1. INTRODUCTION

1.1. BACKGROUND

Sexually transmitted infections (STI) remain a public health problem of major significance in most parts of the world. The incidence of acute STI is believed to be high in many countries and failure to diagnose and treat STI at an early stage may result in serious complications and sequelae, including infertility, foetal wastage, ectopic pregnancy, anogenital cancer and premature death, as well as neonatal and infant infections. The individual and national expenditure for STI care can be substantial.

The appearance of the human immunodeficiency virus (HIV) and the acquired immunodeficiency syndrome (AIDS) has focused greater attention on the control of STI. There is a strong correlation between the spread of conventional STI and HIV transmission and both ulcerative and non-ulcerative STI have been found to increase the risk of sexual transmission of HIV.

The emergence and spread of HIV infection and AIDS complicated the management and control of some other STI. For example, the treatment of chancroid has become increasingly difficult in areas with a high prevalence of HIV infection, due to the HIV-related immunosuppression.

Antimicrobial resistance of several sexually transmitted pathogens is increasing, rendering some regimens ineffective.

New agents, such as 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 STI is one of the cornerstones of STI 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. Appropriate treatment of STI patients at their first encounter with a health care provider is, therefore, an important public health measure. When this involves adolescent patients, there is the potential to influence future sexual behaviour and treatment-seeking practices at a critical stage of development.

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* (*N. gonorrhoeae*) and *Haemophilus ducreyi* (*H. ducreyi*), and is an important factor in rational drug procurement.

It is anticipated that the following recommendations will help countries to develop standardized protocols adapted to local epidemiological and antimicrobial sensitivity patterns. It is recommended that national guidelines for the effective management of STI be developed in close consultation with local STI and public health experts.

### 1.3. CASE MANAGEMENT

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

### 1.4. SYNDROMIC MANAGEMENT

Aetiological diagnosis of STI is problematic in many settings. It places constraints on time, resources, costs and access to treatment. In addition, the sensitivity and specificity of commercially available tests can vary significantly, thus, affecting negatively, the reliability of laboratory testing for STI diagnosis. In settings where laboratory facilities are available

---

1 WHO has defined adolescents as persons in the 10-19 years age group, while youth has been defined as the 15-24 years age group. “Young people” is a combination of these two overlapping groups covering the range 10-24 years (*A Picture of Health: A review and annotated bibliography of the health of young people in developing countries* (1995), UNICEF, WHO).
there must be suitably qualified personnel with adequate training to perform technically demanding procedures, and the establishment of external quality control is mandatory.

Few developing country health facilities have the laboratory equipment or skills required for aetiological diagnosis of STI. To overcome this, a syndrome-based approach to the management of STI patients was developed and promoted in a large number of countries in the developing world. 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 or most serious organisms responsible for producing a syndrome. WHO developed a simplified tool (a flowchart or algorithm) to guide health workers in the implementation of syndromic management.

Syndromic management for urethral discharge in men and genital ulcers in men and women has proved to be both valid and feasible. It has resulted in adequate treatment of large numbers of infected people, and is inexpensive, simple and very cost-effective. WHO also developed syndromic case management algorithms for women with symptoms of vaginal discharge and/or lower abdominal pain. However, it is important to recognize the limitations of the vaginal discharge algorithms, particularly in the management of cervical (gonococcal and chlamydial) infections. In general, but especially in low prevalence settings and in adolescent females, endogenous vaginitis rather than STI is the main cause of vaginal discharge. While attempts have been made to increase the sensitivity and specificity of the vaginal discharge algorithm for the diagnosis of cervical infection, through the introduction of an appropriate, situation-specific risk assessment, both remain low.

Moreover, some of the risk assessment questions based on demographics, such as age and marital status, tend to incorrectly classify too many adolescents as at risk of cervical infection. Therefore, there is a need to identify the main STI risk factors for adolescents in the local population and tailor the risk assessment accordingly. For adolescents in particular it may be preferable to base the risk factors on sexual behaviour patterns.

Recommendations for treatment using a syndrome-based approach are given in section 2.

1.5. RISK FACTORS FOR STI-RELATED CERVICITIS

The algorithms currently available for the management of cervical infection are far from ideal. Initially, it was thought that the finding of vaginal discharge would be indicative of
both vaginal and cervical infection. However, it has become clear that while vaginal discharge is indicative of the presence of vaginal infection, it is poorly predictive of cervical infection (gonococcal and/or chlamydial), particularly in adolescent females.

Some clinical signs seem to be more frequently associated with the presence of cervical infection. In the published literature, clinical observations that have been consistently found to be associated with cervical infection are the presence of cervical muco-pus, cervical erosions, cervical friability and bleeding between menses or during sexual intercourse.

A number of demographic and behavioural risk factors have also been frequently associated with cervical infection. Some of those which, in some settings, have been found to be predictive of cervical infection are age below 21 years (or 25 in some settings), being unmarried, more than one sexual partner in the last 3 months, new partner in the previous 3 months, currently partner has a sexually transmitted infection and recent use of condoms by the partner. Such risk factors are, however, usually specific for the population group for which they have been identified and validated, and cannot easily be extrapolated to other populations or to other countries. Most researchers have suggested that more than 1 demographic risk factor in any particular patient is more valid than just a single one, but that clinical signs can be valid as a single factor.

Adding these signs and a risk assessment to the vaginal discharge algorithm does increase its specificity and, thus, the positive predictive value, although the latter remains low, especially when the algorithm is applied to populations with relatively low rates of infection.

1.6. SELECTION OF DRUGS

Antimicrobial resistance of several sexually transmitted pathogens has been increasing in many parts of the world and this has rendered some low-cost regimens ineffective. Recommendations to use more effective drugs frequently raise concerns about cost and possible misuse.

A two-tier drug policy with the provision of less effective drugs at the peripheral health care level and the most effective and usually more expensive drugs only at a referral level may result in an unacceptable rate of treatment failures, complications and referrals, and may erode confidence in health services. This approach is not recommended. The drugs used for STI 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 STI drugs

Drugs selected for treating STI should meet the following criteria:

- high efficacy (at least 95%)
- low cost
- acceptable toxicity and tolerance
- organism resistance unlikely to develop or likely to be delayed
- single dose
- oral administration
- not contraindicated for pregnant or lactating women.

Appropriate drugs should be included in the national Essential Drugs list and in choosing drugs, consideration should be given to the capabilities and experience of health personnel.
2. TREATMENT OF STI-ASSOCIATED SYNDROMES

This section discusses the management of the most common clinical syndromes caused by sexually transmitted agents. 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 STI and promptly treated for the same condition(s) as the index patient.

Successful management of STI requires that staff are respectful of patients and are not judgmental. Examination must be done in appropriate surroundings where privacy can be ensured and confidentiality guaranteed. When dealing with adolescents, the health care provider should be reassuring, experienced and conversant with the changes in anatomy and physiology associated with the different maturation stages e.g. the menarche in young girls or nocturnal emissions in boys. In some situations, health care workers require training to overcome their own sensitivities and be able to address the issue of sexuality and STI in an open and constructive manner.

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, examination of the urethral smear may show an increased number of polymorphonuclear leukocytes and a gram stain may demonstrate the presence of gonococci. In the male, more than 5 polymorphonuclear leukocytes per high power field (x 1000) are indicative of urethritis.

The major pathogens causing urethral discharge are *N. gonorrhoeae* and *Chlamydia trachomatis* (*C. trachomatis*). In the syndromic management, treatment of a patient with urethral discharge should adequately cover these two organisms. Where reliable laboratory facilities are available, a distinction may be made between the two organisms and specific treatment instituted.
**Recommended syndromic treatment**

- therapy for uncomplicated gonorrhoea (for details see section 3.1)
  
  **PLUS**

- therapy for chlamydia (for details see section 3.2)

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

**AT A GLANCE**

**Urethral Discharge**

For details, see section 3.1 and 3.2

<table>
<thead>
<tr>
<th>Treatment options for Gonorrhoea</th>
<th>Treatment options for Chlamydia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>Doxycycline</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>Azithromycin</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td></td>
</tr>
<tr>
<td>Cefixime</td>
<td></td>
</tr>
<tr>
<td>Spectinomycin</td>
<td></td>
</tr>
</tbody>
</table>

**Alternatives**

<table>
<thead>
<tr>
<th>Alternatives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanamycin</td>
<td>Amoxicillin</td>
</tr>
<tr>
<td>Trimethoprim/Sulfamethoxazole</td>
<td>Erythromycin (if Tetracycline contraindicated)</td>
</tr>
<tr>
<td></td>
<td>Ofloxacin</td>
</tr>
<tr>
<td></td>
<td>Tetracycline</td>
</tr>
</tbody>
</table>

WHO recommends that, where possible, single dose therapy be utilized.
FIGURE 1. URETHRAL DISCHARGE

Patient complains of urethral discharge or dysuria

Take history and examine. Milk urethra if necessary.

Discharge confirmed? NO

Ulcer(s) present? NO

Discharge confirmed? YES

Ulcer(s) present? YES

Use appropriate flow chart

TREAT FOR GONORRHOEA AND CHLAMYDIA
- Educate
- Counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available
- Partner management
- Advise to return in 7 days if symptoms persist
2.1.1. PERSISTENT/RECURRENT URETHRAL DISCHARGE

Persistent or recurrent symptoms of urethritis may be due to drug resistance, poor compliance or re-infection. In some cases there may be infection with *Trichomonas vaginalis* (TV).

There is new evidence suggesting high prevalence of TV in men with urethral discharge in some geographical settings. Where symptoms persist or recur after adequate treatment for gonorrhoea and chlamydia in index patient and partner(s), the patient should be treated for TV, if the local demographic pattern so indicates. If the symptoms still persist at follow up the patient must be referred.

For details see section 3.9.
TREATMENT OF STI-ASSOCIATED SYNDROMES

FIGURE 2. PERSISTENT/RECURRENT URETHRAL DISCHARGE IN MEN

- Patient complains of persistent/recurrent urethral discharge or dysuria
  - Take history and examine. Milk urethra if necessary.
  - Discharge confirmed? NO ∨ Ulcer(s) present? NO
    - Use appropriate flow chart
    - Discharge confirmed? YES ∨ Ulcer(s) present? YES
      - Repeat urethral discharge treatment
    - Does history confirm re-infection or poor compliance? YES
      - Refer
    - Does history confirm re-infection or poor compliance? NO
      - Improved? NO ∨ Improved? YES
        - Refer
  - Does history confirm re-infection or poor compliance? NO
    - TREAT FOR TRICHOMONAS VAGINALIS
      - Educate
      - Counsel
      - Promote and provide condoms
      - Partner management
      - Return in 7 days

N.B. This flowchart assumes effective therapy for Gonorrhoea and Chlamydia to have been received and taken by the patient prior to this consultation.
2.2. GENITAL ULCER

The relative prevalence of causative organisms for genital ulcer disease varies considerably in different parts of the world and may change dramatically over time. Clinical differential diagnosis of genital ulcers is inaccurate, particularly in settings where several aetiologies are common. Clinical manifestations and patterns of genital ulcer disease may be further altered in the presence of HIV infection.

After examination to confirm the presence of genital ulceration, treatment appropriate to local aetiologies 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. In areas where granuloma inguinale or lymphogranuloma venereum (LGV) is prevalent, treatment for these conditions should be included. In many parts of the world, genital herpes is the most frequent cause of genital ulcer disease. Where HIV infection is prevalent, an increasing portion of cases of genital ulcer disease is likely to harbour herpes simplex virus. Herpetic ulcers may be atypical and persist for long periods in HIV-infected patients.

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

**Recommended syndromic treatment**

- therapy for syphilis (for details see section 3.4)

**PLUS EITHER**

- therapy for chancroid where it is prevalent (for details see section 3.5)  
  **OR**

- therapy for granuloma inguinale where it is prevalent (for details see section 3.6)  
  **OR**

- therapy for LGV where it is prevalent (for details see section 3.3)
AT A GLANCE

Genital Ulcer
For details, see sections 3.3 – 3.6

<table>
<thead>
<tr>
<th>Drug options for syphilis</th>
<th>Drug options for chancroid</th>
<th>Drug options for granuloma inguinale</th>
<th>Drug options for LGV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzathine</td>
<td>Ciprofloxacin</td>
<td>Azithromycin</td>
<td>Doxycycline</td>
</tr>
<tr>
<td>benzylpenicillin</td>
<td>Erythromycin</td>
<td>Doxycycline</td>
<td>Erythromycin</td>
</tr>
<tr>
<td></td>
<td>Azithromycin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternatives</td>
<td>Alternatives</td>
<td>Alternatives</td>
<td>Alternatives</td>
</tr>
<tr>
<td>Procaíne</td>
<td>Ceftriaxone</td>
<td>Erythromycin</td>
<td>Tetracycline</td>
</tr>
<tr>
<td>benzylpenicillin</td>
<td>Tetracycline</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trimethoprim/ Sulfamethoxazole</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Penicillin allergy and non-pregnant

<table>
<thead>
<tr>
<th>Drug options</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Doxycycline</td>
<td></td>
</tr>
<tr>
<td>Tetracycline</td>
<td></td>
</tr>
</tbody>
</table>

The decision to treat for chancroid, granuloma inguinale or LGV depends on the local epidemiology of the infections.

Depending upon local availability, management for herpes could include specific antiviral therapy (see section 3.6), but in all settings, appropriate counselling is essential.

Genital Ulcer and HIV Infection

There have been a number of anecdotal reports in the literature suggesting that the natural history of syphilis may be altered as a result of concomitant HIV infection. Some reports have indicated atypical presentations of both primary and secondary syphilis lesions. Some reports have also noted an increase in treatment failure rates among patients with early syphilis who are treated with single-dose therapies of Penicillin.

In chancroid atypical lesions have been reported in HIV-infected individuals. The lesions tend to be more extensive, producing multiple lesions that may be accompanied by systemic manifestations such as fever and chills. Reports of rapidly aggressive lesions have been noted by some clinicians. This emphasizes the need for early treatment, especially in HIV-infected individuals.

There is evidence to suggest that HIV infection may increase rates of treatment failure in chancroid, especially when single-dose therapies are given. More research is needed to confirm these observations.
Herpes simplex lesions may present as persistent multiple ulcers that require medical attention, as opposed to self-limiting vesicular ulcers which occur in immunocompetent individuals. Thus, antiviral treatment may have to be considered therapeutically or prophylactically to offer comfort to the patient. Adequate education needs to be given to the patient to explain the nature and purpose of treatment in order to avoid false expectations of cure.

**Genital Ulcer Disease Management**
- Treat for syphilis, and, depending upon local epidemiology, either chancroid, granuloma inguinale or lymphogranuloma venereum
- Aspirate any fluctuant glands (surgical incision should be avoided)
- Educate and counsel on risk reduction
- Offer syphilis serologic testing and HIV serologic testing where appropriate facilities and counselling are available
- Review if lesion not fully healed

**Herpes Simplex Management**
- Advise on basic care of the lesion (keep clean and dry)
- Educate and counsel on compliance and risk reduction
- Offer syphilis and HIV serologic testing where appropriate facilities and counselling are available
- Promote and provide condoms
- Advise to return in 7 days if lesion is not fully healed, and sooner if there is clinical deterioration; if so, treat for other causes of GUD as per guidelines
Patient complains of genital sore or ulcer.

Take history and examine.

Sore/Ulcer/Vesicle present?
- NO
- YES

Vesicles or small ulcers with history of recurrent vesicles?
- NO
- YES

TREAT FOR SYPHILIS AND CHANCROID
- Educate
- Counsel on risk reduction
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available
- Partner management
- Advise to return in 7 days
- Refer if necessary

TREAT FOR HERPES SIMPLEX
- Educate
- Counsel on risk reduction
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available

Needs adaptation to local epidemiological situation.
INGUINAL BUBO

Inguinal and femoral buboes are localised enlargements of the lymph nodes in the groin area, which are painful and may be fluctuant. They are frequently associated with lymphogranuloma venereum and chancroid. In many cases of chancroid an associated genital ulcer is visible, but occasionally may not be. Non-sexually transmitted local and systemic infections (e.g. infections of the lower limb) can also cause swelling of inguinal lymph nodes.

**Recommended syndromic treatment**

- ciprofloxacin, 500mg orally, twice daily for 3 days
  **AND**
- doxycycline, 100mg orally twice daily for 14 days
  **OR**
- erythromycin, 500mg orally four 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 may delay healing and should not be attempted.
FIGURE 4. INGUINAL BUBO

Patient complains of inguinal swelling.

Take history and examine.

Inguinal/femoral bubo(s) present? NO

Any other STI present? NO

Ulcer(s) present? YES

Use genital ulcer flowchart.

TREAT FOR LYMPHOGRANULOMA VENEREUM AND CHANCROID

- If fluctuant aspirate through healthy skin
- Educate on treatment compliance
- Counsel on risk reduction
- Promote and provide condoms
- Partner management
- Offer HIV counselling and testing if both facilities are available
- Advise to return for review in 7 days, and continue treatment
- If worse refer for further specialist opinion

YES

Use appropriate flowchart.

NO

Educate and counsel
Promote and provide condoms
Offer HIV counselling and testing if both facilities are available
2.3. SCROTAL SWELLING

Inflammation of the epididymis (epididymitis) usually manifests itself by acute onset of unilateral testicular pain and swelling, often with tenderness of the epididymis and vas deferens and occasionally with erythema and oedema of the overlying skin. In men under 35 years of age this is more frequently due to sexually transmitted organisms than in those over 35 years of age. When the epididymitis is accompanied by urethral discharge, it should be presumed to be of sexually transmitted origin, commonly gonococcal and/or chlamydia in nature. The adjacent testis is often also inflamed (orchitis), giving rise to epididymo-orchitis.

In older men, where there may have been no risk of a sexually transmitted infection other general infections may be responsible, for example, Escherichia coli, Klebsiella spp. or Pseudomonas aeruginosa. A tuberculous orchitis, generally accompanied by an epididymitis, is always secondary to lesions elsewhere, especially in the lungs or bones. In brucellosis, usually due to Brucella melitensis or Brucella abortus, an orchitis is usually clinically more evident than an epididymitis. In pre-pubertal children the usual aetiology is coliform, pseudomonas infection or mumps virus. Mumps epididymo-orchitis is usually noted within a week of parotid enlargement.

It is important to consider other non-infectious causes of scrotal swelling, such as trauma, testicular torsion and tumour. Testicular torsion, which should be suspected when onset of scrotal pain is sudden, is a surgical emergency that needs urgent referral.

If not effectively treated, STI-related epididymitis may lead to infertility.

**Recommended syndromic treatment**

- therapy for uncomplicated gonorrhoea (for details see section 3.1)
  
  **PLUS**
  
  - therapy for chlamydia (for details see section 3.2)
**AT A GLANCE**

**Scrotal Swelling**
For details, see section 3.1 and 3.2

<table>
<thead>
<tr>
<th>Drug options for Gonorrhoea</th>
<th>Drug options for Chlamydia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>Doxycycline</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>Azithromycin</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td></td>
</tr>
<tr>
<td>Cefixime</td>
<td></td>
</tr>
<tr>
<td>Spectinomycin</td>
<td></td>
</tr>
</tbody>
</table>

**Alternatives**

<table>
<thead>
<tr>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanamycin</td>
</tr>
<tr>
<td>Trimethoprim/Sulfamethoxazole</td>
</tr>
<tr>
<td>Amoxicillin</td>
</tr>
<tr>
<td>Ofloxacin</td>
</tr>
<tr>
<td>Erythromycin (if Tetracycline is contraindicated)</td>
</tr>
<tr>
<td>Tetracycline</td>
</tr>
</tbody>
</table>

**Adjuncts to therapy**

Bed rest and scrotal support until local inflammation and fever subside.
Figure 5. Scrotal Swelling

Patient complains of scrotal swelling/pain.

Take history and examine.

Swelling/pain confirmed?

- NO
  - Reassure patient and educate
  - Provide analgesics, if necessary
  - Promote and provide condoms
  - Offer HIV counselling and testing if both facilities are available

- YES
  - Testis rotated or elevated, or history of trauma?
    - NO
      - Refer immediately for a surgical opinion.
    - YES
      - TREAT FOR GONORRHOEA AND CHLAMYDIA
        - Educate
        - Counsel
        - Promote and provide condoms
        - Partner management
        - Offer HIV counselling and testing if both facilities are available
        - Review in 7 days or earlier if necessary, if worse, refer
2.4. VAGINAL DISCHARGE

A spontaneous complaint of abnormal vaginal discharge is most commonly due to a vaginal infection. Rarely, it may be the result of muco-purulent STI-related cervicitis. *T. vaginalis*, *C. albicans* and bacterial vaginosis are the commonest causes of vaginal infection and *N. gonorrhoeae* and *C. trachomatis* cause cervical infection. The clinical detection of cervical infection is difficult because a large proportion of women with gonococcal or chlamydial cervical infection is asymptomatic. The symptom of abnormal vaginal discharge is highly indicative of vaginal infection, but poorly predictive for cervical infection. Thus, all women presenting with vaginal discharge should receive treatment for trichomoniasis and bacterial vaginosis.

Among women presenting with discharge, one can attempt to identify those with an increased likelihood of being infected with *N. gonorrhoeae* and/or *C. trachomatis*. Microscopy adds little to the diagnosis of cervical infection and is not recommended. To identify women at greater risk of cervical infection, an assessment of a woman’s risk status is useful, especially when risk factors are adapted to the local situation.

Knowledge of the prevalence of gonococcal and/or chlamydia in women presenting with vaginal discharge is important for the decision to treat for cervical infection. The higher the prevalence, the stronger the justification for treatment. Risk assessment positive women have a higher likelihood of cervical infection than those who are risk negative. Women with vaginal discharge and a positive risk assessment could therefore, be offered treatment for gonococcal and chlamydia cervicitis.

Available preliminary data seems to indicate that it is cost-effective to treat for cervical infection where the prevalence exceeds 6%. More work on this issue is in progress to provide further guidance to program managers and policy-makers.

Where resources permit, one could consider the use of laboratory tests to screen women with vaginal discharge. Such screening could be applied to all women with discharge or selectively to those with discharge and a positive risk assessment.

In some countries, syndromic management algorithms have been used as a screening tool to detect cervical infection among women not presenting with a genital complaint.

---

2 Abnormal in terms of quantity, colour or odour.
While this may assist in detecting some women with cervical infections, it is likely that there will be substantial over-diagnosis.

**CERVICAL INFECTION**

**Recommended syndromic treatment**

- therapy for uncomplicated gonorrhoea (for details see section 3.1)
  
  **PLUS**

- therapy for chlamydia (for details see section 3.2)

**AT A GLANCE**

**Cervical infection**

For details, see section 3.1 and 3.2

**Drug options for Gonorrhoea**

<table>
<thead>
<tr>
<th>Drug options for Gonorrhoea</th>
<th>Drug options for Chlamydia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>Doxycycline</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>Azithromycin</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td></td>
</tr>
<tr>
<td>Cefixime</td>
<td></td>
</tr>
<tr>
<td>Spectinomycin</td>
<td></td>
</tr>
</tbody>
</table>

**Alternatives**

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanamycin</td>
<td>Amoxycillin</td>
</tr>
<tr>
<td>Trimethoprim/Sulfamethoxazole</td>
<td>Ofloxacin</td>
</tr>
<tr>
<td></td>
<td>Erythromycin (if Tetracycline is contraindicated)</td>
</tr>
<tr>
<td></td>
<td>Tetracycline</td>
</tr>
</tbody>
</table>

**Note**

- Tetracyclines are contraindicated in pregnancy.
- Trimethoprim/Sulfamethoxazole should only be used in areas where this combination has been shown to be effective against uncomplicated gonorrhoea.

**VAGINAL INFECTION**

**Recommended syndromic treatment**

- therapy for bacterial vaginosis (for details see section 3.10)
  
  **PLUS**

- therapy for *Trichomonas vaginalis* (for details see section 3.9)
  
  **AND, WHERE INDICATED,**

- therapy for *Candida albicans* (for details see section 3.11)
### AT A GLANCE

#### Vaginal infection

For details, see sections 3.9 – 3.11

<table>
<thead>
<tr>
<th>Drug options for BV</th>
<th>Drug options for TV</th>
<th>Drug options for Candida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metronidazole</td>
<td>Metronidazole</td>
<td>Miconazole</td>
</tr>
<tr>
<td>Tinidazole</td>
<td>Clotrimazole</td>
<td>Fluconazole</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clindamycin</td>
<td>Nystatin</td>
</tr>
<tr>
<td>Metronidazole gel</td>
<td></td>
</tr>
<tr>
<td>Clindamycin vaginal cream</td>
<td></td>
</tr>
</tbody>
</table>

**Note**

- Patients taking metronidazole should be cautioned to avoid alcohol.
Patient complains of vaginal discharge or vulval itching/burning.

Take history, examine patient and assess risk.

Abnormal discharge present?

NO

Educate
Counsel
Promote and provide condoms
Offer HIV counselling and testing if both facilities are available

YES

Lower abdominal tenderness?

YES

Use flowchart for Lower Abdominal Pain.

NO

TREAT FOR BACTERIAL VAGINOSIS AND TRICHOMONAS VAGINALIS

Was risk assessment positive?

YES

TREAT FOR CHLAMYDIA TRACHOMATIS, GONOCOCCAL INFECTION, BACTERIAL VAGINOSIS AND TRICHOMONAS VAGINALIS

NO

TREAT FOR BACTERIAL VAGINOSIS AND TRICHOMONAS VAGINALIS

Vulval oedema/curd like discharge, Erythema, Excoriations present?

YES

TREAT FOR CANDIDA ALBICANS

NO

Educate
Counsel
Promote and provide condoms
Offer HIV counselling and testing if both facilities are available

Risk factors need adaptation to local social and behavioural epidemiological situation.
Patient complains of vaginal discharge or vulval itching/burning.

Take history, examine patient (external, speculum and bimanual) and assess risk.

**Abnormal discharge present?**
- **NO**
- **YES**

**Lower abdominal tenderness or cervical motion tenderness?**
- **NO**
- **YES**

**Was risk assessment positive?**
- **NO**
- **YES**

**TREAT FOR CHLAMYDIA TRACHOMATIS, GONOCOCCAL INFECTION, BACTERIAL VAGINOSIS AND TRICHOMONAS VAGINALIS**

**Vulval oedema/curd like discharge**
- **YES**
- **NO**

**Erythema, Excoriations present?**
- **YES**
- **NO**

**TREAT FOR CANDIDA ALBICANS**

- Educate
- Counsel
- Promote and provide condoms
- Offer HIV counselling and testing if both facilities are available

Risk factors need adaptation to local social and behavioural epidemiological situation.
Patient complains of vaginal discharge or vulval itching/burning.

Take history, examine patient (external) and assess risk.

**Was risk assessment positive?**

- **YES**
  - **TREAT FOR CHLAMYDIA TRACHOMATIS AND GONOCOCCAL INFECTION**
    - PLUS
    - Vaginal infection according to speculum and microscope examination findings

- **NO**
  - Examine patient (speculum and bimanual) and perform wet mount/gram stain microscopy of vaginal specimen

  - **Motile trichomonads in wet mount**
    - **pH > 4.5**
    - **KOH negative**
      - **Treat for Trichomonas vaginalis**
  
  - **Clue cells seen**
    - **pH > 4.5**
    - **KOH positive**
      - **Treat for bacterial vaginosis**
  
  - **Budding yeasts or pseudohyphae seen**
    - **pH ≤ 4.5**
    - **KOH negative**
      - **Treat for Candida albicans**
  
  - **Mucus from cervix**
    - **Cervical motion tenderness present?**
      - **No findings**
        - **Use flowchart for Lower Abdominal Pain**
      - **Yes**
        - **Treat for Chlamydia trachomatis and gonococcal infection**

- **Educate**
- **Counsel**
- **Promote and provide condoms**
- **Offer HIV counselling and testing if both facilities are available**
- **Return if necessary**

**Notes:**

1. **KOH Test**: 1 drop 10% KOH to reveal the amine odour (fishy)
2. **Wet mount**: smear on slide with 1 drop of saline and view at 400x

- Risk factors need adaptation to local social and behavioural epidemiological situation.
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 STI since some women with PID or endometritis will not complain of lower abdominal pain. Women with endometritis may present with complaints of vaginal discharge and/or bleeding and/or uterine tenderness on pelvic examination. Symptoms suggestive of PID include abdominal pain, dyspareunia, vaginal discharge, menometrorrhagia, dysuria, 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, a tender pelvic mass, and direct or rebound tenderness may also be present. The patient’s temperature may be elevated but is normal in many cases. In general, clinicians should err on the side of over-diagnosing and treating suspected cases.

Hospitalisation of patients with acute pelvic inflammatory disease should be seriously considered when:

- the diagnosis is uncertain;
- surgical emergencies such as appendicitis and ectopic pregnancy can not be excluded;
- a pelvic abscess is suspected;
- severe illness precludes management on an outpatient basis;
- the patient is pregnant;
- the patient is unable to follow or tolerate an outpatient regimen; or
- the patient has failed to respond to outpatient therapy. Many experts recommend that all patients with PID should be admitted to hospital for treatment.

Etiological agents include N. gonorrhoeae, C. trachomatis, anaerobic bacteria (Bacteroides spp. and Gram-positive cocci). Facultative Gram-negative rods and Mycoplasma hominis have also been implicated. As it is impossible to differentiate between these clinically, and a precise microbiological diagnosis is difficult, the treatment regimens must be effective against this broad range of pathogens. The regimens recommended below are based on this principle.
OUTPATIENT THERAPY

Recommended syndromic treatment

- single-dose therapy for uncomplicated gonorrhoea
  (see section 3.1 - single-dose ceftriaxone has been shown to be effective;
  other single dose 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 syndromic treatment 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 after 72 hours and admitted if their condition has not improved.

**INPATIENT THERAPY**

**Recommended syndromic treatment**

1. **ceftriaxone, 250mg 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.
Patient complains of lower abdominal pain.

Take history (including gynaecological) and examine (abdominal and vaginal).

Any of the following present?
- Missed/overdue period
- Recent delivery/abortion/miscarriage
- Abdominal guarding and/or rebound tenderness
- Abnormal vaginal bleeding

YES

Refer patient for surgical or gynaecological opinion and assessment.

Before referral set up an IV line and apply resuscitative measures if necessary.

YES

Is there cervical excitation tenderness or lower abdominal tenderness and vaginal discharge?

NO

Any other illness found?

YES

Manage appropriately

NO

Any of the following present?
- Missed/overdue period
- Recent delivery/abortion/miscarriage
- Abdominal guarding and/or rebound tenderness
- Abnormal vaginal bleeding

YES

Refer patient for surgical or gynaecological opinion and assessment.

Before referral set up an IV line and apply resuscitative measures if necessary.

YES

Manage for PID

Review in 3 days

NO

Patient has improved?

YES

Refer patient

NO

Continue treatment until completed
- Educate and counsel
- Offer HIV counselling and testing if both facilities are available
2.6. NEONATAL CONJUNCTIVITIS

Neonatal conjunctivitis (ophthalmia neonatorum) can lead to blindness when caused by *N. gonorrhoeae*. The most important sexually transmitted pathogens which cause ophthalmia neonatorum are *N. gonorrhoeae* and *C. trachomatis*. In developing countries, *N. gonorrhoeae* accounts for 20-75% and *C. trachomatis* for 15-35% of cases brought to medical attention. Other common causes are *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Haemophilus* spp. and *Pseudomonas* spp. Newborn babies are generally presented because of redness and swelling of the eyelids or “sticky eyes”, or because of discharge from the eye(s).

As the clinical manifestations and possible complications of gonococcal and chlamydial infections are similar, in settings where it is impossible to differentiate the two infections, treatment should be provided to cover both infections. This would include single dose therapy for gonorrhoea and multiple dose therapy for chlamydia.

**AT A GLANCE**

**Neonatal conjunctivitis**

For details, see section 3.1 and 3.2.

<table>
<thead>
<tr>
<th>Drug options for gonorrhoea</th>
<th>Drug options for chlamydia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone</td>
<td>Erythromycin</td>
</tr>
<tr>
<td><strong>Alternatives</strong></td>
<td><strong>Alternatives</strong></td>
</tr>
<tr>
<td>Kanamycin</td>
<td>Trimethoprim/Sulfamethoxazole</td>
</tr>
<tr>
<td>Spectinomycin</td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 10. NEONATAL CONJUNCTIVITIS

Neonate with eye discharge.

Take history and examine.

Bilateral or unilateral swollen eyelids with purulent discharge?

- Reassure mother
- Advise to return if necessary

TREAT FOR GONORRHOEA AND CHLAMYDIA

Treat mother and partner(s) for gonorrhoea and chlamydia
- Educate mother
- Counsel mother
- Advise to return in 3 days

Improved?

- Refer

Reassure mother