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GLOBAL PROGRAMME ON AIDS

MANAGEMENT OF SEXUALLY TRANSMITTED DISEASES

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WORLD HEALTH ORGANIZATION

CONTENTS

PREFACE

Sexually transmitted diseases (STD) 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 HIV infection and AIDS have had a major impact on the management and control of other STD. 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 STD within the broader context of control, prevention and care programmes for STD and HIV infection[1]. WHO convened an Advisory Group Meeting on Sexually Transmitted Diseases Treatment from 18 to 19 February 1993[2], to review and update treatment recommendations in the light of recent developments.

This document presents the revised recommendations, both for a syndromic approach to the management of patients with STD symptoms and for the treatment of specific STD infections. It also provides information on the notification and management of sexual partners, and on STD in children.

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1 *Management of patients with sexually transmitted diseases: Report of a WHO Study Group*, Geneva, World Health Organization, 1991 (WHO Technical Report Series, No. 810).

2 For list of participants, see Annex.

1. INTRODUCTION

1.1 BACKGROUND

Sexually transmitted diseases (STD) remain a public health problem of major signficance in most parts of the world. Incidence of acute STD is believed to be high in many countries and failure to diagnose and treat STD at an early stage may result in serious complications and sequelae, including infertility, fetal wastage, neonatal and infant infections, ectopic pregnancy, anogenital cancer and death. STD also account for massive expenditures.

The appearance of the human immunodeficiency virus (HIV) and the acquired immunodeficiency syndrome (AIDS) has focused greater attention on the control of STD and it is now clear that there is a strong correlation between the spread of conventional STD and HIV transmission. Both ulcerative and non-ulcerative STD increase the risk of sexual transmission of HIV.

The emergence and spread of HIV infection and AIDS have had a major impact on the management and control of other STD. For example, the treatment of chancroid may have become increasingly difficult because of immunosuppression caused by coinfection with HIV.

In addition, antimicrobial resistance of several sexually transmitted pathogens is increasing, rendering some low-cost regimens ineffective.

New agents (e.g. third-generation cephalosporins and fluoroquinolones) capable of treating infections with resistant strains are available but are expensive. However, their initial high cost must be weighed against the cost of inadequate therapy, which may lead to complications, relapse, further spread, and selection for antimicrobial resistance.

1.2 RATIONALE FOR STANDARDIZED TREATMENT RECOMMENDATIONS

Effective management of STD is one of the cornerstones of STD control, as it prevents the development of complications and sequelae, decreases the spread of these diseases in the community, and offers a unique opportunity for targeted education about HIV prevention. The appropriate treatment of STD patients at their first encounter with a health care provider is therefore an important public health measure.

The use of appropriate standardized protocols is strongly recommended in order to ensure adequate treatment at all levels of the health service. Such standardized treatment also facilitates the training and supervision of health providers, delays the development of antimicrobial resistance in sexually transmitted agents such as *Neisseria gonorrhoeae* and *Haemophilus ducreyi*, and is an important factor in rational drug procurement.

It is hoped that the following recommendations will help countries to develop standardized protocols adapted to local epidemiological and antimicrobial sensitivity patterns. WHO is currently developing methods for the local assessment of these patterns. It is recommended that national guidelines for the effective management of STD be developed in close consultation with local STD and public health experts.

1.3 CASE MANAGEMENT

Effective management of patients with STD is not limited to antimicrobial therapy to obtain a cure and reduce infectivity. It also aims at reducing and preventing future risk-taking behaviour and ensuring that sexual partners are also appropriately treated. This can be achieved through:

- correct diagnosis
- effective treatment
- education on risk reduction and prevention
- promotion (and provision) of condoms
- partner notification and treatment
- clinical follow-up where appropriate.

1.4 SYNDROMIC MANAGEMENT

Current methods of STD diagnosis are often unreliable and expensive, and require sophisticated equipment and training in their use. In addition, for certain tests patients are required to return one or two days later. This is not feasible in many settings, where patients must travel a long distance to receive health care and, even if they come back, the period of infectivity is prolonged by this delay in therapy. Few developing country health centres have the laboratory facilities required for accurate etiological diagnosis.

A syndrome-based approach to the management of STD patients has therefore been developed and promoted in a large number of countries in the developing world. WHO has developed a simplified syndrome-based approach to provide health workers with a tool for improving the diagnostic process. Syndromic management is based on the identification of consistent groups of symptoms and easily recognized signs (syndromes), and the provision of treatment that will deal with the majority of organisms responsible for producing each syndrome.

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 more infected cases, and is inexpensive, simple and very cost-effective. WHO has also developed syndromic case management for women with or without symptoms of vaginal discharge, and field trials are under way to determine the sensitivity and specificity of this approach which is based on an assessment of the risk that the patient is infected. Recommendations for treatment using a syndrome-based approach are given in section 2.

1.5 SELECTION OF DRUGS

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 confidence in health services. This approach is not recommended. The drugs used for STD in all health care facilities should be at least 95% effective. Criteria for the selection of drugs are listed in the box below.

Criteria for the selection of STD drugs*

Drugs selected for treating STD should meet the following criteria:

- high efficacy
- 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.

* These are preferred characteristics rather than absolute criteria.

2. TREATMENT OF STD-ASSOCIATED SYNDROMES

This section discusses the management of the most common clinical syndromes caused by sexually transmitted agents. Flow charts (algorithms) 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 STD and promptly treated for the same condition(s) as the index case. Partner notification and management are considered in section 5.3.

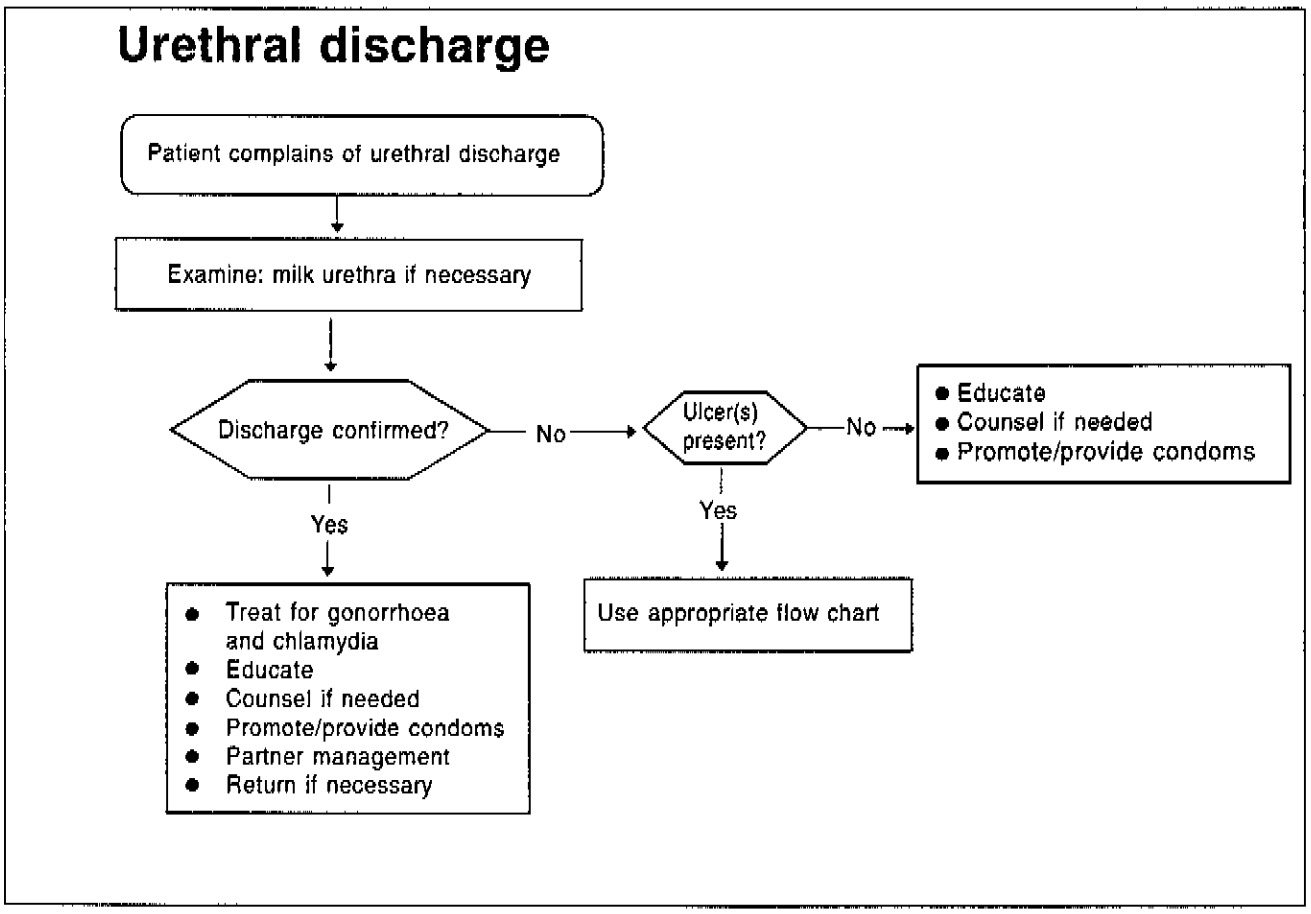
2.1 URETHRAL DISCHARGE

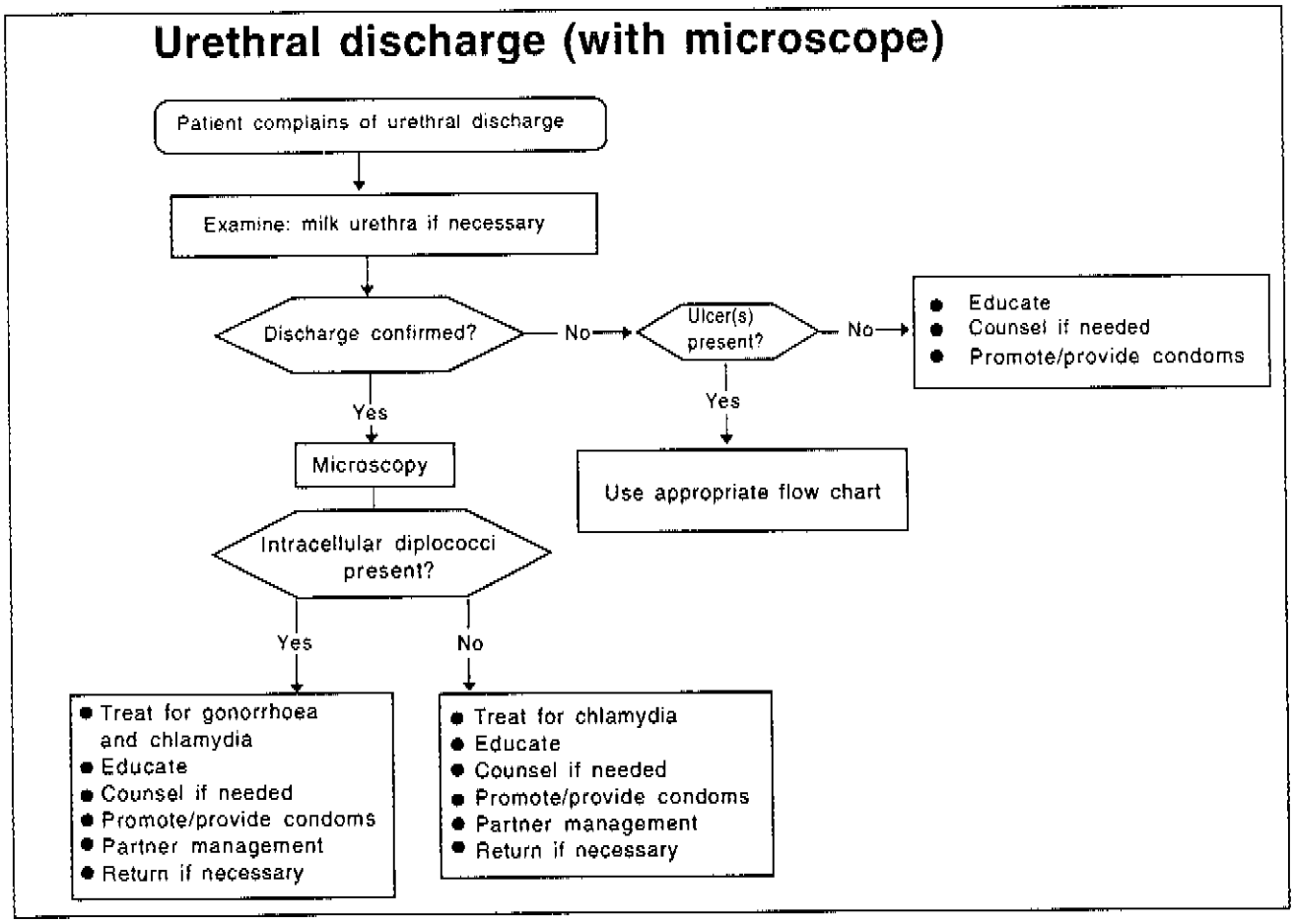
Male patients complaining of urethral discharge and/or dysuria should be examined for evidence of discharge. If none is seen, the urethra should be gently massaged from the ventral part of the penis towards the meatus. If microscopy is available, a urethral specimen should be collected; a Gram-stained urethral smear showing more than 5 polymorphonuclear leukocytes per field (x1000) in areas of maximal cellular concentration is indicative of urethritis.

The major pathogens causing urethral discharge are *N. gonorrhoeae* and *C. trachomatis*. Unless a diagnosis of gonorrhoea can be definitively excluded by laboratory tests, the treatment of the patient with urethral discharge should provide adequate coverage of these two organisms.

Recommended regimens:

therapy for uncomplicated gonorrhoea (see page 18)
plus either
doxycycline, 100mg orally, twice daily for 7 days
or
tetracycline, 500mg orally, 4 times daily for 7 days.





Alternative regimen when tetracyclines are contraindicated or not tolerated:

therapy for uncomplicated gonorrhoea (see page 18)
plus
erythromycin, 500mg orally, 4 times daily for 7 days.

Alternative regimen where single-dose therapy for gonorrhoea is not available:

trimethoprim (80mg) / sulfamethoxazole (400mg), 10 tablets orally, daily for 3 days
plus either
doxycycline, 100mg orally, twice daily for 7 days
or
tetracycline, 500mg orally, 4 times daily for 7 days.

Note. This regimen should only be used in areas where trimethoprim/sulfamethoxazole has been shown to be effective against uncomplicated gonorrhoea.

Follow-up

Patients should be advised to return if symptoms persist 7 days after start of therapy.

Persistent or recurrent symptoms may be due to poor compliance, reinfection, infection with a resistant strain of *N. gonorrhoeae* or infection with *T. vaginalis.* Where symptoms persist or recur after adequate treatment of the index patient and partner(s), both (or all) should be referred for laboratory investigation. The investigation should include a Gram stain to confirm the presence of urethritis and to look for *N. gonorrhoeae. T. vaginalis* may be identified by microscopic examination of a first-voided urine sample, although this test has a fairly low sensitivity as compared to culture. If the presence of *T. vaginalis* is confirmed, metronidazole, 2g, should be given as a single oral dose.

Note. Patients taking metronidazole should be cautioned to avoid alcohol.

2.2 GENITAL ULCER

The frequency with which genital ulcers are caused by specific organisms varies dramatically in different parts of the world. Clinical differential diagnosis of genital ulcers is inaccurate, particularly in settings where several etiologies are common. Clinical manifestations may be further altered in the presence of HIV infection.

After examination to confirm the presence of genital ulceration, treatment appropriate to local etiologies and antibiotic sensitivity patterns should be given. For example, in areas where both syphilis and chancroid are prevalent, 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 granuloma inguinale is also prevalent, treatment for this condition should be included.

Laboratory-assisted differential diagnosis is rarely helpful at the initial visit, and mixed infections are common. For instance, in areas of high syphilis incidence, a reactive serological test may reflect a previous infection and give a misleading picture of the patient's present condition.

Recommended regimens:

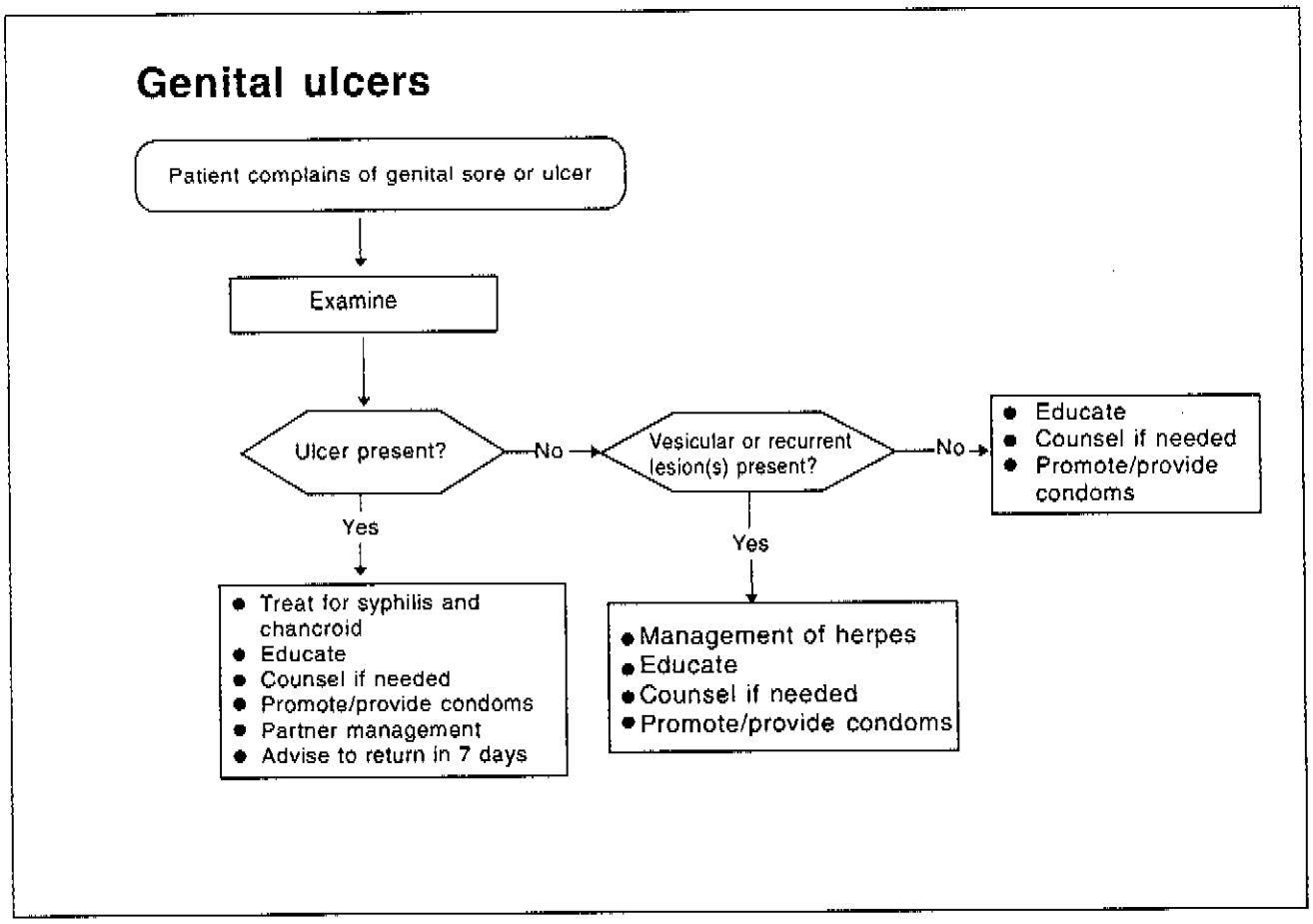
therapy for syphilis (see page 23)
plus either
therapy for chancroid (see page 28)
or
therapy for granuloma inguinale (see page 32).

Genital ulcer and HIV infection

In HIV-infected patients, prolonged courses of treatment may be necessary for chancroid. Moreover, where HIV infection is prevalent, an increasing proportion of cases of genital ulcer are likely to harbour herpes simplex virus. Herpetic ulcers may be atypical and persist for long periods in HIV-infected patients.

Follow-up

Patients with genital ulcers should be followed up weekly until the ulceration shows signs of healing.



Inguinal bubo

Inguinal bubo, an enlargement of the lymph nodes in the groin area, is rarely the sole manifestation of an STD and is usually found together with other genital ulcer diseases. Nonsexually transmitted local and systemic infections (e.g. infections of the lower limb) can also cause swelling of inguinal lymph nodes.

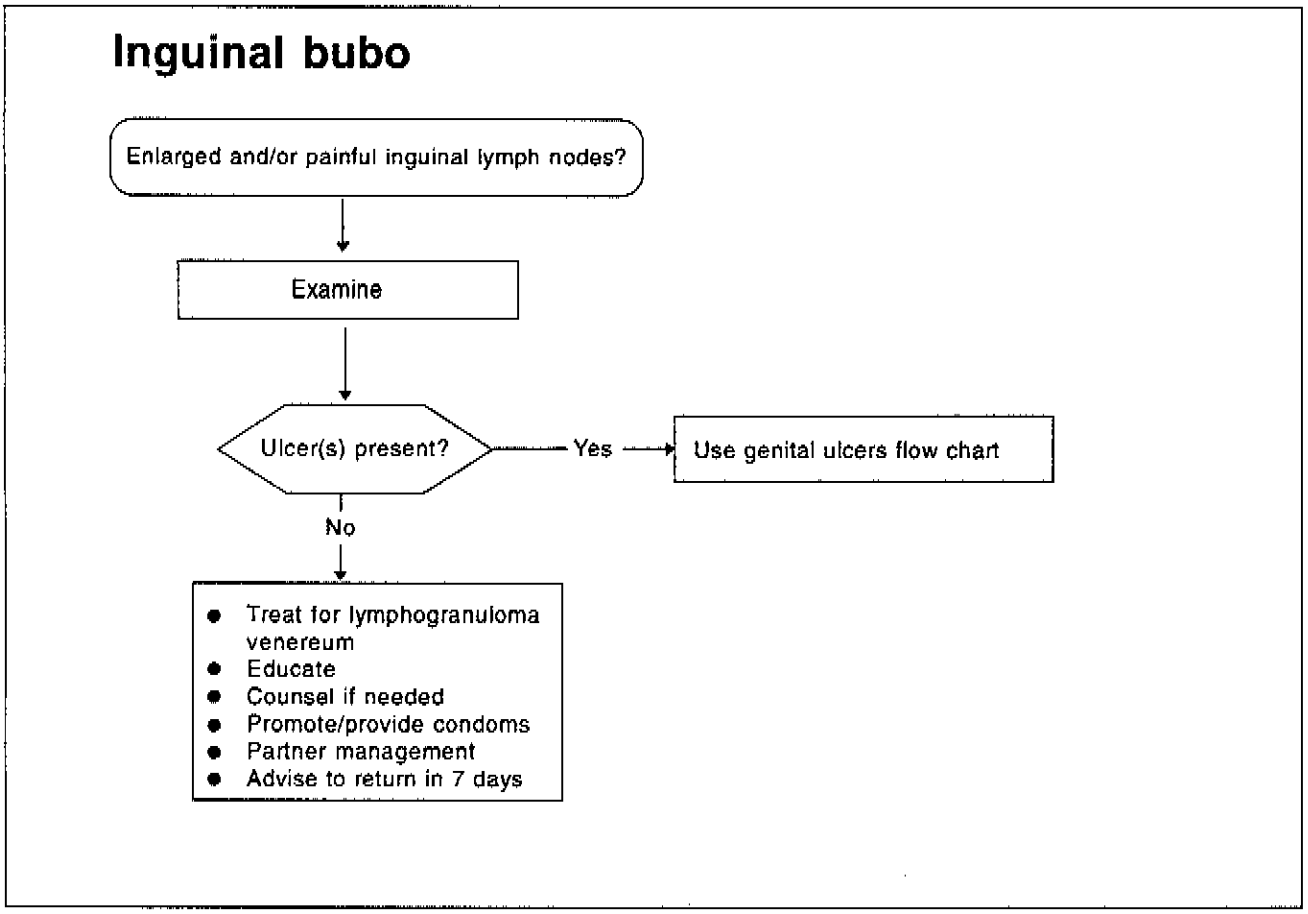
Recommended regimens:

doxycycline, 100mg orally, twice daily for 14 days
or
tetracycline, 500mg orally, 4 times daily for 14 days.

Alternative regimen:

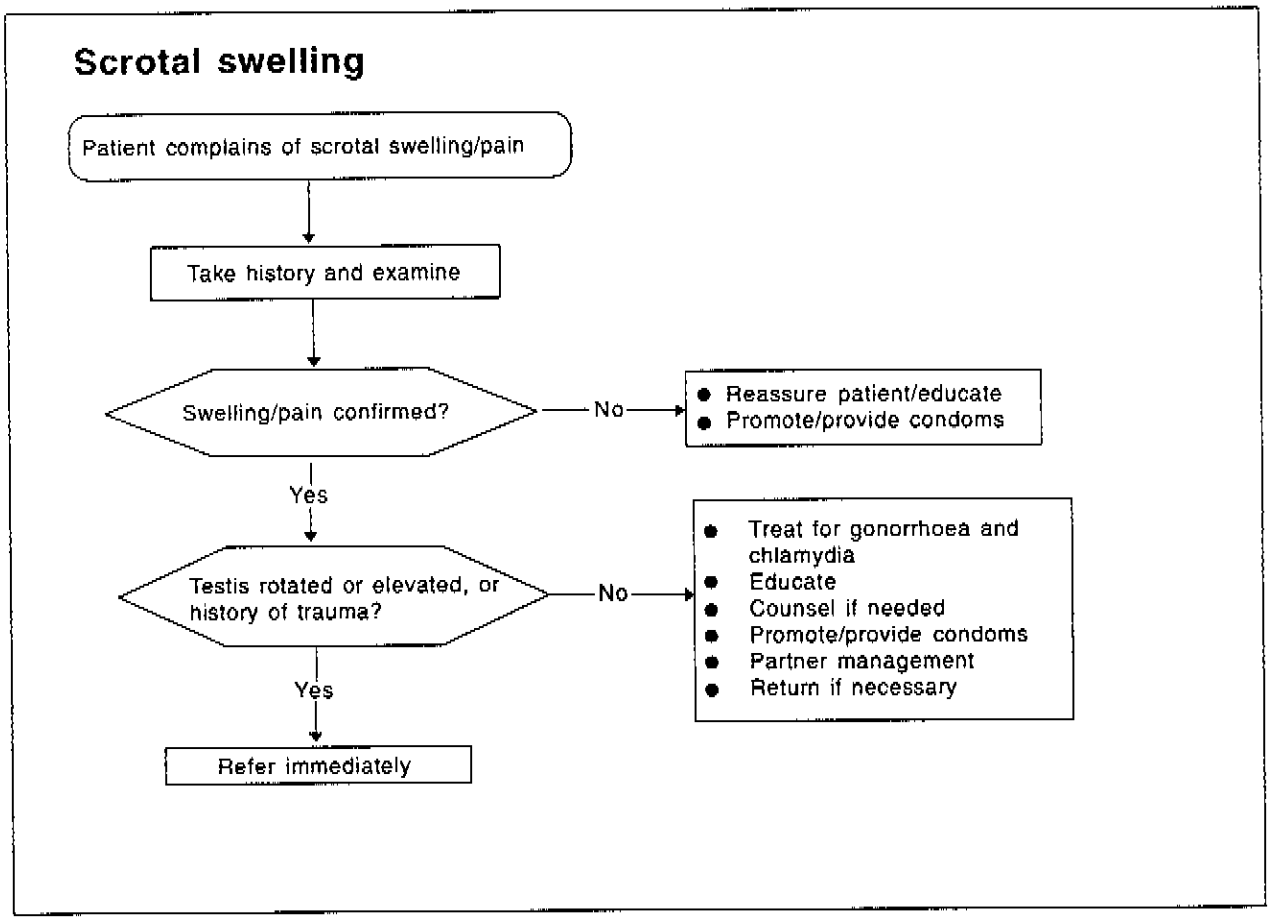
erythromycin, 500mg orally, 4 times daily for 14 days
or
sulfadiazine, 1g orally, 4 times daily for 14 days.

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 will delay healing and is contraindicated.



2.3 SCROTAL SWELLING

Scrotal swelling can be caused by trauma, a tumour, torsion of the testis or epididymitis. Inflammation of the epididymis is usually accompanied by pain, oedema and erythema and sometimes by urethral discharge, dysuria and/or frequency. The adjacent testis is often also inflamed (orchitis), producing epididymo-orchitis. Sudden onset of unilateral swollen scrotum may be due to trauma or testicular torsion and requires immediate referral. When not effectively treated, STD-related epididymitis may lead to infertility. The most important causative organisms are *N. gonorrhoeae* and *C. trachomatis.*



Recommended regimen:

therapy for uncomplicated gonorrhoea (see page 18)
plus either
doxycycline, 100mg orally, twice daily for 7 days
or
tetracycline, 500mg orally, 4 times daily for 7 days.

Alternative regimen when tetracyclines are contraindicated or not tolerated:

therapy for uncomplicated gonorrhoea (see page 18)
plus
erythromycin, 500mg orally, 4 times daily for 7 days.

Alternative regimen where single-dose therapy for gonorrhoea is not available:

trimethoprim (80mg) / sulfamethoxazole (400mg), 10 tablets orally, once daily for 3 days
plus
doxycycline, 100mg orally, twice daily for 7 days
or
tetracycline, 500mg orally, 4 times daily for 7 days.

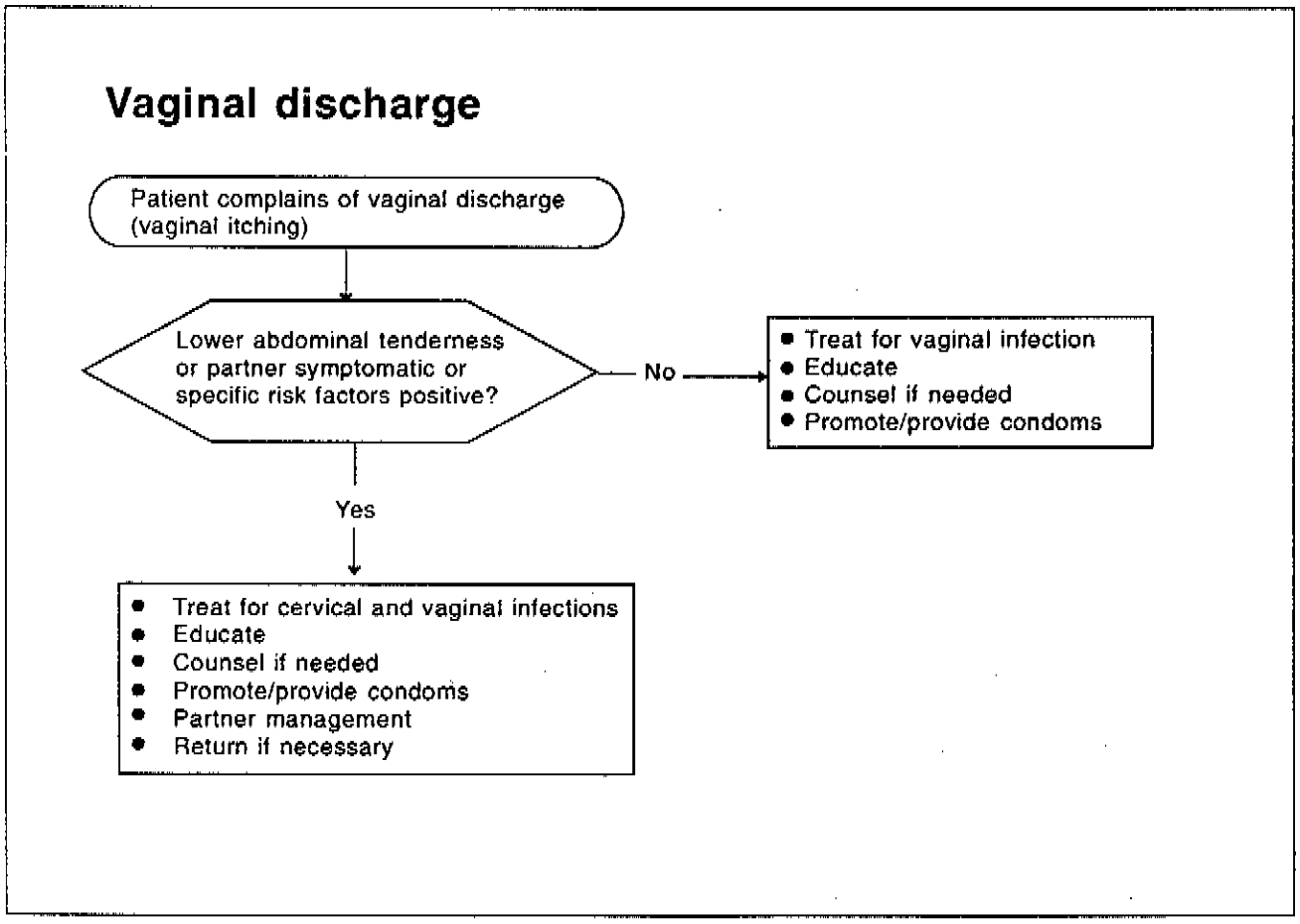
Note. This regimen should only be used in areas where trimethoprim/sulfamethoxazole has been shown to be effective against uncomplicated gonorrhoea.

Adjuncts to therapy

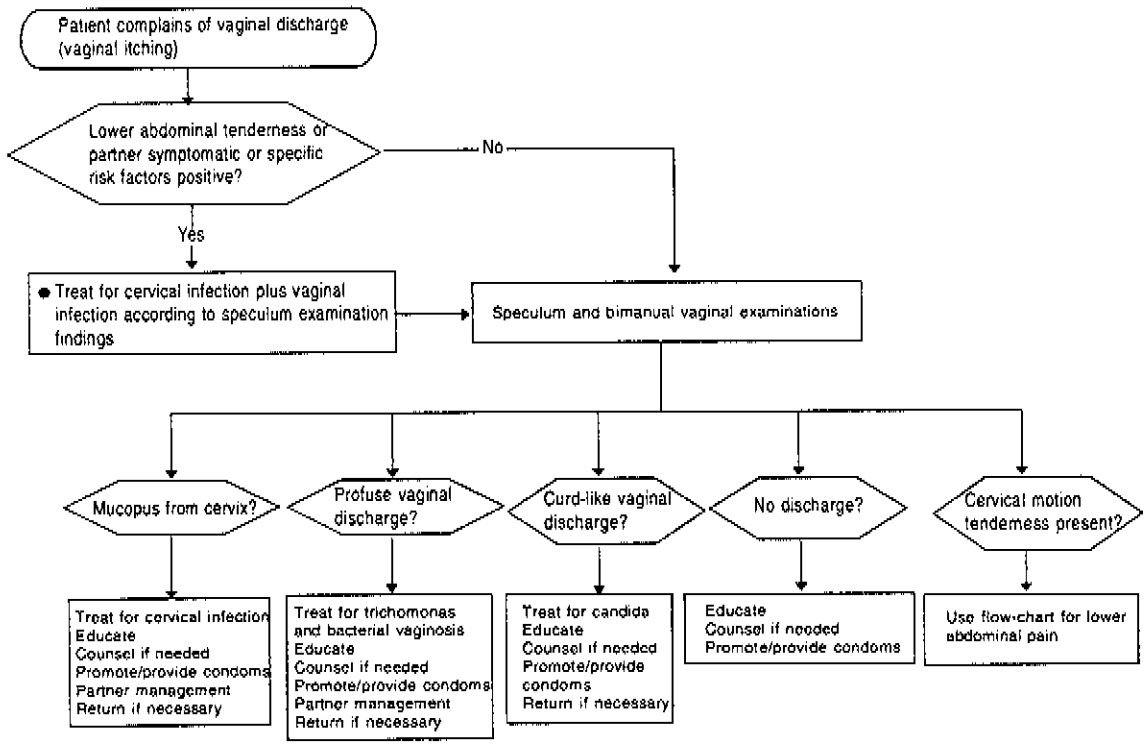
Bed rest and scrotal elevation until local inflammation and fever subside.

2.4 VAGINAL DISCHARGE

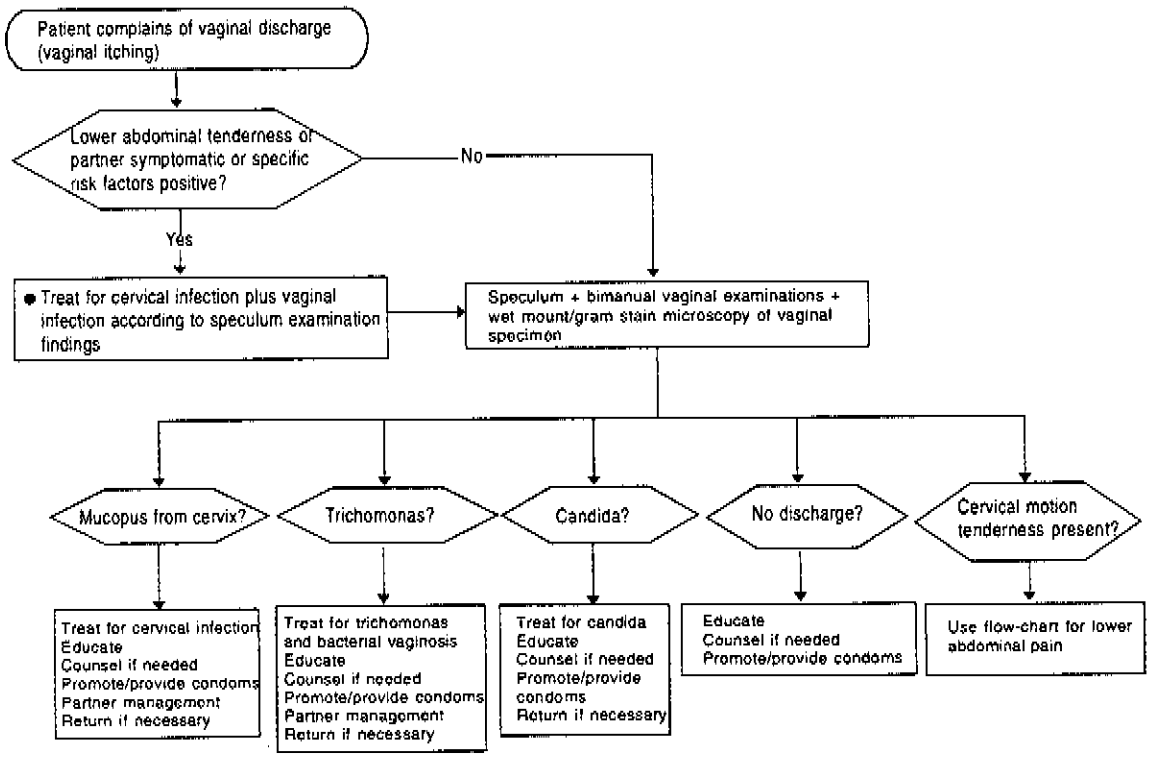
Vaginal discharge is most commonly caused by vaginitis, but may also be the result of cervicitis. *N. gonorrhoeae* and *C. trachomatis* infection cause cervicitis, and *Trichomonas vaginalis, Candida albicans* and a synergistic combination of *Gardnerella sp.* and anaerobic bacterial infection (bacterial vaginosis) cause vaginitis. Effective management of cervicitis is more important from a public health point of view, as cervicitis may have serious sequelae. However, clinical differentiation between the two conditions is difficult. The symptom of vaginal discharge is neither sensitive nor specific for either condition. Recent studies suggest that an assessment of the woman's risk status helps greatly in making a diagnosis of cervicitis, but further evaluation using the flow charts below is needed, particularly with regard to risk factors, which vary from country to country. Where it is not possible to differentiate between cervicitis and vaginitis, and risk assessment is positive, patients should be treated for both conditions.



Vaginal discharge (with speculum)



Vaginal discharge (with speculum and microscope)



Cervicitis

Recommended regimen:

therapy for uncomplicated gonorrhoea (see page 18)
plus either
doxycycline, 100mg orally, twice daily for 7 days
or
tetracycline, 500mg orally, 4 times daily for 7 days.

Note. Tetracyclines are contraindicated in pregnancy.

Alternative regimen when tetracyclines are contraindicated or not tolerated:

therapy for uncomplicated gonorrhoea (see page 18)
plus
erythromycin, 500mg orally, 4 times daily for 7 days.

Alternative regimen where single dose therapy for gonorrhoea is not available:

trimethoprim (80mg) / sulfamethoxazole (400mg), 10 tablets orally, once daily for 3 days
plus either
doxycycline, 100mg orally, twice daily for 7 days
or
tetracycline, 500mg orally, 4 times daily for 7 days.

Note. This regimen should only be used in areas where trimethoprim/sulfamethoxazole has been shown to be effective against uncomplicated gonorrhoea. Tetracyclines are contraindicated in pregnancy.

Vaginitis

Recommended regimen:

metronidazole, 2g orally as a single dose,
or
metronidazole, 400-500mg orally, twice daily for 7 days
plus either
nystatin, 100 000 IU intravaginally, once daily for 14 days
or
miconazole or clotrimazole, 200mg intravaginally, once daily for 3 days
or
clotrimazole, 500mg intravaginally, as a single dose.

Note. Patients taking metronidazole should be cautioned to avoid alcohol.

2.5 LOWER ABDOMINAL PAIN

All sexually active women presenting with lower abdominal pain should be carefully evaluated for the presence of salpingitis and/or endometritis – pelvic inflammatory disease (PID). In addition, routine bimanual and abdominal examinations should be carried out on all women with a presumptive STD 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, pain associated with menses, fever, and sometimes nausea and vomiting.

PID is difficult 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, 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 milder cases.

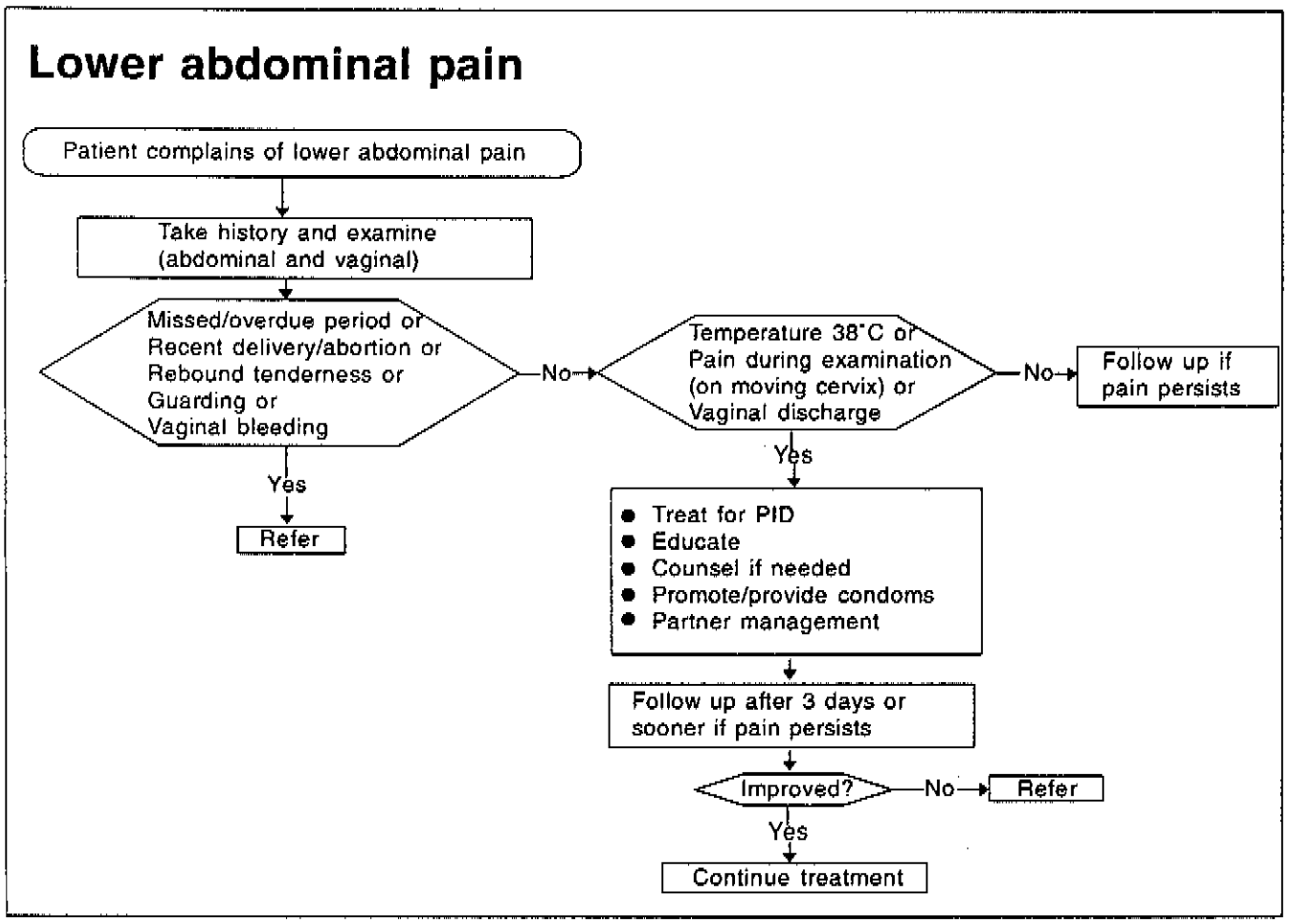
Hospitalization of patients with acute pelvic inflammatory disease should be seriously considered when: (a) the diagnosis is uncertain; (b) surgical emergencies such as appendicitis and ectopic pregnancy need to be excluded; (c) a pelvic abscess is suspected; (d) severe illness precludes management on an outpatient basis; (e) the patient is pregnant; (f) the patient is unable to follow or tolerate an outpatient regimen; (g) the patient has failed to respond to outpatient therapy; or (h) clinical follow-up 72 hours after the start of antibiotic treatment cannot be guaranteed. 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 difficult, the treatment regimens must be effective against this broad range of pathogens. The regimens recommended below are based on this principle.

a) Inpatient therapy

Recommended regimens:

1. ceftriaxone, 500mg by intramuscular injection, once daily
   plus
   doxycycline, 100mg orally or by intravenous injection, twice daily, or tetracycline, 500mg orally 4 times daily
   plus
   metronidazole, 400-500mg orally or by intravenous injection, twice daily, or chloramphenicol, 500mg orally or by intravenous injection, 4 times daily.



2. clindamycin, 900mg by intravenous injection, every 8 hours
   plus
   gentamicin, 1.5 mg/kg by intravenous injection every 8 hours.

3. ciprofloxacin, 500mg orally, twice daily, or spectinomycin 1g by intramuscular injection, 4 times daily
   plus
   doxycycline, 100mg orally or by intravenous injection, twice daily, or tetracycline, 500mg orally, 4 times daily
   plus
   metronidazole 400-500mg orally or by intravenous injection, twice daily, or chloramphenicol, 500mg orally or by intravenous injection, 4 times daily.

Note. For all three regimens, therapy should be continued until at least 2 days after the patient has improved and should then be followed by either doxycycline, 100mg orally, twice daily for 14 days, or tetracycline, 500mg orally, 4 times daily, for 14 days. Patients taking metronidazole should be cautioned to avoid alcohol. Tetracyclines are contraindicated in pregnancy.

b) Outpatient therapy

Recommended regimen:

single-dose therapy for uncomplicated gonorrhoea (see page 18 single-dose ceftriaxone has been shown to be effective; other single dose regimens have not been formally evaluated as treatments for PID)
plus
doxycycline, 100mg orally twice daily, or tetracycline, 500mg orally, 4 times daily for 14 days
plus
metronidazole, 400-500mg orally, twice daily for 14 days.

Note. Patients taking metronidazole should be cautioned to avoid alcohol. Tetracyclines are contraindicated in pregnancy.

Alternative regimen where single dose therapy for gonorrhoea is not available:

trimethoprim (80mg) / sulfamethoxazole (400mg), 10 tablets orally once daily for 3 days, and then 2 tablets orally, twice daily for 10 days
plus
doxycycline, 100mg orally, twice daily, or tetracycline, 500mg orally, 4 times daily for 14 days
plus
metronidazole, 400-500mg orally, twice daily for 14 days.

Note. This regimen should only be used in areas where trimethoprim/sulfamethoxazole has been shown to be effective in the treatment of uncomplicated gonorrhoea. Patients taking metronidazole should be cautioned to avoid alcohol.

Adjuncts to therapy: removal of intrauterine device (IUD)

The IUD is a risk factor for the development of PID. Although the exact effect of removing an IUD on the response of acute salpingitis to antimicrobial therapy and on the risk of recurrent salpingitis is unknown, removal of the IUD is recommended soon after antimicrobial therapy has been initiated. When an IUD is removed, contraceptive counselling is necessary.

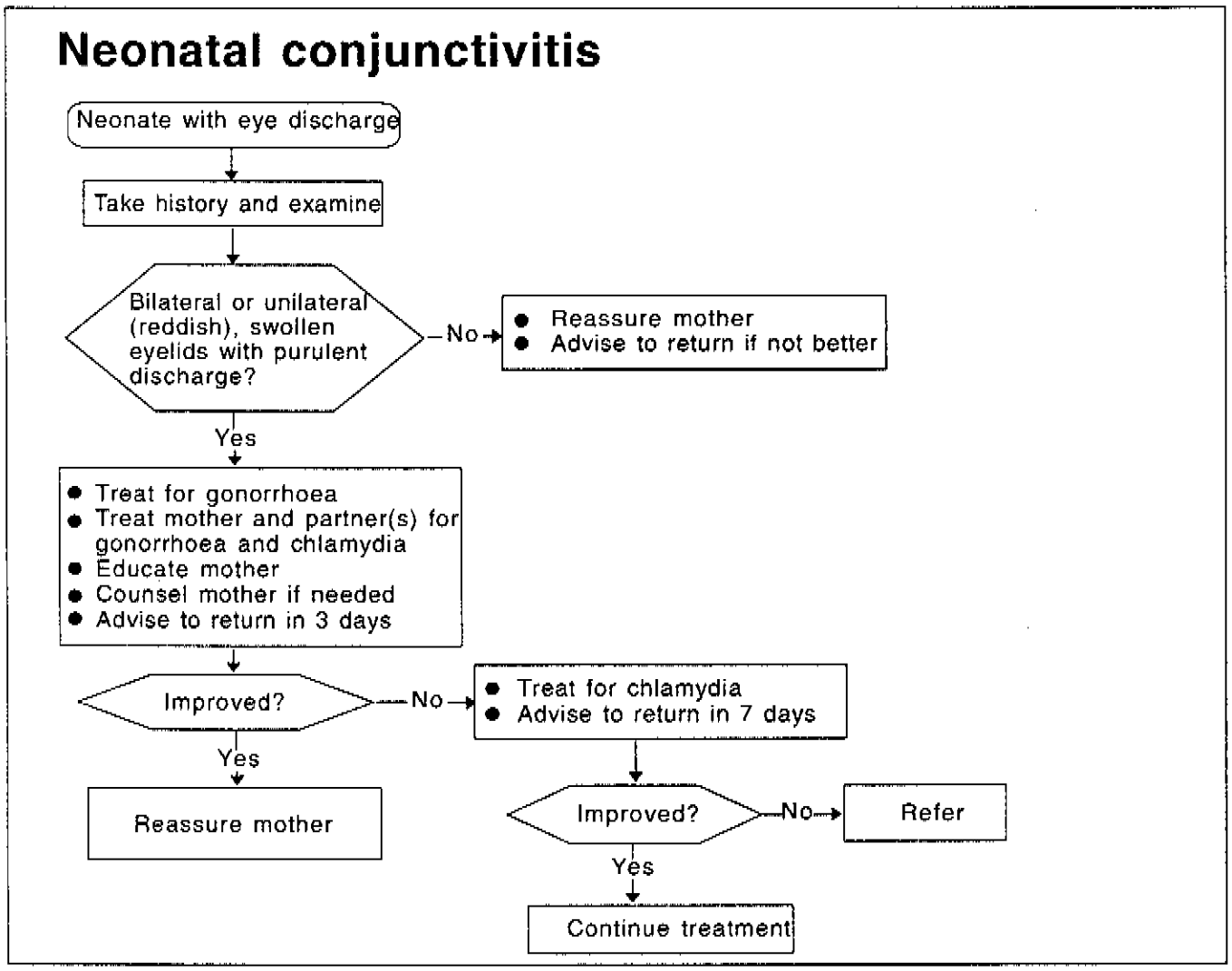
Follow-up

Outpatients with PID should be followed up at 72 hours and admitted if their condition has not improved.

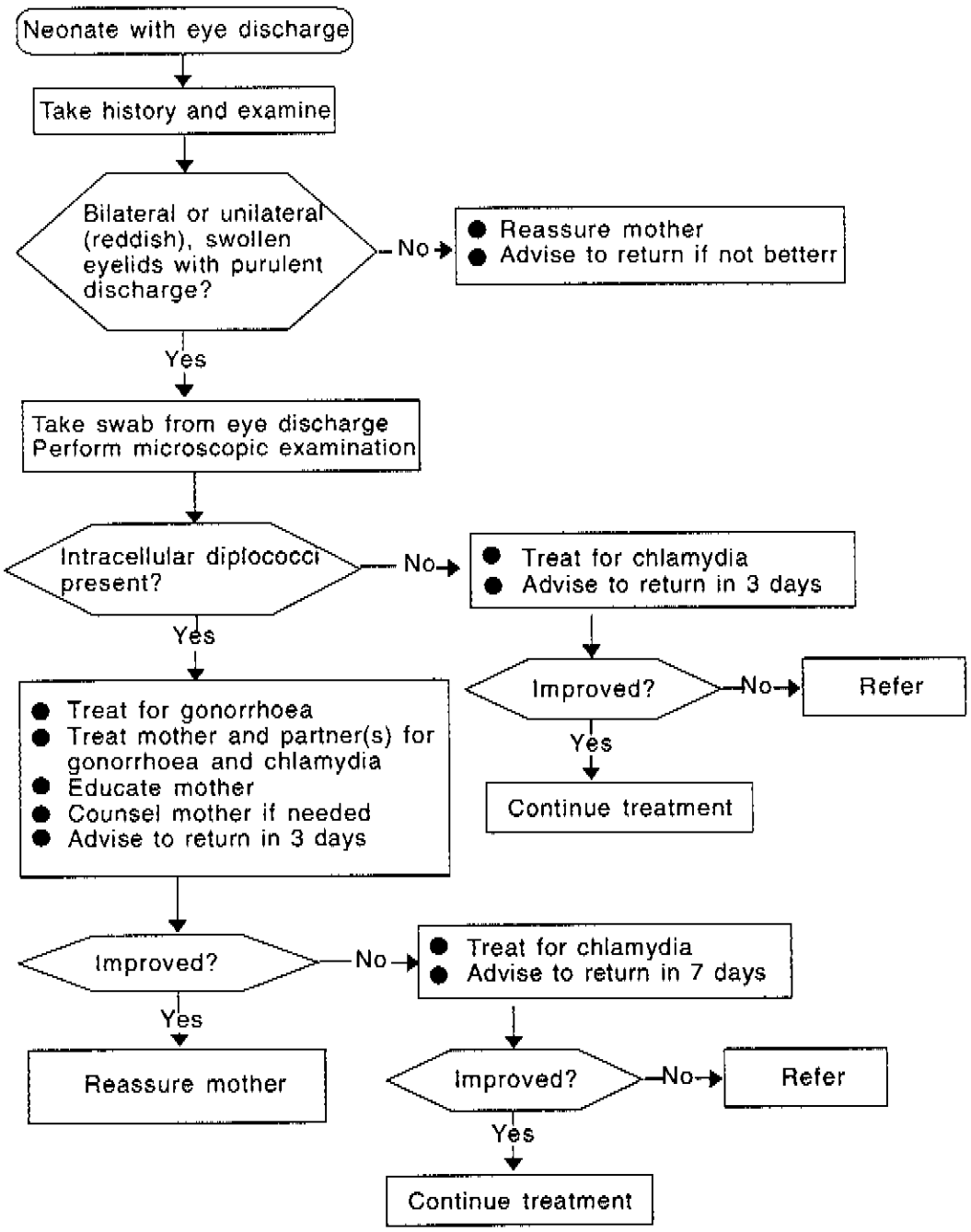
2.6 NEONATAL CONJUNCTIVITIS

Neonatal conjunctivitis (ophthalmia neonatorum) can lead to blindness when caused by *N. gonorrhoeae*. The most important sexually transmitted causes of 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).

Recommended regimen: (see page 20-21)



Neonatal conjunctivitis (with microscope)



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, which can therefore no longer be recommended for the treatment of gonorrhoea.

It is important to monitor local *in vitro* susceptibility, as well as the clinical efficacy of recommended regimens.

Note. Concurrent antichlamydial therapy should be given to all patients with gonorrhoea, as described in the section on chlamydial infections, since dual infection is common.

Uncomplicated anogenital infection

Recommended regimens:

ciprofloxacin, 500mg orally, as a single oral dose
or
ceftriaxone, 250mg by intramuscular injection as a single dose
or
cefixime, 400mg orally, as a single dose
or
spectinomycin, 2g by intramuscular injection as a single dose.

Note. Ciprofloxacin is contraindicated in pregnancy. The manufacturer does not recommend it for use in children. However, single-dose ciprofloxacin is now recommended for prophylaxis of meningococcal meningitis in Denmark.

Ceftriaxone, 125mg, and ciprofloxacin, 250mg, half the recommended doses, are effective in adults, but the higher dose is recommended in order to delay the development of resistance. There are variations in the antigonococcal activity of individual quinolones, and it is important to use only the most active.

Alternative regimens which may be useful in some countries, depending on the prevalence of resistant gonococci:

kanamycin, 2g by intramuscular injection as a single dose
or
trimethoprim (80mg) / sulfamethoxazole (400mg), 10 tablets orally, once daily for 3 days.

Note. Kanamycin and trimethoprim/sulfamethoxazole should only be used in areas where *in vitro* resistance rates are low and are monitored at regular intervals. In addition, second-line treatment with recommended drugs should be available.

Disseminated infection

Recommended regimens:

ceftriaxone, 1g 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, 2g by intramuscular injection, twice daily for 7 days. There are some data to suggest that therapy for 3 days is adequate.

For gonococcal meningitis and endocarditis the same dosages apply but the duration of therapy will need to be increased to 4 weeks for endocarditis.

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 regimens are not available. Careful hand washing by personnel caring for infected patients is essential.

a) Adults

Recommended regimen:

ceftriaxone, 250mg by intramuscular injection as a single dose

or

spectinomycin, 2g by intramuscular injection as a single dose

or

ciprofloxacin, 500mg orally, as a single dose.

This regimen is likely to be effective although there are no published data on its use in gonococcal ophthalmia (a less active quinolone, norfloxacin, 800mg orally, as a single dose, was found to be effective).

Alternative regimen where the recommended agents are not available:

kanamycin, 2g by intramuscular injection as a single dose.

Follow-up

Careful clinical monitoring of progress is important.

b) Neonates

Recommended regimen:

ceftriaxone, 50 mg/kg by intramuscular injection as a single dose, to a maximum of 125mg.

Alternative regimen where ceftriaxone is not available:

kanamycin, 25 mg/kg by intramuscular injection as a single dose to a maximum of 75mg
or
spectinomycin, 25 mg/kg by intramuscular injection as a single dose to a maximum of 75mg.

Single-dose ceftriaxone and kanamycin are of proven efficacy. The addition of tetracycline eye ointment to these regimens is of no documented benefit.

Follow-up

Patients should be reviewed after 48 hours.

Prevention of ophthalmia neonatorum:

Gonococcal ophthalmia neonatorum should be prevented by using timely eye prophylaxis. The infant's eyes should be carefully cleaned immediately after birth and 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 as follows:

Recommended regimen:

ceftriaxone 50 mg/kg by intramuscular injection as a single dose, to a maximum of 125mg.

Alternative regimen where ceftriaxone is not available:

kanamycin, 25 mg/kg by intramuscular injection as a single dose, to a maximum of 75mg
or
spectinomycin, 25 mg/kg by intramuscular injection as a single dose, to a maximum of 75mg.

3.2 *CHLAMYDIA TRACHOMATIS* INFECTIONS (OTHER THAN LYMPHOGRANULOMA VENEREUM)

Laboratory tests for chlamydial infection are not available in most areas. It is recommended that treatment for chlamydial infection should be given to all males with urethral discharge, and their sexual contacts.

Uncomplicated urethral, endocervical, or rectal infections

Recommended regimens:

doxycycline, 100mg orally, twice daily for 7 days
or
tetracycline, 500mg orally, 4 times daily for 7 days.

Note. Tetracyclines are contraindicated during pregnancy.

Alternative regimens when tetracyclines are contraindicated or not tolerated:

erythromycin, 500mg orally, 4 times daily for 7 days
or, if erythromycin is not tolerated,
sulfafurazole, 500mg orally, 4 times daily for 10 days. (Other sulfonamides may be used in equivalent doses.)

The addition of trimethoprim to a sulfonamide does not increase its activity against *C. trachomatis.*

There is evidence that extending the duration of treatment beyond 7 days does not improve the cure rate in uncomplicated chlamydial infection. Azithromycin, 1g orally, as a single dose, is effective for the treatment of chlamydial urethritis, but since its efficacy has not been proven in non-gonococcal, non-chlamydial urethritis, it should only be used where a chlamydial etiology has been proven. This regimen is also expensive.

Follow-up

Compliance with the 7-day regimens is critical. Because resistance of *C. trachomatis* to recommended regimens has not been observed, it is not necessary to undertake a cure evaluation when treatment has been completed. Patients should be asked to return if symptoms persist.

Neonatal conjunctivitis

For all cases of conjunctivitis in the newborn, appropriate tests should be performed to rule out *N. gonorrhoeae* as the cause, because of mixed infection. Treatment for chlamydial conjunctivitis should consist of erythromycin syrup, 50 mg/kg per day orally, in 4 divided doses for 2 weeks. If this is not available, trimethoprim 40mg with sulfamethoxazole 200mg may be given orally twice daily for 14 days.

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

The recommended therapy is erythromycin syrup, 50 mg/kg per day orally, in 4 divided doses for 3 weeks. If this is not available, trimethoprim 40mg with sulfamethoxazole 200mg may be given orally twice daily for 3 weeks. However, the optimal duration of therapy has not been established.

3.3 LYMPHOGRANULOMA VENEREUM

Results of controlled trials on the treatment of lymphogranuloma venereum have not been published, and recommendations are based on expert opinion.

Recommended regimen:

doxycycline, 100mg orally, twice daily for 14 days
or
tetracycline, 500mg orally, 4 times daily for 14 days.

Note. Tetracyclines are contraindicated in pregnancy.

Alternative regimens:

erythromycin, 500mg orally, 4 times daily for 14 days
or
sulfadiazine, 1g orally, 4 times daily for 14 days (other sulfonamides can be used in equivalent doses).

Some patients may require treatment for longer than the 14 days recommended above.

Management of lesions

Fluctuant lymph nodes should be aspirated through healthy skin. Incision and drainage or excision of nodes will delay healing and are contraindicated. However, late sequelae such as stricture and/or fistula may require surgical intervention.

3.4 SYPHILIS

Early syphilis (i.e. primary, secondary, or latent syphilis of not more than two years' duration)

Recommended regimen:

benzathine penicillin G, 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 penicillin G, 1.2 million IU daily, by intramuscular injection, for 10 consecutive days.

There are few data on the optimal treatment of syphilis, and there is consequently considerable disagreement among experts regarding therapeutic recommendations. Some recommend treating secondary and latent syphilis with regimens of longer duration; either benzathine penicillin G, 2.4 IU by intramuscular injection, once weekly for 3 consecutive weeks or procaine penicillin G, 1.2 IU, by intramuscular injection, once daily for 15 consecutive days. Anecdotal evidence suggests that therapy with benzathine penicillin G may be ineffective in HIV-infected patients with abnormalities of the cerebrospinal fluid (CSF). Some experts recommend the use of daily procaine benzathine penicillin G for at least 10 days when HIV infection is considered likely.

Alternative regimen for penicillin-allergic non-pregnant patients:

tetracycline, 500mg orally, 4 times daily for 15 days
or
doxycycline, 100mg orally, twice daily for 15 days.

Late latent and late benign syphilis (i.e. latent syphilis of more than two years' duration or of indeterminate duration)

Recommended regimen:

benzathine penicillin G, 2.4 million IU by intramuscular injection, once weekly for 3 consecutive weeks.

Alternative regimen:

procaine penicillin G, 1.2 million IU, by intramuscular injection, once daily for 20 consecutive days.

Cardiovascular syphilis

Recommended regimen:

procaine penicillin G, 1.2 million IU by intramuscular injection, once daily for 20 consecutive days.

Consultation with a cardiologist is recommended when caring for patients with cardiovascular syphilis.

Alternative regimen for penicillin-allergic non-pregnant patients:

tetracycline, 500mg orally, 4 times daily for 30 days
or
doxycycline, 100mg orally, twice daily for 30 days.

Penicillin is the preferred therapy and should be given whenever possible. The evidence supporting the use of tetracycline is stronger than for doxycycline. It should be emphasized that antibiotic treatment is less well defined for late syphilis than it is for early syphilis. In general, late syphilis requires longer therapy.

Neurosyphilis

Recommended regimen:

benzathine penicillin G, 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 penicillin G, 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 penicillin G, 2.4 million IU, by intramuscular injection, in 3 consecutive doses once weekly, after completing these regimens, but there are no data to support this approach. Benzathine penicillin G, 2.4 million IU by intramuscular injection does not give therapeutic levels in the cerebrospinal fluid.

Alternative regimens for penicillin-allergic non-pregnant patients:

tetracycline, 500mg orally, 4 times daily for 30 days
or
doxycycline, 200mg orally, twice 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 defined, 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, cranial nerve palsies) warrants examination of the cerebrospinal fluid. However, this 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, and careful follow-up is essential.

Syphilis and HIV infection

All patients with syphilis should be encouraged to undergo testing for HIV 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. When clinical findings suggest that syphilis is present, but serological tests are negative or inconclusive, alternative tests, such as biopsy of lesions, dark-field examination, and direct fluorescent antibody staining of lesion material should be used. 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 non-HIV-infected patients. However, some authorities advise examination of the cerebrospinal fluid and/or more intensive treatment with a regimen appropriate for all patients dually infected with *Treponema 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 the sexual partner(s).

Recommended regimens:

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.

Alternative regimens for penicillin-allergic pregnant patients:

a) Early syphilis (i.e. primary, secondary, or latent syphilis of not more than 2 years' duration):

erythromycin, 500mg orally, 4 times daily for 15 days

b) Late syphilis (i.e. late latent syphilis of more than 2 years' duration or of indeterminate duration, late benign syphilis, cardiovascular syphilis, or neurosyphilis):

erythromycin, 500mg orally, 4 times daily for 30 days.

Note. The effectiveness of erythromycin in all stages of syphilis and its ability to prevent the stigmata of congenital syphilis are highly questionable, and many failures have been reported. Its efficacy 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 allergy is not manifested by anaphylaxis.

All infants born to seroreactive mothers should be treated with a single intramuscular dose of benzathine penicillin G, 50 000 IU/kg by intramuscular injection as a single dose, whether or not the mothers were treated during pregnancy (with or without penicillin).

Follow-up

Following treatment, quantitated non-treponemal serological tests should be performed at monthly intervals until delivery, retreatment being undertaken if there is serological evidence of reinfection or relapse. Subsequent follow-up of the mother is the same as for non-pregnant patients.

Congenital syphilis

Recommended regimens:

a) Early congenital syphilis (up to 2 years of age)

Infants with abnormal cerebrospinal fluid:

benzathine penicillin G, 50 000 IU/kg by intramuscular or intravenous injection, daily in 2 divided doses for a minimum of 10 days

or

procaine penicillin G, 50 000 IU/kg by intramuscular injection, as a single daily dose for 10 days.

Infants with normal cerebrospinal fluid:

benzathine penicillin G, 50 000 IU/kg by intramuscular injection, at a single session.

Note. Some experts treat all infants with congenital syphilis as if the cerebrospinal fluid findings were abnormal. Antibiotics other than penicillin (i.e. erythromycin) are not indicated for congenital syphilis except in cases of severe allergy to penicillin. Tetracyclines should not be used in young children.

b) Congenital syphilis of 2 or more years' duration:

benzathine penicillin G, 200 000 – 300 000 IU/kg/day by intravenous or intramuscular injection, in divided doses for 10-14 days. Dosage should be adapted to patient's weight, but should not exceed that used for late acquired syphilis.

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.

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 3 months until it is confirmed that serological tests are, and remain, negative. Any antibody carried over from mother to baby usually disappears within 3 months of birth. Where available, IgM-specific serology may aid diagnosis.

Infected babies of untreated syphilitic mothers can be asymptomatic at birth and can also be seronegative if the mother was infected late in pregnancy. However, some experts recommend that treatment should be given (a) in the presence of clear serological evidence and/or clinical, radiological signs of disease; (b) if the treatment of the mother was inadequate or is unknown; (c) if antibiotics other than penicillin were used; or (d) if clinical and serological follow-up of the infant cannot be ensured.

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 intercurrent infections, e.g. pneumonia; in such cases, admission to a hospital is advised.

Follow-up

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 first year after therapy. Patients whose early syphilis has been treated with appropriate doses and preparations of benzathine penicillin G, should be evaluated clinically and serologically, using a non-treponemal test, after 3 months to assess the results of therapy. A second evaluation should be performed after 6 months and, if indicated by the results at 6 months, again after 12 months, to reassess the condition of the patient and detect possible reinfection.

All patients with cardiovascular syphilis and neurosyphilis should be followed for many years. The follow-up should include clinical, serological, cerebrospinal fluid and, where necessary, radiological examinations based on the clinician's assessment of the individual patient's condition and evaluation of the illness.

At all stages of the disease, retreatment should be considered when:

(a) clinical signs or symptoms of active syphilis persist or recur;
(b) there is a confirmed fourfold increase in the titre of a non-treponemal test;
(c) an initially high-titre non-treponemal test (e.g. VDRL 1:8 or above) persists for a year.

Examination of the cerebrospinal fluid should be undertaken before retreatment, unless reinfection and a diagnosis of early syphilis can be established.

Patients should be retreated with the schedules recommended for syphilis of more than two years' duration. In general, only one retreatment course is indicated because adequately treated patients may maintain stable, low titres in non-treponemal tests.

3.5 CHANCROID

Owing to widespread resistance in all geographical areas, tetracycline and penicillins have no place in the treatment of chancroid. Single-dose therapy with alternative microbials would be the preferred regimen. However, anecdotal reports suggest that in some parts of the world, particularly those with a high prevalence of HIV infection and AIDS, single-dose regimens may be associated with an unacceptably high failure rate.

Recommended regimen:

erythromycin, 500mg orally, 3 times daily for 7 days.

Alternative regimens:

ciprofloxacin, 500mg orally, as a single dose
or
ceftriaxone, 250mg by intramuscular injection as a single dose
or
spectinomycin, 2g by intramuscular injection as a single dose
or
trimethoprim (80mg) / sulfamethoxazole (400mg), 2 tablets orally, twice daily for 7 days.

Note. The trimethoprim/sulfamethoxazole regimen has been shown to be less effective in some parts of Africa and Asia. It should only be used in areas where *in vitro* resistance rates are low and are monitored at regular intervals.

Where compliance is likely, erythromycin is clearly the treatment of choice. *In vitro* resistance to ceftriaxone and ciprofloxacin has not been reported, but a recent study in Kenya documented treatment failure using ceftriaxone, 250mg by intramuscular injection, in 27% of HIV-negative and 60% of HIV-positive subjects. These results need confirmation in other geographical areas, and further data are required on the use of single-dose ciprofloxacin and spectinomycin. Azithromycin, 1g orally, as a single dose appears to be effective, but further data are required.

Chancroid and HIV infection

In patients infected with HIV, the alternative regimens (i.e. other than erythromycin) often seem ineffective, and more prolonged courses of therapy may be necessary. Further work is required to determine optimum therapy.

Management of lesions

No special treatment is required. Ulcerative lesions should be kept clean, and fluctuant lymph nodes should be aspirated as required through the surrounding healthy skin. Incision and drainage or excision of nodes delay healing and are contraindicated.

Follow-up

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.

3.6 GENITAL HERPES INFECTIONS

There is no known cure, but the course of symptoms can be modified if systemic therapy with acyclovir is started as soon as possible following the onset of symptoms. Topical therapy with acyclovir produces only minimal shortening of the duration of symptomatic episodes and is not recommended.

First clinical episode

A careful clinical history should be obtained to establish that this is the patient's first symptomatic episode.

Recommended regimen:

acyclovir, 200mg orally, 5 times daily for 7 days.

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 influence the natural history of recurrent disease.

Recurrences

Recommended regimen:

acyclovir, 200mg orally, 5 times daily for 5 days
or, for frequently recurring outbreaks (more than 6 per year)
acyclovir, 200mg orally, 3 times daily, continuously.

This long-term regimen will completely suppress symptomatic recurrences in 50-75% of sufferers, but recurrences become more likely when it is continued for longer than one year. 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 be determined only empirically. Although it suppresses symptomatic recurrences, acyclovir therapy does not eliminate viral shedding, and the risk of transmission to sexual partners may be increased if shedding becomes occult.

Gestational herpes

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. It is not necessary to screen for herpes simplex virus during pregnancy. Careful history and physical examination serve as a guide to the need for caesarian section in mothers with primary genital herpes. Babies born to women with active genital ulcers or positive herpes virus cultures should be isolated in the nursery and observed carefully. Specimens should be obtained from the mother's lesions, and cultured for herpes simplex virus at 24 and 48 hours.

Herpes and HIV infections

Herpes infections may be chronic and destructive in patients whose immunity is compromised. Acyclovir, 400mg orally, 3-5 times daily has been used successfully to treat herpes in HIV-infected patients. Persistent or recurrent infection is common, and chronic suppressive treatment may be required.

3.7 VENEREAL WARTS

Human papillomavirus is a common sexually transmitted pathogen, specific types of which may give rise to invasive carcinoma of the cervix or to benign exophytic genital warts. The virus types causing these two conditions are distinct, so that patients with genital warts are probably no more likely than patients with other STD to develop cervical carcinoma. However, it is recommended practice to examine the cervix in all female STD patients, and to perform regular cervical smears in this population for Papanicolaou examination.

Since genital warts are painless and do not lead to serious complications, the aim of therapy is purely cosmetic. No treatment is completely satisfactory. In most clinical situations, podophyllin (or podophyllotoxin) or trichloroacetic acid (TCA) are used to treat external genital and perianal warts. Cryotherapy with liquid nitrogen, solid carbon dioxide, or cryoprobe is preferred by many consultants when available. Cryotherapy is non-toxic, does not require anaesthesia and, if used properly, does not result in scarring.

Sexual partners 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.

External genital, perianal, vaginal and anal warts

Recommended regimens:

a) Chemical

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 removing the speculum or anoscope. Treatment should be repeated at weekly intervals.

Where available, podophyllotoxin 0.5%, one of the active constituents of podophyllin resin, is recommended. Its efficacy 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

Trichloroacetic acid (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
or
Electrosurgery
or
Surgical removal.

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 trichloroacetic acid for cervical warts. One of the alternative therapies listed above should therefore be used.

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 dried before contact with normal, opposing epithelial surfaces is allowed. Low success rates with podophyllin are reported.

Urethroscopy is necessary to diagnose intraurethral warts, but they should be suspected in men with recurrent meatal warts. Electrosurgical removal is preferred by some experts. Intraurethral instillation of a 5% cream of fluorouracil or thiotepa may be effective, but neither has been adequately evaluated. Podophyllin should not be used.

3.8 GRANULOMA INGUINALE (DONOVANOSIS)

No controlled treatment trials have been published.

Recommended regimen:

trimethoprim (80mg) / sulfamethoxazole (400mg), 2 tablets orally, twice daily for a minimum of 14 days, and until lesions have completely healed.

Alternative regimen:

tetracycline, 500mg orally, 4 times daily, or doxycycline, 100mg twice daily for 7 days.

Since the causative organism cannot be cultured, treatment is empirical. Numerous anecdotal reports suggest that chloramphenicol and erythromycin are also effective.

3.9 TRICHOMONAS VAGINALIS INFECTIONS

Recommended regimen:

metronidazole, 2g orally, in a single dose.

The reported cure rate in women ranges from 82% to 88% but may be increased to 95% if sexual partners are treated simultaneously.

Other 5-nitroimidazoles may also be used.

Alternative regimen:

metronidazole, 400-500mg orally, twice daily for 7 days.

Note. Patients taking metronidazole should be cautioned to avoid alcohol.

Asymptomatic women with trichomoniasis should be treated with the same regimens as symptomatic women.

Management of sexual partners

All sexual partners should be notified and treated. Trichomoniasis is usually asymptomatic in men but is an uncommon cause of symptomatic nongonococcal urethritis. The 7-day multidose regimen described above is highly effective in men; the effectiveness of the single-dose regimen has been less well studied.

Follow-up

Patients should be asked to return after 7 days if symptoms persist. Resistance to the 5-nitroimidazoles has been reported, and may be one cause of treatment failure. Reinfection should be carefully excluded. Patients not cured following initial treatment often respond favourably to repeat treatment with the 7-day regimen.

Patients not cured with the repeated course of metronidazole may be treated with a regimen consisting of metronidazole 2g orally, daily, together with 500mg 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 primary therapy of trichomoniasis.

Trichomoniasis in pregnancy

There is increasing evidence of an association between infection with *T. vaginalis* and premature rupture of the membranes. Metronidazole is contraindicated in the first trimester of pregnancy but may be used during the second and third trimesters. The minimum effective dose should be used.

Neonatal infections

Infants with symptomatic trichomoniasis or with urogenital colonization persisting past the fourth month of life should be treated with metronidazole.

Recommended regimen:

metronidazole, 5 mg/kg orally, 3 times daily for 5 days.

3.10 BACTERIAL VAGINOSIS

Only symptomatic women need to be treated. Treatment of sexual partners has not been demonstrated to be of benefit.

Recommended regimens:

metronidazole, 400-500mg orally, twice daily for 7 days
or
metronidazole, 2g orally, as a single dose.

A recent meta-analysis found that the single-dose regimen was as effective as the 7-day treatment, but this is not accepted by all experts.

Note. Patients taking metronidazole should be cautioned to avoid alcohol.

Bacterial vaginosis in pregnancy

Metronidazole is contraindicated during the first trimester but may be used, if necessary, during the second and third trimesters. Data on alternative regimens are very limited. Clindamycin, 300mg orally, twice daily for 7 days has been used successfully, and this regimen is safe in pregnancy.

There is some evidence that bacterial vaginosis may increase the incidence of premature rupture of the membranes. It should therefore be treated when diagnosed in the third trimester.

3.11 CANDIDIASIS

Vulvovaginal candidiasis

Therapy generally involves topical use of any of a wide variety of imidazoles (e.g. miconazole, clotrimazole, econazole, butoconazole, terconazole) or nystatin. Imidazoles require shorter courses of treatment and appear somewhat more effective than nystatin, but are more expensive.

Examples of *effective regimens:*

nystatin, 100 000 IU intravaginally, daily for 14 days

miconazole or clotrimazole, 200mg intravaginally, daily for 3 days

clotrimazole, 500mg intravaginally, as a single dose.

Ketoconazole and fluconazole have been studied in a variety of oral regimens for the treatment of vulvovaginal candidiasis. Although effective, they are not recommended as primary therapy because of cost and toxicity. Oral therapy does not prevent relapse.

Recurrences

Reduction or elimination of predisposing factors such as antibiotic use may be of value. Simultaneous treatment of a rectal focus with oral nystatin or ketoconazole is not useful in preventing recurrences. Topical treatment for 3 days in the immediate premenstrual period may prevent symptoms.

Vulvovaginal candidiasis and HIV infection

Candidiasis at several sites, including the vulva and vagina, is an important correlate of HIV disease. It is often quite severe and frequently relapses. Prolonged treatment is generally required, and chronic suppressive therapy is frequently employed.

Balanoposthitis

Topical application of a nystatin or clotrimazole lotion or cream twice daily for 7 days.

3.12 SCABIES

Adults 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.

Note. Lindane is not recommended for pregnant or lactating women. Resistance has been reported in some areas.

Alternative regimens:

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 final 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 found necessary in some geographical areas (crotamiton has the advantage of an antipruritic action).

or

sulfur 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 final application.

Infants, children under 10 years of age, pregnant or lactating women

Recommended regimen:

crotamiton 10%, as above
or
sulfur 6%, as above
or
permethrin 5%, cream, applied in the same way as the sulfur regimen described above.

Contacts

Sexual contacts and close household contacts should be treated as above.

Special considerations

Pruritus may persist for several weeks after adequate therapy. A single treatment after 1 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 clinical manifestation.

Clothing or bed linen that may have been contaminated by the patient in the 2 days prior to the start of treatment should be washed and well dried, or dry-cleaned.

3.13 PHTHIRIASIS (PEDICULOSIS PUBIS)

Recommended regimens:

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 the treatment should be washed and well dried, or dry cleaned.
or
permethrin 1% as above.

Note. Lindane is not recommended for pregnant or lactating women.

Special considerations

Pediculosis 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.

4. KEY CONSIDERATIONS UNDERLYING TREATMENTS

4.1 THE CHOICE OF ANTIMICROBIAL REGIMENS

Efficacy

Efficacy is the most important criterion in choosing among available regimens. STD therapy regimens should ideally cure at least 95% of those infected with a bacterial STD. Regimens yielding lower cure rates should be used only with great caution since in a setting of unstable susceptibility patterns, they may select for resistant strains and rapidly limit their own usefulness. Such caution should be applied to regimens yielding cure rates between 85% and 95%. Regimens 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 general population, special programmes for effective case management should be designed for groups at high risk, such as sex workers and their clients. *Treatment regimens 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 providers.

Efficacy data cannot be transferred reliably from one location (or in some situations, from one subpopulation) to another. Assessments should thus ideally 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 efficacy against these infections changes over time. Periodic surveillance of clinical efficacy, and/or *in vitro* sensitivity is recommended. If resistance levels and cure rates are not known in an area, the regimens used should be those which can reasonably be expected to produce acceptable cure rates under the most adverse ecological conditions. It is recognized that few comparative clinical trials are large enough to define small differences in efficacy between highly effective antimicrobial regimens.

Note. In order to ensure efficacy, practitioners are cautioned not to use less than the recommended dosages.

Safety

Toxicity is a second major concern in STD treatments because of the frequency with which patients become reinfected and their consequent exposure to repeated courses of antimicrobials. In addition, treatment of resistant STD agents often requires achievement of relatively high serum levels of antimicrobials, in some cases for periods of 7 days or more. Combination regimens further increase the risk of adverse drug reactions. Pregnancy, relatively common in sexually active groups with high incidences of STD, represents a special case in which additional considerations of fetal safety become important. The safety of the fluoroquinolones in pregnancy and adolescence is uncertain and limits their use in groups with a high level of sexual activity. In some areas, doxycycline is not used because of the danger of photosensitization. Tetracyclines are contraindicated in pregnancy and children under 8 years of age.

The prominence of third-generation cephalosporins in the recommended regimens results from their combination of high efficacy, even against relatively resistant organisms, and low toxicity.

Cost

Cost is a major limiting factor in all areas. Kanamycin is chosen in preference to spectinomycin for the treatment of gonorrhoea in many parts of the world because of its lower cost. It is assumed that local programmes will use the best regimens that each can afford. In calculating the total cost of various regimens, however, it is important to consider the costs associated with less effective therapies: retreatment, further spread, complications, and selection for increasing resistance. Choosing among regimens may be materially assisted by formal decision analysis, and sensitivity analyses can sometimes compensate for uncertainties in primary data.

Compliance and acceptability

Patient compliance with STD treatment regimens is a continuing problem seriously limiting the effectiveness of multidose regimens such as those involving erythromycin and tetracyclines. Single-dose or very short course regimens should therefore be given preference. Appropriate counselling and health education have been shown to increase compliance and should be a part of clinical management.

In some societies, oral regimens are strongly preferred to injections, whereas among other groups, injection 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 regimens, in order to reduce risks associated with the reuse of unsterilized injection equipment.

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 STD are prevalent in a population, coinfection may be frequent. Unfortunately, the ability to treat common coinfections with single drugs has been reduced by the development of resistance to the tetracyclines among *N. gonorrhoeae*; double drug therapy is now required for simultaneous gonococcal and chlamydial infections. Coincident chancroid and syphilis require a multidrug 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 intensified and prolonged.

Risk of reducing drug efficacy for other indications

More effective but expensive drugs should not be reserved for referral centres. Use of less effective regimens at the primary care level would quickly discourage patients from seeking the most readily and rapidly available care and would foster disease spread and selection of resistant organisms.

STD treatments, particularly single-dose regimens for gonorrhoea, result in short exposures of human resident flora to antimicrobials and may conceivably select for resistance among these organisms, possibly limiting the efficacy of such drugs in the therapy of serious infections with these organisms. These ecological considerations are particularly relevant to aminoglycosides, fluoroquinolones and cephalosporins. The probability of jeopardy to other uses of drugs has been strongly emphasized. A drug such as spectinomycin, which has limited use beyond the treatment of STD, may theoretically select for cross-resistance to related drugs such as gentamicin or amikacin.

Antibiotic strategies for delaying emergence of resistance

Simultaneous treatment with several agents has been used to prevent the emergence of resistance in individuals during therapy for tuberculosis. The efficacy of this technique in preventing emergence of resistance in STD populations is unknown. Unfortunately resistance to a number of antimicrobials is sometimes acquired simultaneously by *N. gonorrhoeae*. In addition, the simultaneous administration of several drugs multiplies the risk of adverse reaction. Also the total amount of antimicrobial use would be increased, which may stimulate the emergence of resistance among other organisms. However, the use of multiple drugs to treat polymicrobial processes (e.g. pelvic inflammatory disease) or presumed simultaneous infection (e.g. tetracycline for chlamydial coinfection in cases of gonorrhoea), is widely practised and recommended.

4.2 COMMENTS ON INDIVIDUAL DRUGS

Cephalosporins

Several third-generation cephalosporins have been shown to be effective in the treatment of gonorrhoea. Cefixime has the advantage of being an oral preparation. It is also likely to be effective against chancroid, but it has not yet been evaluated in this condition. The efficacy 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 and conjunctivitis, and pharyngeal infection. Because of its cost it is tempting to use doses of ceftriaxone below 125mg. However this is likely to accelerate the development of resistance, and such regimens are not recommended.

Macrolides

Early clinical studies with newer macrolides such as azithromycin appear promising. These compounds are known to achieve high tissue and intracellular concentrations, even after single-dose administration.

Sulfonamides

The addition of trimethoprim to sulfonamides does not increase their antichlamydial activity. A three-day regimen of sulfamethoxazole and trimethoprim is inadequate for chlamydial infection.

Different sulfonamides are available in various parts of the world. These drugs differ somewhat in their pharmacology. Equivalent doses may be used in the treatment of STD.

Quinolones

Earlier agents such as rosoxacin are no longer recommended. In contrast, some of the new fluoroquinolones show considerable promise as oral agents for the treatment of gonorrhoea. Their use is contraindicated in pregnancy. The manufacturers advise against their use in children and adolescents, but ciprofloxacin has been licensed in Denmark for the single-dose prophylaxis of meningococcal disease in children.

The *in vitro* activity of individual fluoroquinolones against *N. gonorrhoeae* varies considerably. There is some evidence of increased minimum inhibiting concentrations in strains isolated after treatment with less active agents. The importance of half-life in determining the clinical efficacy of quinolones in STD has not been clearly established.

Ciprofloxacin is considered to be the agent with the greatest activity against *N. gonorrhoeae.* Its efficacy in treating pharyngeal gonorrhoea is still controversial and requires further study.

Gonococcal resistance to the fluoroquinolones remains uncommon, but this should continue to be monitored.

Experience in treating chlamydial infection with the fluoroquinolones has been somewhat disappointing. Of the currently studied agents, ofloxacin has the greatest antichlamydial activity *in vitro.*

Tetracyclines

A number of tetracyclines of equal efficacy 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 antibiotic 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 efficacy of traditional regimens for treating gonorrhoea.

Chromosomal resistance in *N. gonorrhoeae* has been observed since the introduction of sulfonamides in the 1930s. Its significance today is that chromosomally 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 clinical relevance in relation to the use of ceftriaxone, this trend is disturbing. The high level spectinomycin resistance reported sporadically in gonococci is also chromosomally mediated. Resistance to the new fluoroquinolones is not yet common even in areas where they are used as first-line therapy.

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.[3] Disc-diffusion sensitivity testing remains poorly standardized, one problem being the limited availability of antibiotic discs of the correct content.

4.4 ANTIMICROBIAL RESISTANCE IN *H. DUCREYI*

The surveillance of antimicrobial susceptibility in *H. ducreyi* is complicated by the technical difficulties of performing sensitivity testing. Data are available from very few centres. However, proposals for a standardized method for sensitivity testing have been made and are now being discussed.

H. ducreyi has developed resistance to a number of different antibiotics but with the exception of two strains isolated in Singapore in the early 1980s, resistance to erythromycin has not been reported, and it therefore remains the recommended treatment. Ceftriaxone and ciprofloxacin are suitable alternatives, since *in vitro* resistance has not been reported to either, although frequent treatment failures were observed with ceftriaxone among both HIV-positive and HIV-negative patients in a study conducted in Nairobi in 1991. Single-dose azithromycin therapy appears to be another promising alternative, but further data are required.

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3 Available from the WHO Collaborating Centre, Statens Seruminstitut, 5 Artillerivej, DK-2300 Copenhagen S, Denmark (Dr Inga Lind).

Plasmid-mediated resistance has been found against ampicillin, sulfonamides, 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 too is 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 sulfonamides 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 sulfonamide remains effective.

Plasmid-controlled aminoglycoside-inactivating enzymes have reduced the usefulness of these antibiotics in treating chancroid in South-East Asia. At present this is not the case in Africa or elsewhere.

5. PRACTICAL CONSIDERATIONS IN CASE MANAGEMENT

There are four major components in STD 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
- treatment and education of the sexual partners of infected individuals.

The prevention of STD is based primarily on changing the sexual behaviours that put patients at risk and on promoting the use of condoms.

5.1 CLINICAL CONSIDERATIONS

Routine STD care should be delivered through general health services.

For individuals requesting health services for evaluation of an STD, appropriate care consists of the following components. (The order in which interventions are carried out may vary, depending on the specific case and diagnosis.)

- history taking
- medical and behavioural risk assessment
- physical examination
- laboratory investigations if available and indicated
- diagnosis
- curative or palliative therapy
- counselling and education regarding
  - the present episode of STD
  - prevention of STD and HIV
  - condom use
- official reporting of the case when this is required
- identification, notification and evaluation of sexual partner(s)
- clinical follow-up when appropriate.

Individuals who are seeking health-care services for other reasons, but who are at risk for acquisition of STD, should undergo the following as part of their routine health care if resources allow:

- STD risk assessment
- directed physical examination based on elicited symptoms
- screening for asymptomatic infections.

5.2 EDUCATION FOR PRIMARY PREVENTION

A consultation for STD is a unique opportunity for education about the prevention of HIV and STD of people who by definition are at risk for these diseases.

Clinics and practitioners who treat patients with STD should have resources available for promoting safer sexual behaviour. Behavioural assessment is an integral part of the STD history, and patients should be educated on methods to lower their risk of acquiring STD and HIV, including abstinence, careful selection of partners and use of condoms and spermicides.

Condoms should be available in any health care facility providing clinical STD 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.

5.3 EDUCATION AND COUNSELLING DURING AN STD COUSULTATION

A consultation for STD provides an opportunity for the health worker to discuss on a one-to-one basis with the patient, his or her risk factors for HIV/STD. When this discussion consists of the provision of information about STD and their prevention, condom use and partner notification, it is generally termed *education*. Education for prevention is an essential part of an STD consultation.

Some issues which arise during an STD consultation may provoke emotional reactions in the patient. Health workers should be able to recognize these and ensure that time is set aside in a *counselling* session, to discuss them.

Such issues include:

- telling the partner or spouse about the STD diagnosis;
- assessing their own risk for HIV, and deciding whether or not to undergo testing for HIV;
- learning about, and coming to terms with, worrying complications of STD, such as infertility, congenital syphilis, etc;
- dealing with an incurable STD such as herpes genitalis which may be transmitted to the partner or spouse;
- symptoms suggesting HIV-related disease.

For any of the above issues, a decision needs to be made whether education alone, i.e. the provision of information, as outlined above, is enough or whether counselling is needed.

Counselling is defined as a confidential dialogue between a client and a care provider aimed at enabling the client to cope with stress and take personal decisions. The counselling process includes an evaluation of personal risk of HIV/STD transmission and facilitation of preventive behaviour.

Before offering counselling to STD patients, the care provider needs to:

- identify the need of the client which may relate to stress or anxiety about a particular aspect of the STD, or may be a special need for confidential 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 STD or general out-patient clinic. Is is therefore suggested that when a counselling need is identified, 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 receive the relevant training and be accorded the necessary space and time off from other duties to provide the counselling.

In many developing countries where health resources are scarce, counselling services are not always generally available. However, it is recognized that some of the ingredients of counselling – compassion, sensitivity and communication skills – are qualities that many health workers already possess and apply on a daily basis during all interactions with patients. However, in the absence of formal training in counselling, health workers should be encouraged to engage their patients in a dialogue about STDs and to identify those requiring further emotional support if such support is available.

5.4 NOTIFICATION AND MANAGEMENT OF SEXUAL PARTNERS

The sexual partners of STD patients are likely to be infected themselves and should be offered treatment. Further transmission of STD and reinfection are prevented by referral of sexual partners for diagnosis and treatment. Partner notification should be considered whenever an STD is diagnosed, irrespective of where care is provided.

Notification can be by patient referral, the approach whereby an infected patient is encouraged to notify partner(s) of their possible infection without the direct involvement of health-care providers, or by provider referral, the approach whereby health-care providers or other health-care workers notify a patient's partner(s).

Partner notification should be conducted in such a way that all information remains confidential. The process should be voluntary and non-coercive. The aim is to ensure that the sexual partners of STD 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 specific). The following three strategies can be adopted for the treatment of partners:

1. offer immediate epidemiological treatment (treatment based solely on the diagnosis of the index patient) without any laboratory investigation;

2. offer immediate epidemiological treatment, but obtain specimens for subsequent laboratory confirmation;

3. delay treatment until the results of definitive 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 availability of effective treatment
- the likelihood of spread if epidemiological treatment is not given
- the available infrastructure for follow-up of patients.

WHO recommends that epidemiological treatment (with the same treatment regimen used for the index patient) should be given to all sexual partners.

6. CHILDREN AND SEXUALLY TRANSMITTED DISEASES[4]

During the past decade, child sexual abuse has come to be recognized as a serious social problem 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, emotional and physical health of children, the treatment of child victims is emerging as an important aspect of child health care in both the industrialized and the developing world.

A standardized approach to the management of sexually transmitted diseases in children who are suspected of having been sexually abused is important because the infection may be asymptomatic. An STD 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 STD in children. Previously, children suspected of having been sexually abused were not screened routinely for STD. Conversely, children diagnosed with an STD were not investigated as to the source of infection, but were assumed to have acquired the infection by non-sexual means such as a contaminated towel or overcrowded sleeping arrangements bringing them into contact with an infected person.

The identification of a sexually transmissible agent from a child beyond the neonatal period always suggests sexual abuse. Exceptions do, however, exist, e.g. rectal or genital infection with *C. trachomatis* in young children may be due to perinatally acquired infection, which may persist for up to 3 years. In addition, bacterial vaginosis and genital mycoplasmas have been identified in both abused and non-abused children. Genital warts, although suggestive of assault, are not specific

[4] Adapted from: Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines*, 1993. Sacks, D. (ed). Canadian Guidelines for the Examination of Children suspected of Having Been Sexually Abused. *Can dis Wkly Rep*, 1989, 15 (suppl 3): 1-16.

for sexual abuse without other evidence. When the only evidence of sexual abuse is the isolation of an organism or the detection of antibodies to a sexually transmissible agent, findings should be carefully confirmed and considered.

6.1 EVALUATION FOR SEXUALLY TRANSMITTED INFECTIONS

Examinations of children for sexual assault or abuse should be arranged to minimize trauma to the child. The decision to evaluate the child for sexually transmitted infections must be taken on a case-by-case basis. Situations involving a high risk of STD and a strong indication for testing include:

- alleged offender known to have an STD or to be at high risk for STD
- child with a history of STD-associated manifestations
- symptoms and signs of STD on physical examination
- high STD prevalence in the community.

Special care must be taken in collecting the required specimens in order to avoid undue psychological and physical trauma to the child. The clinical manifestations of some sexually transmitted infections are different in children as compared with adults. A paediatric speculum is rarely, if ever, needed in examination of prepubescent sexual assault victims. Indeed, in these situations, skill, sensitivity and experience are more essential than any specially developed technology. Practitioners undertaking examinations and specimen collection should be specially trained in child abuse/assault evaluation.

The scheduling of examinations should depend upon the history of assault or abuse. If initial exposure is recent, infectious agents acquired through the exposure may not have produced sufficient concentrations of organisms to result in positive tests at an initial examination. A follow-up visit approximately 1 week after the last sexual exposure to repeat the physical examination and to collect additional specimens is important in such cases to allow sufficient time for infections to incubate. Similarly, to allow sufficient time for antibody to develop, an additional follow-up visit at approximately 12 weeks following the last sexual exposure is also necessary to collect sera. A single examination may be sufficient if the child has been abused over an extended period of time and/or the last alleged episode of abuse occurred some time before the child presents for medical evaluation. The following recommendation for scheduling examinations is a general guide. The exact timing and nature of follow-up contacts should be determined on an individual basis, however, and take psychological and social needs into consideration.

Initial examination

An initial examination, and any follow-up examinations 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 prepubertal 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 bacterial vaginosis in a child with vaginal discharge. The significance of clue cells or other indicators of bacterial vaginosis 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-field microscopy or direct fluorescent antibody testing for *T. pallidum* from a specimen collected from vesicles or ulcers in children of all ages.

- 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 antibody 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 antibody to infectious agents to develop. Serological tests for the following agents should be considered: *T. pallidum*, HIV, 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. Also, 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 a sexually transmitted infection 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 STD, 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.

ANNEX

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