# Comprehensive Management Guideline for Sexually Transmitted Infections

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MINISTRY OF HEALTH & MEDICAL SERVICES

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UNAIDS

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# ACRONYMS

| | |
|---|---|
| A&E | Accident and Emergency |
| ANC | Antenatal Clinic |
| CDC | Centres for Disease Control |
| DMO | Divisional Medical Officer |
| DOT | Directly observed treatment |
| EMF | Essential Medicines Formulary |
| FP | Family Planning |
| GOPD | General Outpatient Department |
| HIV | Human immuno-deficiency virus |
| HPV | Human papilloma virus |
| HSV | Herpes simplex virus |
| MCH | Maternal and Child Health |
| MO | Medical Officer |
| NAAT | Nucleic acid amplification test |
| NP | Nurse Practitioner |
| OSSHHM | Oceania Society for Sexual health and HIV Medicine |
| PID | Pelvic inflammatory disease |
| PITC | Provider initiated confidential HIV testing with consent and counselling |
| RTI | Reproductive tract infection |
| SDMO | Subdivisional Medical Officer |
| SPC | Secretariat of the Pacific Community |
| STI | Sexually transmitted infection |
| TPHA | Treponema pallidum haemaglutination assay |
| TPPA | Treponema pallidum particle agglutination test |
| WHO | World Health Organization |

# 1

# INTRODUCTION

# SECTION I INTRODUCTION

**Purpose of this document**

This comprehensive management guideline for reproductive tract infections and sexually transmitted infections is intended for use by nurses, nurse practitioners and medical doctors in the public and private health care setting in the provision of holistic care for people with reproductive tract infections (RTI) and sexually transmitted infections (STI).

**Scope of this document.**

The table below provides the scope of clinical management for RTI and STIs that can be offered using this guideline at the different levels of health facilities:

***Levels of Health Facilities and RTI & STI Management***

| Level of Health Facility | Health Care Workers | STI Case | Referral of cases to the next level |
|---|---|---|---|
| Level 5: Nursing Station | Nurses (including nurses in health centres in the absence of MO or NP) | Syndromic management for:<br>Urethral discharge and/or dysuria in men<br>Vaginal discharge<br>Genital ulcer<br>Neonatal conjunctivitis prophylaxis<br>Scabies<br>Pubic lice | Recurrent urethral discharge and/or dysuria in men<br>Lower abdominal pain in women<br>Suspected genital herpes<br>Scrotal swelling<br>Neonatal conjunctivitis<br>Genital warts |
| Level 4: Health Centre | Medical Officers (MO) and Nurse Practitioners (NP) | As in level 5 PLUS:<br>Recurrent urethral discharge and/or dysuria in men<br>Lower abdominal pain in women (outpatient management)<br>Scrotal swelling<br>Neonatal conjunctivitis | Recurrent urethral discharge and/or dysuria in men resistant to treatment<br>Lower abdominal pain (PID)<br>Complicated scrotal swelling<br>Neonatal conjunctivitis that needs inpatient treatment<br>Suspected genital herpes<br>Genital warts |
| Level 3: Subdivisional hospital | Medical Officers | As in level 4 PLUS:<br>Recurrent urethral discharge and/or dysuria in men resistant to treatment<br>Genital herpes, Genital warts<br>Complicated scrotal swelling<br>Lower abdominal pain in women (in patient management)<br>Inpatient management of neonatal conjunctivitis<br>Aetiologic diagnosis depending on laboratory | Lower abdominal pain in women (in patient management) resistant to treatment or with complications<br>STIs with complications and not responding to treatment |

| | | | |
|---|---|---|---|
| | | tests available when syndromic approach fails to provide cure. | |
| Level 2 Reproductive health clinic (Hub centres) | Medical Officer | As in level 3 except for inpatient management of STIs | Inpatient management of STIs |
| Level 1: Divisional hospital | Medical officer Specialists | As in level 3 PLUS Management of STI cases resistant to treatment. Management of Disseminated Gonococcal Infections, Tertiary Syphilis and Congenital Syphilis Management of PID and scrotal swelling complications. Management of genital warts | |

Nurses trained to provide sexual reproductive health service will be providing clinical services at the category 5 level, and will be using the syndromic management guideline to manage patients who are symptomatic. Patients requiring further investigations and management will be referred to higher levels of health care when needed.

**Approach to diagnosis and management**

The 3 classical approaches of STI & RTI diagnosis and treatment covered in this document are:

I. **Syndromic approach**: This approach identifies the clinical pattern of the symptoms and signs that a patient has and putting these together as a syndrome. It is highly sensitive and does not miss infections in people presenting with symptoms. With this approach, people can be treated at *primary health care* level immediately.

II. **Clinical approach**: This approach uses clinical experience to identify the symptoms typical of a specific STI. *Even in the most experienced hands, this approach is unreliable* as clinically it is not possible to differentiate between different infections. The clinician may diagnose some STIs incorrectly and may also miss mixed infections, leading to unsuccessful treatment.

III. **Aetiological approach**: This approach uses laboratory tests to identify the causative agent. This is *the most accurate approach*; however, it may be expensive and is time-consuming. It requires special resources and there is a potential for delay in treatment. With the use of the newer rapid diagnostic tests and by offering patients syndromic treatment, this latter problem may be overcome for some infections.

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# THE PUBLIC HEALTH PACKAGE FOR STI PREVENTION AND CARE

# SECTION II THE PUBLIC HEALTH PACKAGE FOR STI PREVENTION AND CARE

## Comprehensive Management Concept

When a person consults a health care provider with a complaint of an RTI or STI, this provides an excellent opportunity to assess the patient's risk behaviour and general perception; create awareness and provide education and counselling; and thence provide treatment for the current condition, and condoms to avoid future infections.

### Key Principles of Comprehensive Case Management

Key principles of comprehensive management include:

1. Establishing a diagnosis and providing the treatment to the patient.
2. Risk reduction and behaviour change communication.
3. Partner notification and management
4. Offering HIV testing and other required testing services.
5. Motivation for follow up examination.

### Key Components of Comprehensive Case Management

STI case management must be assured within any health care setting, whether within the public or private sector. Regardless of who is providing this service, privacy must be ensured at all times, there is also a need to provide tools and equipment support such as an examination table or couch with adequate lighting, gloves, syringes, specula, sterilization equipment and laboratory support.

Comprehensive STI care consists of the following components:

i. History taking, including behavioural, demographic and medical risk assessment.
ii. Physical examination is essential, particularly of the genital area, which in some cultures may be sensitive.
iii. Establishment of a diagnosis, syndromic or laboratory based.
iv. Curative or palliative therapy, using the most effective antimicrobial for the pathogen, at the first port of call of the patient.
v. Patient education and counselling (where counselling services are available), including information on:

- compliance to medications
- nature of infection
- importance of partner notification and treatment therefore
- risk reduction and prevention of further STI transmission
- HIV risk perception and assessment

vi. Partner notification and treatment
vii. Case reporting
viii. Clinical follow up when appropriate and feasible
ix. Screening for asymptomatic infection (where feasible)

Thus, effective case management consists not only of antimicrobial therapy to obtain cure and reduce infectivity, but also comprehensive consideration and care of the patient's sexual and reproductive health needs.

**Education for Primary Prevention**

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

There are four major components in STI control:

i. Education of individuals at risk on modes of disease transmission and means of reducing the risk of transmission
ii. Detection of infection in asymptomatic subjects and in subjects who are symptomatic but unlikely to seek diagnostic and therapeutic services
iii. Effective management of infected individuals
iv. Treatment and education of the sexual partners of infected individuals.

People become infected with a sexually transmitted infection (STI) through having unprotected sexual intercourse with a person who has an STI. A consultation for STI is a unique opportunity for education about the prevention of HIV and STI in people who, by definition, are at risk for these diseases. Adolescents are an especially important target group for primary prevention because much of their active sexual and reproductive life lies ahead of them. Furthermore, adolescents may be less inclined to appreciate their risk of acquiring an STI.

Behavioural assessment is an integral part of the STI history and patients should be educated on methods to lower their risk of acquiring STI and HIV, including abstinence, careful selection of partners and use of condoms.

Most patients assume that once they have taken their medications they will be cured. The health care provider needs to explain to their patients that this is not the case with STIs. Patients need to be educated about the fact that their sexual partners are also infected and will re-infect them. So, partner treatment and compliance of treatment of themselves and their sexual partners are necessary to cure the infection.

Patients need to be made aware of the possible complications of these serious infections which in many cases do not have symptoms and therefore continue to spread, even during asymptomatic phases. They need to understand that HIV is one of these STIs and that for HIV there is a long asymptomatic phase. The spread of HIV is also facilitated by the presence of other STIs.

All the above factors should help the patient become aware of the need to prevent infections in the future through:

A - abstaining from sex (and alcohol and Kava) – for both patient and partner during STI treatment.
B - being mutually faithful and
C - using condoms with new, casual or multiple sexual partner contacts.

An assessment of the risk behaviour of the patient needs to be made to assist them to address their risks. One of the means of risk reduction, which is widely available, is the use of condoms. The health care provider needs to demonstrate the use of condoms and supply the patient as well as inform them where they can obtain the male and female condoms.

**Counselling**

Counselling is defined here as an interactive confidential process where a care provider assists a patient in reflecting on what factors lead to risky sexual behaviour or unprotected sex and how they can be addressed to avoid this in the future. Once the individual understands his/her risky behaviour factors, these issues can therefore be explored for possible lines of action.

Issues that should be addressed in counselling sessions include:

i. importance of treatment compliance and abstaining from alcohol and sex until cured;
ii. the link between STIs and HIV infection
iii. how to avoid becoming infected in the future (risk-behaviour analysis and risk-reduction);
iv. the importance of and the correct use of condoms
v. informing the partner(s) or spouse about the STI diagnosis (options: either the patient or the health care provider informs the partner(s) or spouse)
vi. assessing the patient's own risk for HIV and deciding whether or not to undergo testing for HIV
vii. learning about and coming to terms with worrisome complications of STI such as infertility, congenital syphilis, etc.
viii. dealing with an incurable STI such as herpes genitalis which may be transmitted to the partner(s) or spouse
ix. symptoms suggesting HIV-related disease
x. prevention of future infections, including strategies to discuss and introduce condom use with a partner
xi. confidentiality, disclosure and the risk of violence or stigmatizing reactions from spouse, partner, family or friends
xii. supplying the patient with condoms and informing them where condoms are available. This applies to both male and female condoms.

When a counseling need is identified, the patient should be counseled by a health worker with knowledge and expertise in the field of HIV/STI and reproductive health or health promoting officer with similar background, a trained counsellor or a social worker. Time, usually 15-20 minutes, and space for privacy must be allocated for the provision of counselling.

Even in the absence of formal training in counselling, health workers are encouraged to engage their patients in a dialogue about STI to explore risk assessment, personal behavioural options and to identify those requiring further emotional support. It is recognized that apart from the professional and technical expertise, some of the ingredients of counselling such as compassion, sensitivity and communication skills, are qualities that many health workers already possess and apply on a daily basis.

**Notification and Management of Sexual Partners**

The sexual partners of STI patients are likely to be infected themselves and should be offered treatment. Further transmission of STI and re-infection are prevented by referral of sexual partners for diagnosis and treatment. Female partners of male STI patients may well be asymptomatic; thus, partner notification and management offers an opportunity to identify and treat people who otherwise would not receive treatment. Partner notification should be considered whenever an STI is diagnosed, irrespective of where care is provided.
Notification can be by patient referral or by provider referral.

**Patient referral** - an infected patient is encouraged to notify partner(s) of their possible infection without the direct involvement of health-care providers;

The steps in partner notification, contact tracing and treatment are:

- he or she is counseled and educated on how to motivate his/her partner(s) to present themselves to the clinic for treatment;

**OR**

- to take the treatment ('treatment packages'), this approach may contribute to increase partner awareness and support. However, this approach is not easy as it requires the patient's action and it can lead to domestic violence and social consequences, hence the patient needs to be well prepared when using this method;

**OR**

- accompanying the partner to the clinic or asking the partner to attend without specifying why;

**OR**

- by providing the patient with 'contact note' which he/she can give to the partner(s) asking him or her to attend the clinic. The contact note should contain details (may or may not include index patient's name) by which the index case or his/her diagnosis can be known, as well as the specific personnel to see him/her at the clinic.

If the contact does not come before or during the index case follow-up date (one week after the treatment was given), check to see if the contact has gone to a different clinic. If not, proceed to do provider facilitated contact tracing.

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 partner(s) of STI patients, including those without symptoms, are referred for evaluation.

**Provider referral** - health-care providers notifies a patient's partner(s).

- With the patient's consent, ask for names, addresses and other details of his/her contact(s), information necessary to contact or visit and bring him/her to the clinic for management and treatment. Assure the patient that confidentiality will be maintained. This should be done during the first visit if possible.

**OR**

- As in the case of an antenatal clinic mother who is positive for any of the STIs except HIV, with her consent, the healthcare provider may provide a laboratory investigation form (syphilis and hepatitis) for the partner(s) which should also include details of the mother to assist in in the identification of the index case; also arrange for a review in a week's time or earlier with the partner, when the lab result is available.

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:

i. Offer immediate epidemiological treatment (treatment based solely on the diagnosis of the index patient) without any laboratory investigation.
ii. Offer immediate epidemiological treatment, but obtain specimens for subsequent laboratory confirmation.
iii. 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 likelihood of a person returning for follow-up
- 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.

If the contact refuses to come or cannot be reached, advice patient on patient delivered treatment for the partner. It may not always be possible to contact all individuals at risk from exposure to the index case but every reasonable effort should be made to trace and advise contacts.

The last resort will be by enforcing the Public Health Act cap 111 or any relevant legislation where the health inspectors or the police are instructed to bring the contacts to the clinic for counseling and treatment.

**HIV Testing Services**

Patients with STI and all those seeking care for suspected STI have engaged in unsafe sexual activities. HIV is acquired in the same way as other STIs, so it is advisable to inform and counsel the patient on HIV and offer testing. This will be initiated by the health care provider who sees the patient with an STI or his/her contacts.

**Follow up and the Continuum of Care**

All STI patients who have been treated should be encouraged to come for a review. They should be asked if symptoms have disappeared and examined if necessary. If laboratory tests or an HIV test was done at first visits the results should be discussed.
If the laboratory tests indicate any other STIs than those for which the patient was treated, treatment should be provided.
If the HIV test comes back negative, then post-test counselling needs to be done with an emphasis on behaviour change. If the HIV test comes back positive, the patient needs to be referred to the nearest Sexual Reproductive Health Centre (HIV Hub) for further assessment and counselling.
People who were not tested for HIV at their first visit should be counselled and offered testing at this visit. This visit can also serve to reinforce education and behaviour change.

The provision of accessible, acceptable and effective services is important for the control of STIs. In most developing and industrialized countries, patients will have a choice of services from which to

seek STI care. Planning of a balanced and comprehensive programme will need to consider strengthening all health care providers that are able to provide STI services.

Adolescents often lack information about existing services (where they are, what times they operate, how much they cost etc). Even if they know of these services they are often reluctant to seek help for diagnosis and treatment due to embarrassment and possible stigma, and the fear of negative reactions from health workers and lack of confidentiality. There should be initiatives in place to ensure services are friendly and responsive to the needs of users especially to adolescents and young youths.

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# SYNDROMIC MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS

# SECTION III SYNDROMIC MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS

## Principles of Syndromic Management of Sexually Transmitted Infections

The management of STI syndrome is based on a group of symptoms and clinical signs that health care workers can use to decide on the appropriate treatment. Nurses at nursing station level, medical officers and nurses at health centres, sub-divisional hospitals and sexual reproductive health clinic level would be able to manage STIs through syndromic approach after undergoing training.

Syndromic approach cannot be used in asymptomatic patients. Patients are usually given treatment for more than one infection and hence there is a degree of overtreatment, which can be gradually overcome as reliable rapid diagnostic tests become more available.

Flowcharts guide the providers through logical steps to arrive at a diagnosis and management. These guidelines provide recommendations on what treatments should be provided once a syndromic diagnosis has been made.

For most STI syndromes, single dose oral treatments administered under observation of a health care provider is preferred. This Directly Observed Treatment (DOT) assures compliance.

**Key features of syndromic case management**

The key features of syndromic case management are that it:

- is problem oriented (it responds to the patients symptoms).
- is highly sensitive and does not miss mixed infections.
- treats the patient at the first visit.
- enables all trained providers to diagnose an STI syndrome and treat patients without waiting for time consuming laboratory results.
- helps the prevention of further spread of STI thus reducing the risk of developing complications.
- makes STI care more accessible as it can be implemented at primary health care level.
- uses flowcharts that guide the health care worker through logical steps.
- provides opportunity and time for education and counseling.

**A syndromic diagnosis can only be made in persons with symptoms.**

**If an infected person has no symptoms, diagnosis of an infection can only be made by carrying out laboratory tests.**

## Identifying Sexually Transmitted Infection Syndromes

A number of different organisms that cause STIs give rise to only a limited number of symptoms. A syndrome is simply a group of the symptoms a patient complains about and the clinical signs that is observed during clinical examination.

This guideline covers only the STI syndromes caused by organisms which both respond to treatment and if untreated may lead to severe consequences. Other STI syndromes such as vesicular lesions (herpes), genital warts and dysuria in women are not included under this section.

**Signs and symptoms for the main STI syndromes and their causes:**

| Syndrome | Symptoms | Signs | Most common causes |
|---|---|---|---|
| **Urethral discharge** | Urethral discharge<br>Dysuria<br>Frequent urination | Urethral discharge<br>(if necessary ask patient to milk urethra) | Gonorrhoea<br>Chlamydia |
| **Vaginal discharge** | Unusual vaginal discharge<br>Vaginal itching<br>Dysuria (pain on urination)<br>Dyspareunia (pain during sexual intercourse) | Abnormal vaginal discharge | VAGINITIS<br>Trichomoniasis<br>Candidiasis<br>CERVICITIS<br>Gonorrhoea<br>Chlamydia |
| **Anorectal discharge and ulcer** | Anal discharge<br>Anal pain | Anal discharge<br>Ulcers<br>Blisters<br>Warts<br>Haemorrhoids<br>Fistulas | Gonorrhoea<br>Chlamydia<br>Syphilis |
| **Genital ulcer** | Genital sore | Genital ulcer | Syphilis<br>Chancroid<br>Genital herpes |
| **Lower abdominal pain** | Lower abdominal pain<br>Dyspareunia | Vaginal discharge<br>Lower abdominal tenderness on palpation<br>Temperature >38º C | Gonorrhoea<br>Chlamydia<br>Mixed anaerobes |
| **Scrotal swelling** | Scrotal pain and swelling | Scrotal swelling | Gonorrhoea<br>Chlamydia |
| **Inguinal bubo** | Painful enlarged inguinal lymph nodes | Enlarged inguinal lymph nodes<br>Fluctuation<br>Abscesses or fistulae | Lymphogranuloma venerium (LGV)<br>Chancroid |
| **Neonatal conjunctivitis** | Swollen eyelids<br>Eye discharge<br>Baby cannot open eyes | Oedema of the eyelids<br>Purulent/ blood stained discharge | Gonorrhoea<br>Chlamydia |

The aim of syndromic management is to identify one of these syndromes and manage it accordingly.

## Health Education in a Syndromic Management Setting

Educate and counsel all patients with sexually transmitted infections by:

- advising patients on the importance of completing the full course of treatment.
- explaining how STIs are transmitted and the possible complications of infection as well as the risk for re-infection if partner is not treated.
- advising the patient not to engage in sexual activity or should use condoms until both the patient and the partner(s) have completed treatment.
- discussing the patient's choices for safer sexual behaviour.
- educating the patient on condom use promoting and providing condoms.
- recommending HIV testing services.
- enlisting the patient's help with partner referral.
- the patient should be advised that he or she could be re-infected if partners are not appropriately treated.
- all sexual partners in the last 3 months should be assessed and treated for the same conditions. If the last sexual contact was more than 3 months, the last partner should be treated.
- emphasizing the importance of returning to the clinic for re-evaluation 7 days after start of therapy, if symptoms persist or if symptoms worsen.

Summary of comprehensive syndromic case management delivered in one package:

i. **Antibiotic treatment for the syndrome:** - the availability and use of *effective* antibiotics is an absolute requirement. The drugs must be available at the first point of contact with a patient with an STI.

ii. **Condom supply:** With people being encouraged to use condoms, health authorities should ensure that there is an adequate supply of good-quality, affordable condoms at health facilities and at various other distribution points in the community. Social marketing of condoms is another way of increasing access to condoms. Instruction in their proper use must be provided. Although condoms do not provide absolute protection from any infection, if properly used they greatly reduce the risk of infection. The question of pregnancy prevention should also be addressed and dual protection emphasized. Adolescents should be instructed where to get contraception and future supplies of condoms.

iii. **Counselling:** Counselling should be made available for cases where it is needed, for example, in chronic cases of genital herpes or warts either for individuals or for couples in a sexual relationship.

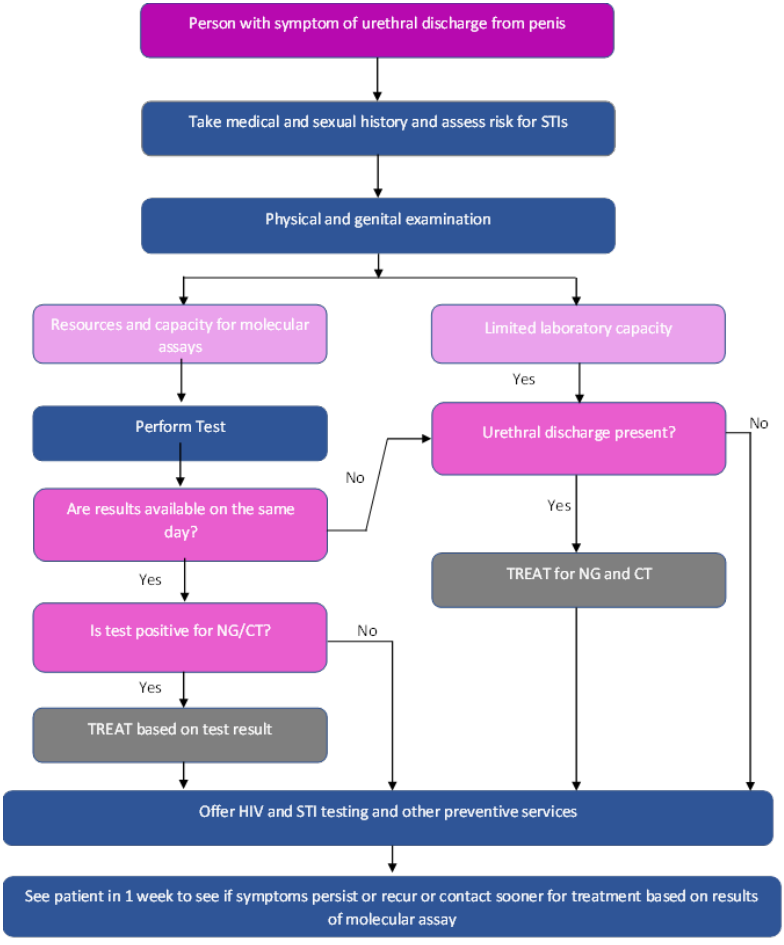
iv. **Information on partner notification and treatment:** Contacting sex partners of clients with STI, persuading them to present themselves to a site offering STI services, and treating them promptly and effectively are essential elements of any STI control programme. These actions, however, should be carried out with sensitivity, with social and cultural factors taken into account. This will avoid ethical problems, as well as practical problems such as rejection and violence, particularly against women.

# Urethral Discharge and/or Dysuria Syndrome in Men

**Clinical features**

This syndrome is characterized by urethral discharge or meatal erythema. The urethral discharge is usually characterized as either mucoid, watery or muco-purulent and varies in amounts from profuse to scant. Patients may experience dysuria, urinary frequency or urethral irritation.
In men presenting with urethral discharge and/or dysuria, take a history including history of sexual contacts for the last 3 months. Examine patient to confirm the urethral discharge by milking the urethra if necessary and to look for other signs of STI.

**Flowchart for the syndromic management of urethral discharge and dysuria in males**



**Treatment:**

The major microorganisms causing urethral discharge and/or dysuria in men are *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. In treating patients with this syndrome, antibiotics that will cover both organisms are recommended.

## Persistent or Recurrent Urethral Discharge in Men

If symptoms do not resolve after seven days, check for the following possible reasons:

| | |
|---|---|
| **Re-infection – this is a possibility if the patient has had unprotected sex since being treated.** | **Repeat treatment and advise patient on abstaining from sex until the infection has been cured (at least 7 days), avoid alcohol and kava, the importance of treating partners and condom use.** |
| **Infection with a drug resistant organism or infection with a different pathogen not covered by initial treatment** | **Take swabs and urine sample for culture and sensitivity if available or refer to the next higher level or to the nearest reproductive health clinic.** |

Persistent or recurrent urethral discharge in men is commonly due to infection with:

- *Trichomonas vaginalis*

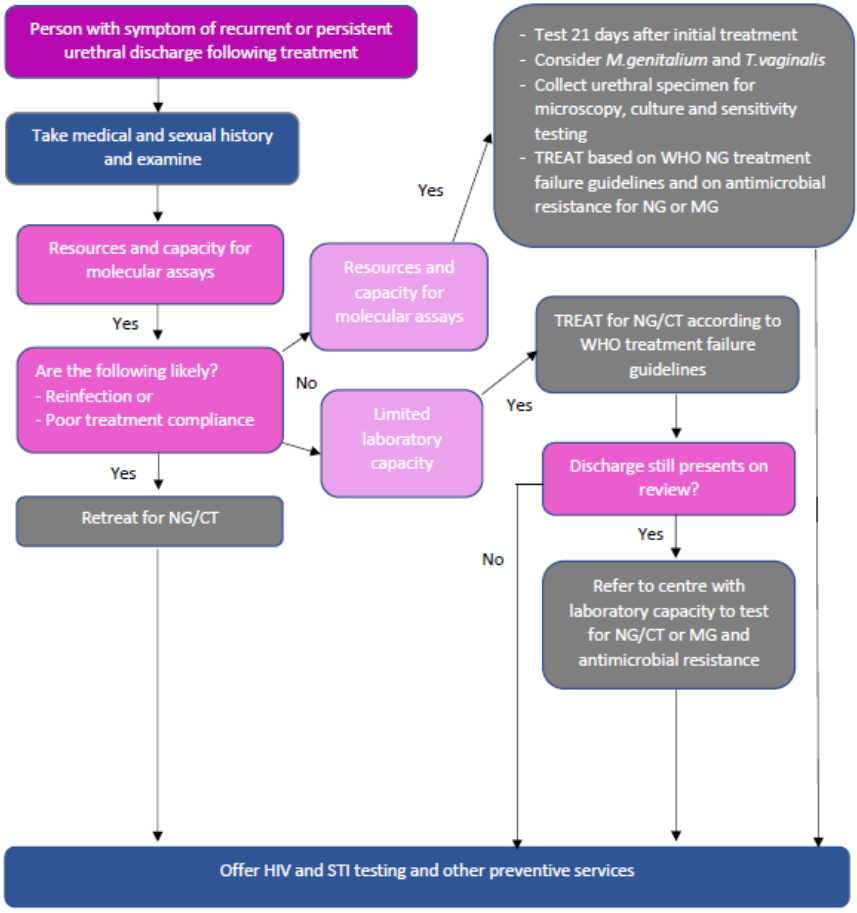
Treat with Metronidazole 400mg or 500mg orally twice daily for 7 days or Metronidazole 2g orally as single dose.

- *Mycoplasma genitalium*

Treat with Azithromycin 500 mg orally on day 1 as single dose and then 250mg orally daily on days 2–5 as single doses.

Review after 7 days when results of laboratory tests may be available to guide further treatment.

**Flowchart for the syndromic management of persistent and recurrent urethral discharge and dysuria in males**



# Vaginal Discharge Syndrome

**Causes of vaginal discharge**

While vaginal discharge can be due to other causes, it is the most common presentation of women with STI. These include:

i. Normal discharge - related to menses (mid-cycle peak flow of mucus), fluid released during sexual arousal, during pregnancy and lactation.
ii. Vaginal infection (vaginitis) – Bacterial vaginosis, Trichomoniasis and Candidiasis.
iii. Cervical infection (cervicitis) – Gonorrhoea and Chlamydia.

While *Neisseria gonorrhoeae* and *Chlamydia trachomatis* are the most commonly isolated organisms, in most cases no organism is identified.

Vaginal discharge syndrome refers to either vaginitis or cervicitis, or both. Health care providers should differentiate between these two, if possible.

**Cervicitis**

Cervicitis can be an infectious or non-infectious inflammation of the cervix. Findings may include vaginal discharge, vaginal bleeding, and cervical erythema and friability. Women are tested for infectious causes of vaginitis and pelvic inflammatory disease and are usually treated empirically for chlamydial infection and gonorrhoea.

Cervicitis if left untreated leads to pelvic inflammatory disease, which can lead to substantial long-term ill effects such as infertility and chronic pelvic pain. Sexual partner(s) of women suffering from cervicitis should also be treated to avoid re-infection.

Cervicitis is often difficult to diagnose clinically. Using bimanual pelvic and speculum examination, the cervix can be felt and visualized directly, and cervicitis diagnosed if mucopus or erosions are seen, or friability observed. In these cases, treatment for both Gonorrhoea and Chlamydial infections should be added to the treatment for Bacterial vaginosis and Trichomoniasis (and Candidiasis if indicated).

**Clinical suspicion is generally sufficient to justify therapy, but of the diagnostic aids, nucleic acid amplification testing remains the most sensitive and specific tool for accurately diagnosing *N gonorrhoeae* and *C trachomatis*.**

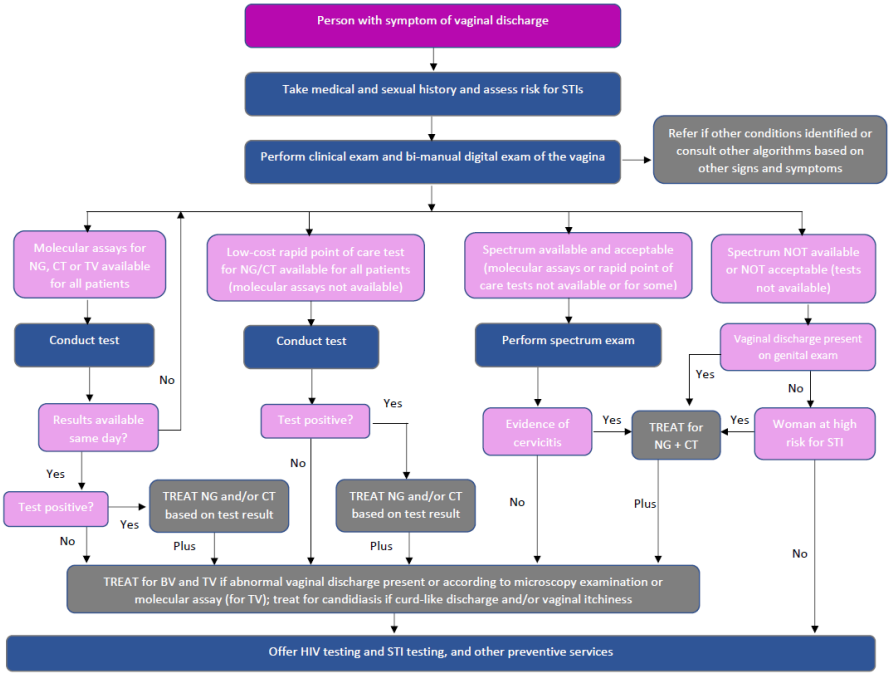
**Vaginitis**

Vaginitis is an inflammation of the vagina that can result in discharge, itching and pain. The cause is usually a change in the normal balance of vaginal bacteria or an infection. Reduced estrogen levels after menopause and some skin disorders can also cause vaginitis.

The most common types of vaginitis are:

- **Bacterial vaginosis -** results from a change of the normal bacteria found in the vagina to overgrowth of other organisms.
- **Yeast infections -** usually caused by a naturally occurring fungus called Candida albicans.
- **Trichomoniasis -** caused by a parasite and is commonly transmitted by sexual intercourse.

**Flow chart for the management of vaginal discharge**




**Differences between Vaginitis and Cervicitis:**

| Characteristics | Vaginitis | Cervicitis |
|---|---|---|
| **Cause** | Trichomoniasis or Candidiasis or Bacterial vaginosis | Gonorrhoea or Chlamydia |
| **Vaginal discharge** | Most common cause | Less common cause |
| **Signs & symptoms** | Vaginal itching or irritation<br>Dyspareunia (Pain during intercourse)<br>Dysuria (Painful urination)<br>Light vaginal bleeding or spotting<br><br>**Bacterial vaginosis -** Grayish-white, foul-smelling discharge, with a fishy odor, more obvious after sexual intercourse.<br>**Yeast infection - vaginal** itching, with a white, thick discharge that resembles cottage cheese.<br>**Trichomoniasis -** causes a greenish-yellow, sometimes frothy discharge. | Inflammation of the cervix characterized by a purulent endocervical exudate and/or easily induced endocervical bleeding caused by manipulation with an atraumatic instrument such as a cotton swab. |

| | | |
|---|---|---|
| **Complications** | No complications | PID and infertility. |
| **Treatment of partner(s)** | Unnecessary, except for Trichomoniasis | Need to treat partner to avoid re-infection |
| **Risk assessment** | Negative | Positive |

All women presenting with abnormal vaginal discharge should receive treatment for Bacterial vaginosis and Trichomoniasis. Consider additional treatment for Candidiasis if clinically indicated.

**Bacterial vaginosis and Candidiasis are not true STIs and treatments of sexual partners are not necessary.**

## Persistent or Recurrent Vaginal Discharge:

In vaginal infection, some improvement may be seen within a few days. Symptoms should disappear within one week. Advise patients to return if symptoms persist. If symptoms persist, re-examine patient and consider treating for Candidiasis and/or vaginal infection if these were not given during the first visit. Consider treating for Mycoplasma genitalium with with Azithromycin 500 mg orally on day 1 as single dose and then 250mg orally daily on days 2–5 as single doses. Take swabs for culture and sensitivity if available or refer to the next higher level or to specialist care at reproductive health clinics and divisional hospitals.

Current partner(s) should be treated for *Trichomoniasis* if the patient's symptoms persist or recur, or if the partner is symptomatic.

**Advise patients with recurrent vaginal infection to avoid douching and vaginal drying**

Repeated Candidiasis may be due to pregnancy, diabetes, HIV infection, excessive use of antibiotics and oral contraceptive use.

# Anorectal Discharge Syndrome

**Causes of anorectal discharge**

Anorectal STIs are commonly the result of anal receptive intercourse, oro-anal sexual contact and may also be due to contiguous spread from a genital infection. The incidence of anorectal STIs has risen in recent years, and is common in those who practice anal receptive intercourse. Traditionally associated with homosexual men, anal receptive intercourse is also practiced among heterosexual couples.

Common complaints of anorectal STIs include anal pain, tenesmus, urgency, purulent drainage, and bleeding. Common lesions include ulcerations, vegetations, and clinical proctitis.

Based on anatomical involvement and common causative agents:

- **Distal proctitis** - typical organisms include *Neisseria gonorrhoeae, Chlamydia trachomatis, Treponema pallidum*, and Herpes simplex virus.
- **Proctocolitis** - organisms associated with food or waterborne diseases are more common and include *Entamoeba histolytica, Campylobacter* spp., *Salmonella* spp., *shigella* spp., *Cryptosporidium* spp., and Cytomegalovirus (CM).

**Gonorrhea**

Gonorrhea infection can affect the urethra, rectum, or throat. People can transmit these bacteria through vaginal, anal, or oral sex without a condom. Most men who have gonorrhea show no symptoms. When gonorrhea in the urethra does cause symptoms, these usually appear 1–14 days after infection. Common signs and symptoms of gonorrhea in men include:

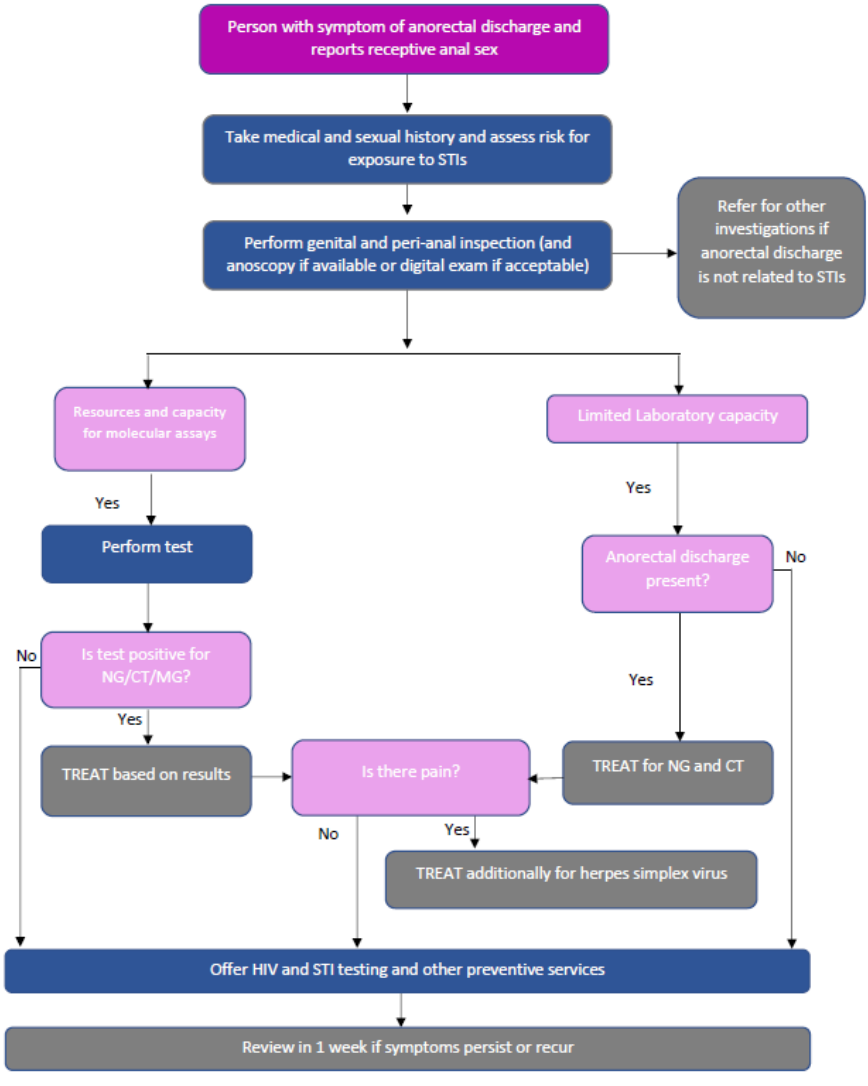
- itching and soreness in the anus
- painful bowel movements
- bloody discharge from the anus

**Chlamydia**

Chlamydia infection can spread through anal, oral, or vaginal sex without a condom. Men can get chlamydia in the urethra, rectum, or throat. People refer to chlamydia as a "silent" infection because people are often unaware that they have it. The majority of chlamydia infections in men do not cause any symptoms, but some men can develop symptoms several weeks after infection. Chlamydia infections in the rectum are less common, but they do occur. Although these infections usually have no symptoms, they can cause:

- rectal pain
- bleeding
- discharge
- infection of the epididymis, causing – fever, pain and in rare cases, infertility.

**Flow chart for managing anorectal discharge syndrome**



## Genital Ulcer Syndrome

After examination to confirm the presence of genital ulceration, treatment appropriate to local aetiologies should be given. For example, in areas where both herpes, syphilis and chancroid are prevalent, patients with genital ulcers should be treated for these 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.

Genital ulcer syndrome in Fiji is commonly due to Genital herpes and Syphilis. Other less common causes are Chancroid, Lymphogranuloma venereum, Donovanosis, primary HIV infection, trauma or allergic reaction.

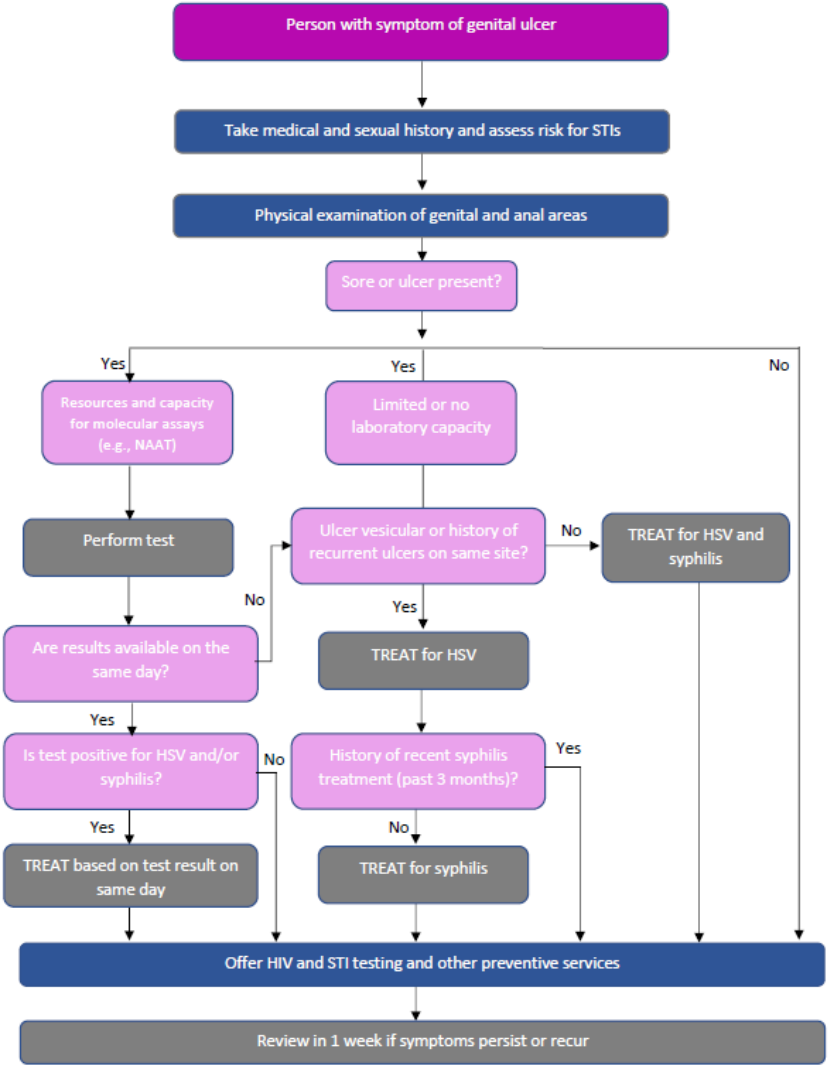
**Treatment summary for genital ulcer diseases:**

| **Drug options for syphilis** | **Drug options for chancroid** | **Drug options for granuloma inguinale or donovanosis** | **Drug options for Lymphogranuloma venerium (LGV)** |
|---|---|---|---|
| Benzathine Benzyl penicillin | Azithromycin<br>Ceftriaxone<br>Ciprofloxacin | Azithromycin | Doxycycline |
| | | | |
| ***Alternatives*** | ***Alternatives*** | ***Alternatives*** | ***Alternatives*** |
| Procaine penicillin | Not recommended | Doxycycline | Not recommended |
| | | | |
| ***Penicillin allergy and non-pregnant*** | | | |
| Doxycycline | | | |
| Tetracycline | | | |

Keep lesions clean and dry.
Educate and counsel as for all STIs.

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. Pre-test information for HIV testing is important.

**Flowchart for the syndromic management of genital ulcers**

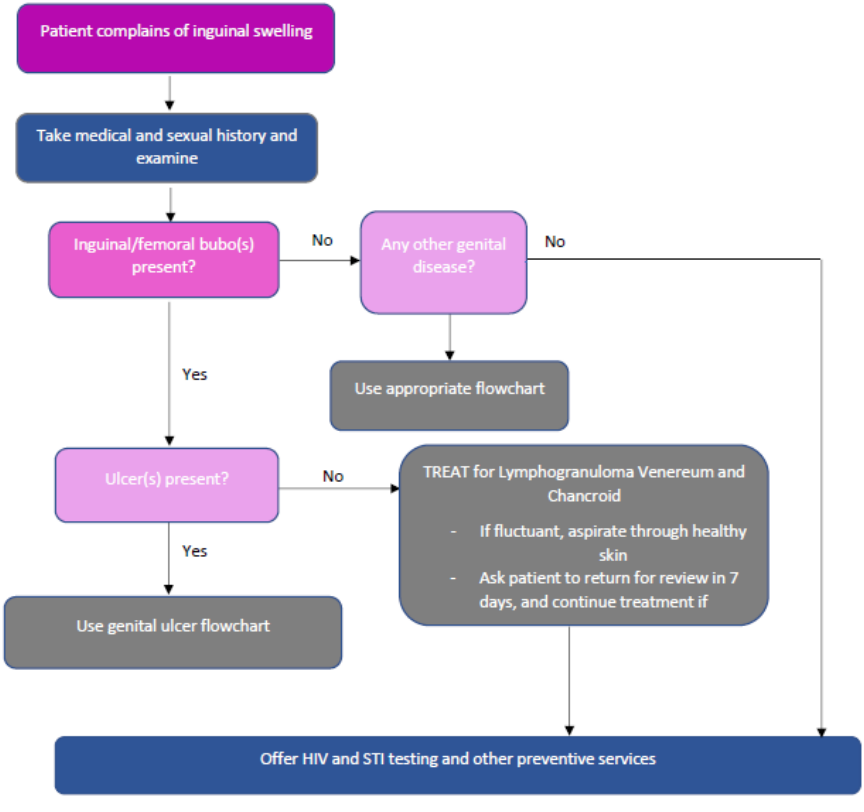


## Inguinal Bubo Syndrome

Inguinal and femoral buboes are localized enlarged lymph nodes in the groin area, which are painful and may be fluctuant. Buboes may appear as ulcers in the inguinal area when they rupture. Common causes of buboes are lymphogranuloma venereum and chancroid. In most cases of chancroid, a genital ulcer is also visible, but internal vaginal ulcers in women may be missed. Where granuloma inguinale (donovanosis) is common, it should also be considered as a cause of inguinal bubo.

Non-sexually-transmitted local and systemic infections (e.g. infections of the lower limb) can also cause swelling of inguinal lymph nodes.

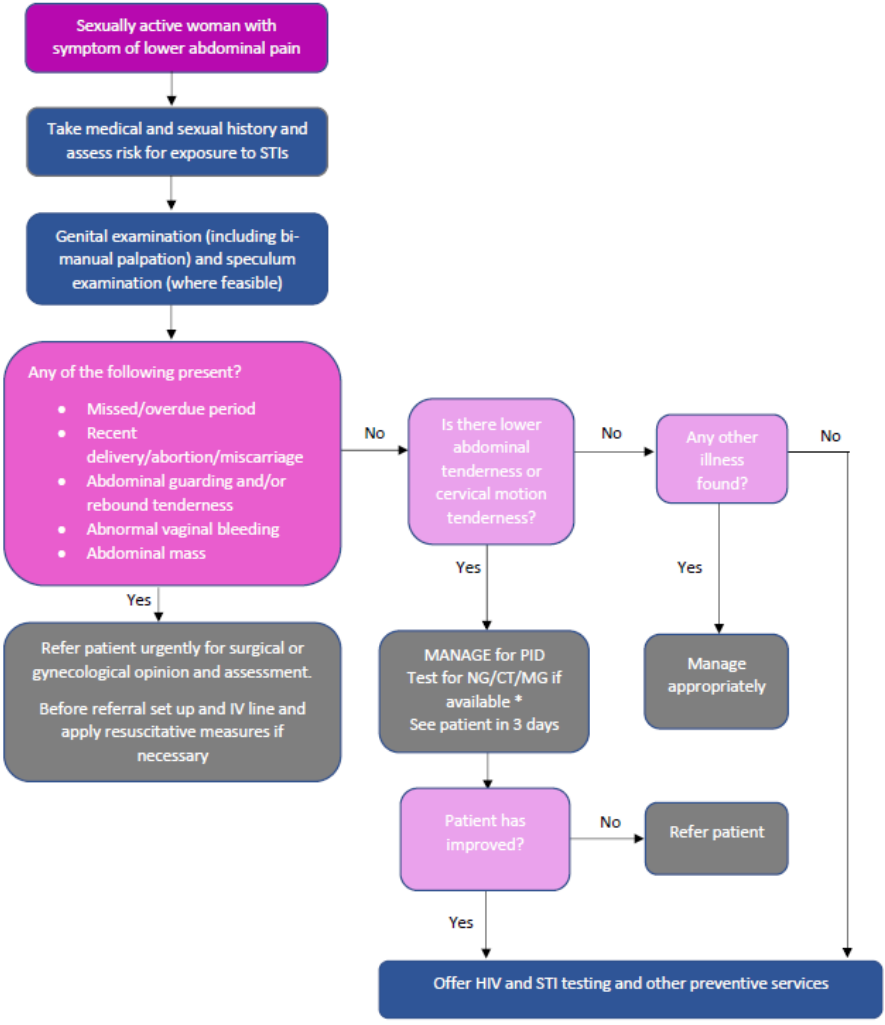
**Flowchart for the syndromic management of inguinal bubo**



## Lower Abdominal Pain Syndrome

The common aetiologic agents causing Pelvic Inflammatory Disease (PID) include *N. Gonorrhoeae*, *C. Trachomatis* and anaerobic bacteria. It is often difficult to differentiate these agents clinically and microbiologically. The treatment regimen must be effective against this broad range of pathogens.

**Flowchart for the management of lower abdominal pain in women**




Mild and uncomplicated PID can be managed at the health centre level where there is a medical officer or nurse practitioner. Nurses at the nursing station level should refer all cases of women presenting with lower abdominal pain to the nearest health centre or hospital.

## Scrotal Swelling Syndrome

In patients presenting with scrotal pain and swelling, first exclude non-infectious causes such as testicular torsion, inguinal hernia, trauma or testicular tumour. When the testis is rotated or elevated, or there is history of trauma, refer the patient immediately for surgical evaluation.

**Common Causes of Scrotal Swelling:**

| Cause | Characteristics |
|---|---|
| Epididymitis or Epididymo-orchitis | Acute onset of unilateral testicular pain and swelling, tender epididymis and vas deferens, redness and swelling of overlying skin.<br><br>In men <35 years, frequently caused by STIs and usually associated with urethral discharge and or dysuria.<br><br>In older men (>35 years), where there is no risk of an STI, causes include E. Coli, Klebsiella or Pseudomonas. In pre-pubertal children, common causes include coliform, pseudomonas or mumps virus infection. |
| Testicular torsion | Acute onset of unilateral testicular pain and swelling with or without lower abdominal pain. Common in young men. Red, swollen and tender scrotum. Affected testis may be palpated high in the scrotum. Urethral discharge and fever are uncommon. |
| Inguinal hernia | A lump or swelling in the groin. Sudden attack of scrotal pain, abdominal discomfort, pain in the groin while standing or moving. History of "evanescent mass" before the acute attack. |
| Trauma | History of injury or trauma. Testicular pain, swelling and tenderness. Abrasion, laceration, bruise and redness of the scrotum. |
| Tumour | Asymptomatic, painless lump or swelling. Sensation of heaviness. Enlargement or tenderness of the breasts. |

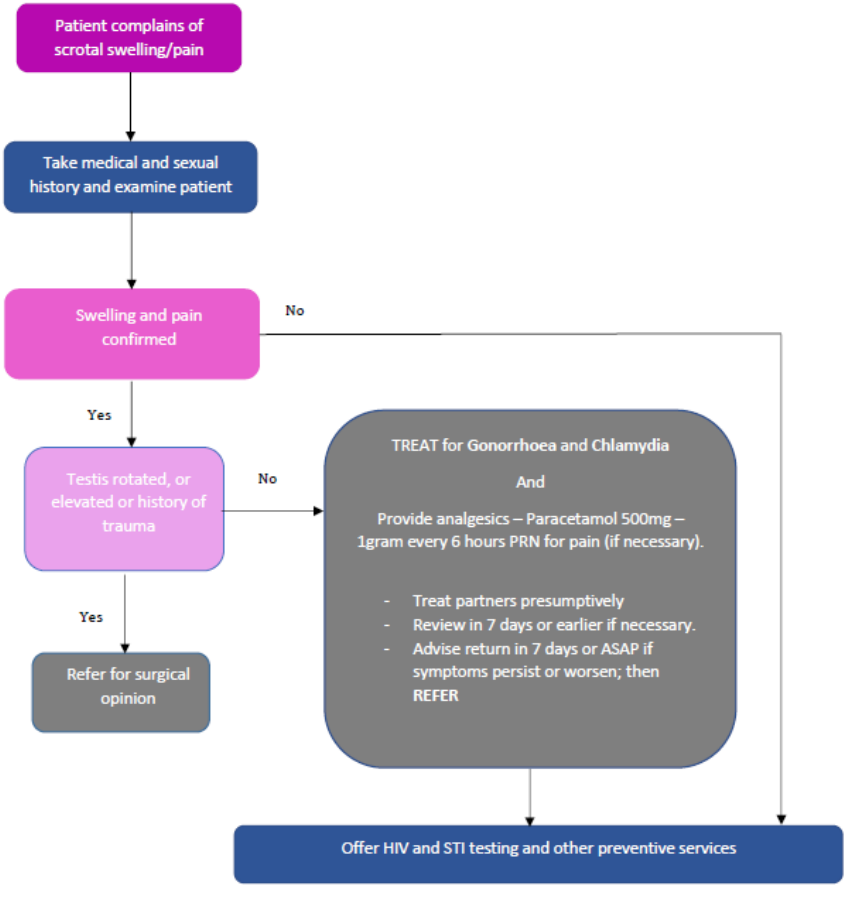
**Treatment considerations for epididimo-orchitis**

When the scrotal swelling is presumed to be sexual in origin,

- treat all sexual partners in the preceding 3 months or the most recent partner if the last sexual contact was more than 3 months previously.
- Female partners should be treated as for cervicitis.
- When sexual origin cannot be presumed, consider presumptive treatment to partners to avoid complications and re-infection.
- Advise patient to rest and avoid strenuous activities until the pain and swelling subsides.
- Further follow-up after 21 days of treatment may be considered.

The epididymis does not return to its normal soft consistency for several months after treatment. Infection of the testis or epididymis is a serious complication of gonococcal and chlamydia urethritis. When infected the testis becomes swollen, hot and very painful. If early and effective treatment is not given, the inflammation will heal with fibrous scarring and destruction of testicular tissue, often leading to infertility. Also consider possible noninfectious and non STI causes of scrotal swelling and pain such as trauma, tumour and testicular torsion and all require referral. In men over 35 years with no risk of STIs, and among pre-pubertal boys, other general infections may be responsible.

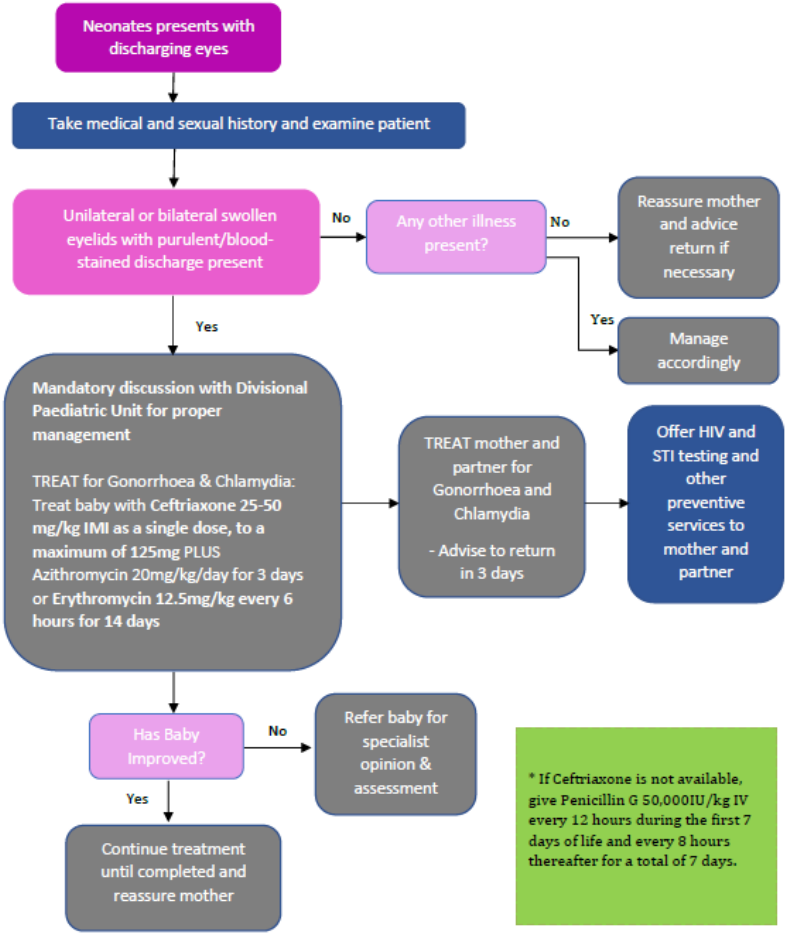
**Flowchart for the management of scrotal swelling in males**



## Neonatal Conjunctivitis Syndrome

Neonatal conjunctivitis or Ophthalmia neonatorum is characterized by a purulent conjunctivitis (redness, swelling of the eyelids, and purulent/bloody discharge from the eyes or "sticky eyes") in a baby less than one month of age. Common causes of neonatal conjunctivitis are Gonorrhoea (a neonatal emergency which may result in blindness within 24 hours due to damage to the cornea) and Chlamydia.

**Flowchart for the management of Neonatal conjunctivitis - babies less than one month of age presenting with swollen eyes and pus/blood discharging from both eyes (Mandatory discussion with Divisional Paediatric Unit is required)**



4

# MANAGEMENT OF SPECIFIC INFECTIONS

# SECTION IV MANAGEMENT OF SPECIFIC INFECTIONS

This section presents treatment of specific STIs AND RTIs based on laboratory confirmation and/or specific clinical presentations. Where laboratory facilities are available, such as in some health centres, subdivisional and divisional hospitals and reproductive health clinics (hub centres), aetiological diagnosis complements syndromic case management especially when there is no improvement with the latter treatment.

## Gonococcal Infections

**Aetiology**

Gonorrhoea is the second most common STI that can cause infection in the genitals, rectum, and throat. It is caused by the bacteria Neiserria Gonorrhoea. The incubation period of Gonorrhoea is 2-10 days (occasionally weeks to months). If left untreated, the patients will be infectious up to 12 months. Neonatal gonococccal ophthalmia is an ophthalmic emergency and needs to be referred to the Divisional Paediatric Unit.

**Clinical Presentation**

| Category | Symptoms | Signs |
|---|---|---|
| Males | Dysuria, Urethral Discharge | Purulent Urethral Discharge<br>Testicular swelling and tenderness |
| Females | Vaginal Discharge. Dysuria, Contact bleeding during sex | Muco-Purulent Vaginal Discharge |
| Neonates (≤28 days old) and children | Neonatal eye discharge, vaginal/urethral discharge (older children) | Congenital conjunctivitis, vaginal/urethral discharge |
| DISSEMINATED GONOCOCCAL INFECTION | Fever, petechial or pustular skin lesions, asymmetrical arthralgia, septic arthritis, tenosynovitis, | |

*Rectal and Pharyngeal infections are most commonly asymptomatic.*

**Diagnosis**

Neiserria Gonorrhoea is a gram-negative intra-cellular, aerobic diplococcus and can be identified from genital, rectal, pharyngeal or ocular secretions through gram staining, culture and nucleic acid amplification test (NAATs). Culture and Sensitivity is always recommended where available to guide antibiotic usage.
In settings without laboratory diagnostic support, diagnosis is made clinically based on the presence of symptoms.

**Treatment**

Fiji adopts and now uses the WHO Gonococcal infection treatment recommendations as follows:

- Syndomic management of Gonococcal infections
- Genital and Anorectal Gonococcal Infections

- Oropharyngeal Gonococcal Infections (OGI)
- Retreatment of Gonococcal Infection after treatment failure
- Gonococcal Ophthalmia Neonatorum (GON)
- Neonatal Ocular Prophylaxis - Combined prophylaxis for gonorrhoea & chlamydia.

| **Condition** | Treatment |
|---|---|
| **Previous Syndromic Management (can be used in the absence of the treatment regimens below and where penicillin is still sensitive)** | **A – Amoxycillin** 2g<br>**A - Augmentin** 625mg<br>**P- Probenecid** 1g<br>+<br>**A- Azithromycin** 1g (for chlamydia)<br><br>Alternatively, where amoxycillin + clavulanate is not available, use:<br><br>***Amoxycillin*** *3g orally, as a single dose*<br><br>***PLUS***<br><br>***Probenecid*** *1g orally, as a single dose*<br><br>***PLUS***<br><br>***Azithromycin*** *1g orally, as a single dose* |
| **Genital and Anorectal Gonococcal Infections** | Dual Therapy:<br>**Ceftriaxone** 250mg IM single dose + Azithromycin 1g PO single dose<br><br>**OR**<br><br>**Cefixime** 400mg PO single dose + Azithromycin 1g PO single dose |
| **Oropharyngeal Gonococcal Infections (OGI)** | Dual Therapy:<br>**Ceftriaxone** 250mg IM single dose + Azithromycin 1g PO single dose<br><br>**OR**<br><br>**Cefixime** 400mg PO single dose + Azithromycin 1g PO single dose |
| **Retreatment of Gonococcal Infection after treatment failure** | If re-infection is suspected, retreat with a WHO recommended regimen and re-enforce safe sex, condom use, and provide partner treatment.<br><br>If treatment failure occurred after treatment with a regimen not recommended by WHO, retreat with a WHO recommended regimen.<br><br>If treatment failure occurred and resistant data are available, retreat according to susceptibility.<br><br>If treatment failure after a WHO dual therapy, retreat with one of the following dual therapies:<br><br>**Ceftriaxone** 500mg IMI single dose + Azithromycin 2g PO single dose<br><br>**OR**<br><br>**Cefixime** 800mg PO single dose + Azithromycin 2g PO single dose |

| | |
|---|---|
| | **OR**<br><br>**Gentamycin** 240mg IMI single dose + Azithromycin 2g PO single dose<br><br>**OR**<br><br>**Spectinomycin** 2g IMI single dose (if not on oropharyngeal infection) + Azithromycin 2g single dose<br><br>*Before retreatment, re-infection should be distinguished from treatment failure, resistance data must be obtained, and WHO recommended regimen should be used.* |
| **Gonococcal Ophthalmia Neonatorum (GON)** | Neonatal conjunctivitis<br>Treat using one of the following:<br>**Ceftriaxone** 25-50 mg/kg (max 125 mg) IMI or IV single dose<br><br>**OR**<br><br>**Cefotaxime** 50mg/kg IV single dose |
| **Neonatal Ocular Prophylaxis** | For all neonates, Topical Ocular Prophylaxis for the prevention of gonococcal and chlamydia ophthalmia neonatorum; application of one of the following to both eyes immediately after birth:<br><br>**Tetracycline hydrochloride** 1% eye ointment (preferred drug of choice)<br><br>**OR**<br><br>**Erythromycin** 0.5% eye ointment<br><br>**OR**<br><br>**Chloramphenicol** eye ointment 1% eye ointment<br><br>Local data on resistance to erythromycin, tetracycline and chloramphenicol in gonococcal infection may determine the choice of medication.<br>Caution should be taken to avoid touching eye tissue when applying the topical treatment. |

# Chlamydia

**Aetiology**

Chlamydia is a common sexually transmitted infections (STI) caused by infection with *Chlamydia trachomatis*. It can cause cervicitis in women and urethritis and proctitis in both men and women. Chlamydial infections in women can lead to serious consequences including pelvic inflammatory disease (PID), tubal factor infertility, ectopic pregnancy, and chronic pelvic pain.

Lymphogranuloma venereum (LGV), another type of STI caused by different serovars of the same bacterium, occurs commonly in the developing world, and has more recently emerged as a cause of outbreaks of proctitis among men who have sex with men (MSM) worldwide

Chlamydia is transmitted through sexual contact with the penis, vagina, mouth, or anus of an infected partner. Ejaculation does not have to occur for chlamydia to be transmitted or acquired. Chlamydia can also be spread perinatally from an untreated mother to her baby during childbirth, resulting in ophthalmia neonatorum (conjunctivitis) or pneumonia in some exposed infants.

Incubation period is 1-60 days (average 1-14 days). Infected people will remain infectious for months or years when left untreated.

**Clinical Presentation**

Chlamydia is known to be asymptomatic in 75% of women and 50% of men.

| | | |
|---|---|---|
| **Men** | Urethritis<br>Proctitis<br>Epididimytis | Dysuria, urinary frequency/urgency, mucoid or watery urethral discharge, painful ejaculation, haematuria, lower back pain, rectal pain, discharge and/or bleeding unilateral testicular pain, tenderness and swelling |
| **Women** | Urethritis<br>Cervicitis<br>PID<br>Proctitis | Dysuria, pyuria, urinary frequency<br>Unusual vaginal discharge, dyspareunia, contact bleeding, LAP, abnormal vaginal bleeding<br>lower back pain, rectal pain, discharge and/or bleeding |
| **Children** | Conjunctivitis<br>Pneumonia | Purulent eye discharge, red eyes<br>Atypical pneumonia presentation |

**Diagnosis**

Because Chlamydia is commonly asymptomatic, laboratory testing is required for diagnosis of infected individuals. C. trachomatis can be diagnosed by culture, direct immunofluorescence assays (DFAs) and enzyme linked immunosorbent assays (ELISA), but nucleic acid amplification test (NAATs) are preferred due to its superior performance characteristics.
However in Fiji, treatment is guided syndromically.

**Treatment**

The current treatment guideline provides nine treatment recommendations for genital infections and LGV caused by C. trachomatis. The recommendations summarized below apply to adults, adolescents (10-19years of age), people living with HIV and key populations, including sex workers, MSM and transgender persons. Specific recommendations have also been added for genital

chlamydia infection in pregnant women and for prophylaxis treatment for ophthalmia neonatorum caused by C. trachomatis.

| Condition | Recommended Treatment |
|---|---|
| **Uncomplicated genital Chlamydia** | **Adults and Children > 8years or > 45g:**<br>**Azithromycin** 1g PO single dose<br><br>**OR**<br><br>**Doxycycline** 100mg PO BD 7days<br><br><u>Alternative</u>:<br>Tetracycline 500mg PO Q6 hourly 7days<br>Erythromycin 500mg PO Q6 hourly 7days<br>Ofloxacin 200-400mg PO BD 7days<br><br>**Children <8 years or <45kg:**<br>**Erythromycin** 12.5mg/kg PO Q6 hourly for 7days<br><br>*Tetracycline, Erythromycin and Ofloxacin are contraindicated in pregnancy.* |
| **Anorectal Chlamydia infection** | **Doxycycline** 100mg PO BD for 7 days |
| **Genital Chlamydia infection in pregnant women** | **Azithromycin** 1g PO single dose<br><br>**OR**<br><br>**Erythromycin** 500mg Q6 hourly 7days<br><br>*Azithromycin is the first choice of treatment. Treatment with Azithromycin provided as a single dose, may result in better adherence and therefore, better outcomes.* |
| **Lymphogranuloma venereum (LGV)** | **Doxycycline** 100mg PO BD for 21days |
| **Ophthalmia Neonatorum** | In neonate with Chlamydial conjunctivitis:<br>**Azithromycin** 20mg/kg/day PO OD for 3days |
| **Chlamydial Ophthalmia Neonatorum prophylaxis** | **Tetracycline** eye ointment prophylaxis<br><br>**OR**<br><br>**Erythomycin** 0.5% eye ointment<br><br>If symptomatic: give antibiotic treatment |

# Syphilis

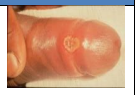
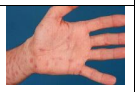
Syphilis is a systemic infection caused by the spirochaete, *Treponema pallidum*. Syphilis infections are typically spread through sexual contact (acquired) with infectious lesions of the mucous membranes or abraded skin, via blood transfusion, or transplacentally from an infected pregnant woman to her fetus. Men who have sex with men (MSM) have a higher risk of contracting syphilis.

The incubation period for *T. pallidum* is 10-90 days (average: 21 days) with many individuals identified only as a result of blood tests, in either the acute or latent phase. Patients with untreated syphilis are usually infectious up to 24 months (rare after 12 months).

The symptoms of syphilis progress in stages known as primary, secondary, latent, and tertiary. Each stage has its own unique set of symptoms that can last for weeks, months, or even years.

**Classification of Syphilis and Clinical Features**

Acquired Syphilis is classified into early and late Syphilis with the following clinical features:

| Stages | | Clinical Features |
|---|---|---|
| **Early Syphilis** | Primary | First stage of the disease - Small painless open sore or ulcer (chancre) on the genitals, mouth, skin, or rectum that heals by itself in 3 to 6 weeks.<br>  <br>Enlarged lymph nodes in the area of the sore.<br>➢ sores can also appear on the fingers or buttocks<br>➢ swollen lymph nodes in the neck, groin, or armpits |
| | Secondary* | This stage typically starts with the development of a rash on one or more areas of the body.<br>  <br>Rashes can appear when the chancre is healing or several weeks after the chancre has healed:<br>➢ rough, red or reddish brown spots on the palms of both hands or soles of the feet.<br>➢ large gray or white lesions in the mouth, anus, armpit, or groin<br>May present also as:<br>➢ fatigue, headaches, sore throat, swollen lymph nodes, hair loss, muscle aches |
| | Early Latent | Infection of < 2 years duration. More infectious and respond better to treatment. No clinical manifestations. |
| Late Syphilis | Late latent | Infection of >2 years duration. No clinical manifestations. |
| | Tertiary | Tertiary syphilis is very rare. It can cause severe health complications that affect multiple organ systems.<br>Gummatous, neurosyphilis and cardiosyphilis<br>May present as:<br>➢ meningitis, stroke, dementia<br>➢ blindness<br>➢ heart problems<br>➢ numbness |

** Symptoms and signs of secondary Syphilis can spontaneously resolve even without treatment*

**Laboratory diagnosis**

Syphilis diagnosis is based on the patient's history, physical examination, laboratory testing and sometimes radiology. The available laboratory tests for diagnosis of syphilis include

i. direct detection methods (i.e. darkfield microscopy, direct fluorescent antibody test and nucleic acid amplification test),
ii. serology (treponemal and non-treponemal tests), and
iii. examination of cerebrospinal fluids.

There are two types of serological test for syphilis: non-treponemal and treponemal.

- A presumptive diagnosis of syphilis requires a positive result from at least one of these types of tests.
- A confirmed diagnosis requires positive results from both types of serological tests (refer to Annex A for Syphilis Testing Algorithm).
- Serum is the specimen of choice for serological testing.
- Cerebrospinal fluid is used to diagnose congenital and tertiary syphilis and when neurological symptoms are present.

The most widely available non-treponemal tests are the microscopic Venereal Disease Research Laboratory (VDRL) and the Rapid Plasma Reagin (RPR) tests. These tests detect anti-lipid immunoglobulin M or G (IgM or IgG) antibodies.

RPR (Rapid Plasma Reagin Test):

- This is a non-treponemal test (non-specific test for Syphilis).
- The result of this test is usually measured through a process of dilution of a blood sample. This quantitative 'titres' or dilution can be used to assess the activity of infection and response to treatment.
- Generally, a higher 'titre' or 'dilution' is usually an indication of recent acquisition or infectivity.
- Non-treponemal test may be negative for up to 4 weeks after the lesion of primary syphilis first appears and can be negative in late latent syphilis.
- Additionally in primary and secondary syphilis, this tests may be false negative due to a prozone reaction (i.e. interference by high concentrations of antibodies in a specimen, which can be uncovered with dilution and retesting).
- A negative non-treponemal test at 3 months after the onset of the primary chancre excludes the diagnosis of syphilis.

TPHA (Treponema Pallidum Haemagglutination Assay): This is a specific test for Syphilis (*T.pallidum*) and Yaws (*T.pertenue*)*. Results are reported as being either reactive or non-reactive indicating the presence of an infection. TPHA remains positive for life in most cases regardless of treatment.

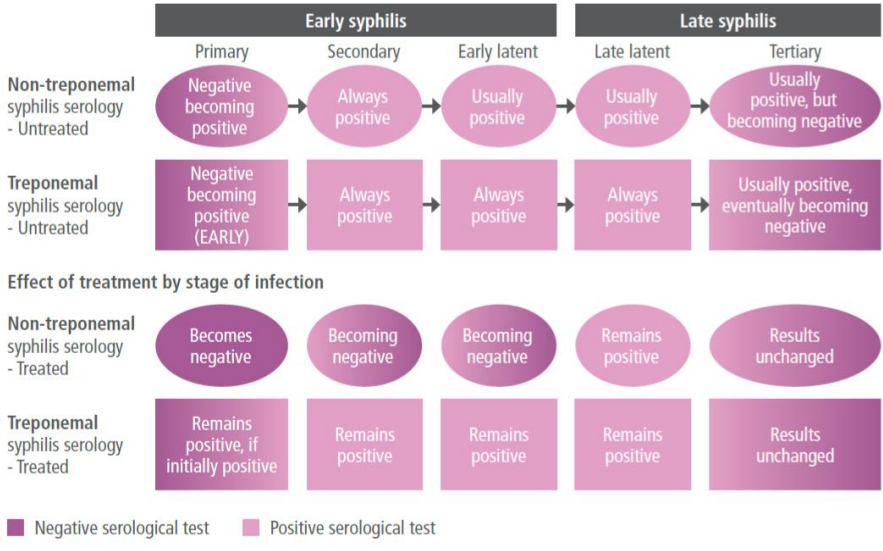
**Additional consideration for interpretation of results**

| Status | RPR | RPR | TPHA |
|---|---|---|---|
| **Active infection** | + | >1:8 | + |
| **Latent syphilis** | + | Often < 1:4 | + |
| **False positive** | + | Usually <1:4 | - |
| **Successful treatment** | +/- | 2 titres decrease (fourfold drop) e.g. 1:16 to 1:4 | + |

| | | | |
|---|---|---|---|
| **Continued active infection** | + | 1:8 to 1:32 | + |

Titres are expected to decrease following effective treatment and increase in untreated active infection. A four-fold change or higher in titre, equivalent to a change of at least two dilutions (e.g. from 1:16 to 1:4 for effective positive response to treatment, or from 1:8 to 1:32 for continued active infection), is considered a significant difference between two sequential tests using the same method (e.g. VDRL or RPR) and preferably by the same laboratory. Titres that differ by only one dilution (e.g. 1:8 versus 1:4 or 1:2 versus 1:1) are not considered significant and may only represent differences in laboratory interpretation).

**Reactivity of serological tests by stage of syphilis and effect of treatment**




**Recommended treatment**

***Early Syphilis*** **(primary, secondary or early latent <2 years duration):**

| Population | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Adults, adolescents and people living with HIV** | **Benzathine Penicillin** 2.4million units IMI as a single dose | Procaine Penicillin G 1.2million units IMI OD × 10-14 days<br><br>**OR**<br><br>Doxycycline 100mg PO BD ×14 days<br><br>**OR**<br><br>Ceftriaxone 1g IMI daily for 10-14days. |

| | | |
|---|---|---|
| | | *(Doxycycline is preferred over ceftriaxone due to its lower cost and oral administration.) Doxycycline is contraindicated in pregnancy.* |
| **Pregnant Women[c]** | **Benzathine Penicillin** 2.4million units IMI as a single dose | Procaine penicillin G 1.2 million units IMI OD × 10 days<br><br>**OR**<br><br>Erythromycin 500mg PO QID ×14 days (to be used with caution – use only when penicillin is out of stock or penicillin desensitization is not possible)<br><br>**OR**<br><br>Ceftriaxone 1g IMI OD x 10-14days,<br><br>**OR**<br><br>Azithromycin[b] 2g PO as a single dose |

[a] *Doxycycline should not be used in pregnant women*
[b] *Azithromycin is an option in special circumstances only when local susceptibility to Azithromycin is likely*
[c] *Although erythromycin and azithromycin treat the pregnant women, they do not cross the placental barrier completely. As a result the foetus is not treated. It is therefore necessary to treat the newborn infant soon after delivery.*

***Late latent Syphilis*** **(infection >2 years duration without evidence of treponemal infection)**:

| Population | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Adults, adolescents and people living with HIV** | **Benzathine penicillin** 2.4 million units IMI once weekly × 3 consecutive weeks<br><br>*The interval between the consecutive doses should not exceed 14 days* | Procaine Penicillin G 1.2 million units IMI OD × 20 days<br><br>**OR**<br><br>Doxycycline[a] 100mg PO BD × 30 days |
| **Pregnant Women[b]** | **Benzathine penicillin** 2.4 million units IMI once a week × 3 consecutive weeks | Procaine penicillin G 1.2 million units IMI OD × 20 days<br><br>**OR**<br><br>Erythromycin 500mg PO QID × 30 days |

[a] *Doxycycline should not be used in pregnant women*
[b] *Although erythromycin treats the pregnant woman, they do not cross the placental barrier completely. As a result the foetus is not treated. It is therefore necessary to treat the newborn infant soon after delivery (refer to Congenital Syphilis section for treatment of infants).*

Pregnant women should be screened for syphilis (RPR & TPHA) during first visit or booking at ANC. It should be repeated during 28 to 32 weeks and during delivery in areas with high prevalence rate and for women at high risk.

**Note:** Any woman who delivers a stillbirth after 20 weeks age of gestation should be tested for Syphilis. No infant should leave the hospital without the maternal serologic status having been determined at least once during pregnancy.

Diagnosis:

- Pregnant women with positive RPR and TPHA tests should be considered infected unless there is documented history of adequate treatment in the patient's folder and a series of RPR titres show a decline (of at least fourfold).
- In patients with Syphilis of more than 2 years duration, the patient will likely become **serofast** (that is, maintain a constant low antibody titre, usually <1:4) and do not require treatment.
- Persistent higher titre antibody tests usually indicate re-infection and require treatment.

**Neurosyphilis [CNS disease can occur at any stage of Syphilis]**

Neurosyphilis is a disease of the coverings of the brain, the brain itself, or the spinal cord. It can occur in people with syphilis, especially if they are left untreated. Neurosyphilis is considered different from syphilis because it affects the nervous system, while syphilis is a sexually transmitted disease with different signs and symptoms.
There are five types of neurosyphilis:

i. asymptomatic neurosyphilis - means that neurosyphilis is present, but the individual reports no symptoms and does not feel sick.

ii. meningeal neurosyphilis - can occur between the first few weeks to the first few years of getting syphilis. Individuals with meningeal syphilis can have headache, stiff neck, nausea, and vomiting. Sometimes there can also be loss of vision or hearing.

iii. meningovascular neurosyphilis - causes the same symptoms as meningeal syphilis but affected individuals also have strokes. This form of neurosyphilis can occur within the first few months to several years after infection.

iv. general paresis also known as paralysis progressiva - can occur between 3 – 30 years after getting syphilis. People with general paresis can have personality or mood changes.

v. tabes dorsalis - is characterized by pains in the limbs or abdomen, failure of muscle coordination, and bladder disturbances. Other signs include vision loss, loss of reflexes and loss of sense of vibration, poor gait, and impaired balance. Tabes dorsalis can occur anywhere from 5 – 50 years after initial syphilis infection.

The clinical picture of neurosyphilis has substantially changed in the past two decades. General paresis and tabes dorsalis are now less common than the other forms of neurosyphilis because of advances made in prevention, screening, and treatment.

Leading agencies on communicable disease control such as the Center for Disease Control and Prevention (CDC) emphasize that more and more cases of neurosyphilis can manifest as meningitis, ischemic stroke, especially in people under 40 years of age, rapidly progressive dementia, especially in young patients, impaired proprioception, and hearing and sight disturbances, especially unexplained uveitis or sudden hearing loss which cannot be explained otherwise. It also recommends searching for the above-mentioned neurological manifestations in patients with syphilis. Performing syphilis testing in patients being admitted to neurology departments due to the above-mentioned neurological symptoms is also highly recommended.

People with HIV/AIDS are at higher risk of developing neurosyphilis

**Diagnosis of Neurosyphillis**

The standard serologic test for cerebrospinal fluid (CSF) is VDRL. The other non-treponemal tests such as RPR and USR (Unheated Serum Reagin) are not recommended for CSF. VDRL in CSF is highly specific. A positive result in the absence of CSF contamination with blood, confirms the diagnosis. However, a negative result does not exclude neurosyphilis. CSF-VDRL may be negative in 30–70% of neurosyphilis cases.
In the cases of the negative CSF VDRL, other tests can be taken into consideration such as treponemal assays, CSF cell count, protein and glucose levels. Treponemal tests performed in CSF (TPHA, FTA-ABS, EIA) are highly sensitive but nonspecific for the neurosyphilis diagnosis.

> This means that the negative results exclude neurosyphilis, but the positive result does not confirm the diagnosis.

The CSF white cell count cutoff values which may suggest neurosyphilis have been established on:

- $\geq 5$ cells/mm$^3$ in immunocompetent patients with syphilis and,
- $\geq 20$ cells/mm$^3$ in HIV-positive patients.
- Neurosyphilis may be also associated with the CSF protein concentration higher than 45 mg/dl and the CSF glucose levels of less than 2.72 mmol/l
- So far there has been no consensus on how many of the above-mentioned additional criteria must be stated for neurosyphilis diagnosis when the CSF VDRL is negative.
- However, most experts consider that pleocytosis (i.e. elevated CSF cell count) is a necessary condition in all instances.

Duration of treponemicidal concentration of procaine penicillin after a single dose is not precisely defined. There is however no doubt that it is significantly shorter. It has been suggested that it may be even less than 24 h.

**Treatment of Neurosyphillis**

Penicillin level of above 0.018 mg/l in blood and CSF should be considered treponemicidal. Duration of the treponemicidal level should be at least 7–10 days to cover a number of division times of treponemes. Benzathine penicillin at a single dose of 2.4 million units provides a treponemicidal concentration for up to 3–4 weeks (21–23 days).

| Population | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Neurosyphillis** | **Benzathine penicillin** at a single dose of 2.4 million units IMI provides a treponemicidal concentration for up to 3–4 weeks (21–28 days)<br><br>**OR**<br><br>**Aqueous crystalline penicillin G** 18–24 million units per day, administered as 3–4 million units IV every 4 hours or continuous infusion for 10–14 days | Procaine penicillin G 2.4 million units IMI once daily<br><br>**PLUS**<br><br>Probenecid 500mg orally four times a day, both for 10–14 days |

**Management of sexual partner(s)**

Generally, any person who has been exposed sexually to a person diagnosed with Syphilis should be clinically and serologically evaluated. Provided below is a guide for evaluation and treatment with the following recommendations:

| Status | Recommendations |
|---|---|
| Persons who were exposed within the 3 months preceding the diagnosis of primary, secondary or early latent Syphilis to a sex partner who might be infected, even if seronegative: | Such persons should be treated presumptively. |
| Persons who were exposed >3 months before the diagnosis of primary, secondary or early latent Syphilis to a sex partner: | Such persons should be treated presumptively if serologic test results are not available immediately and the opportunity for follow-up is uncertain. |
| For purposes of partner notification and presumptive treatment of exposed sex partners: | Patients with Syphilis of unknown duration who have high non-treponemal serologic test titres (i.e.>1:32) can be assumed to have early Syphilis. |
| Long term sex partners of patients who have latent Syphilis should be evaluated clinically and serologically for Syphilis: | Treatment on the basis of the investigation and findings. |
| To assist with the identification of at-risk partners, the following provides the guide for the time periods before treatment: | ➢ Three months plus duration of symptoms for primary Syphilis.<br>➢ Six months plus duration of symptoms for secondary Syphilis.<br>➢ One year for early latent Syphilis. |

**Continuum of care - Follow up after treatment of syphilis**

It is essential that all patients treated for syphilis receive close clinical and laboratory follow-up to ensure adequacy of treatment. Follow-up serology is especially important for those patients treated with antibiotics other than penicillin.

**Follow up laboratory investigation**

Early syphilis: - Repeat RPR at 6- and 12-months interval
Latent syphilis: - Repeat RPR at 6-, 12- and 24-months interval
Patients with HIV infection and those treated on non-penicillin regimen: - Repeat RPR at 3, 6, 9 and 12 months

**Re-treatment** should be considered if:

i. clinical signs or symptoms persist or recur.
ii. there is a sustained fourfold increase in the titre of RPR or VDRL
iii. the initial RPR or VDRL titre fails to show a fourfold decrease within 1 year.

When re-treatment is being considered, a lumbar puncture to exclude neurosyphilis is recommended.

**Congenital Syphilis**

Congenital Syphilis is a multisystem infection transmitted to the foetus through transplacental transmission.

*Early Congenital Syphilis* (birth to <2years): Skin lesions, lymphadenopathy, hepatosplenomegaly, failure to thrive, blood stained nasal discharge (snuffles), perioral fissures, meningitis, choroiditis, hydrocephalus, seizures, mental retardation, osteochondritis and pseudoparalysis.

*Congenital Syphilis of 2 or more years:* Gummatous ulcers, periosteal lesions, paresis, tabes, optic atrophy, interstitial keratitis, sensorineural deafness and dental deformities.

**Treatment of Congenital syphilis**

| Population | Recommended Treatment | Alternative treatment |
|---|---|---|
| Infants with<br>➢ confirmed congenital syphilis or<br>➢ infants who are clinically normal, but whose mothers had untreated syphilis, inadequately treated syphilis (including treatment within 30 days of delivery) or<br>➢ syphilis that was treated with non-penicillin regimens | **Aqueous benzyl penicillin** 50,000 U/kg/dose intravenously for 10 days<br>*First 7 days: 12 hourly*<br>*Week 2 to 4 8: 8-hourly*<br>*From 4 weeks: 6-hourly*<br>*Additional evaluation:*<br>*- CSF: VDRL,Cell count and Protein*<br>*- FBC & differentials*<br>*- Platelet count*<br>***Follow neuroyphilis guideline for management** | Procaine penicillin 50,000 U/kg/day single dose intramuscularly for 10 days<br>*Antimicrobials other than penicillin are not recommended for congenital syphilis unless there is absolutely no other alternate regimen for penicillin-choice.*<br>*History or presumed history of allergy needs desensitization and treated with penicillin whenever possible.* |
| Infants who are:<br>➢ clinically normal and, | The risk of transmission of syphilis to the fetus depends on a number of factors: | Condition:<br>If treatment is to be provided then: |

| | | |
|---|---|---|
| ➢ whose mothers had syphilis that was adequately treated with no signs of reinfection | ➢ maternal titres from non-treponemal tests (e.g. RPR)<br>➢ timing of maternal treatment and<br>➢ stage of maternal infection<br><br>and therefore the offer of treatment is conditional. | **Benzathine penicillin G** 50,000 U/kg/day single dose intramuscularly is an option.<br><br>*Closely monitor infants* |

Infants of mothers treated with drugs other than penicillin during pregnancy should be treated with the above penicillin regimen after birth. Hospitalisation is recommended for all symptomatic babies born to mothers who were seropositive.

Follow-up for neonatal syphilis infection includes:

- Babies should be evaluated every 3 months over the first year of life with serological tests at each visit until the test becomes nonreactive or the titer has decreased fourfold. The infant's titers should decrease by 3 months of age and be nonreactive by 6 months of age.
- In cases of neurosyphilis, ongoing serum and CSF analysis should be done every 6 months until the CSF white cell count is normal and the CSF VDRL is nonreactive. The CSF WCC should decline by 6 months after succesful treatment and all CSF abnormalities should resolve by 2 years after treatment.
- Re-treatment is needed if titers do not fall or clinical signs of disease persist or develop.

**Management of people who have a history of penicillin allergy[1]**

There are no proven alternatives to penicillin that is available for the treatment of neurosyphilis, congenital syphilis, or syphilis in pregnant women. Penicillin is also recommended for persons with HIV infection. People who report to have an allergy to penicillin, 10%–15% of them have a positive skin test suggestive of a penicillin allergy. These people are at a risk for an immunoglobulin E (IgE)-mediated allergic response to penicillin such as urticaria, angioedema, or anaphylaxis (i.e., upper airway obstruction, bronchospasm, or hypotension).

Re-administering penicillin to patients with a history of IgE-mediated hypersensitivity reactions can cause severe immediate reactions. Anaphylactic reactions to penicillin can be fatal, therefore every effort should be made to avoid administering penicillin to penicillin-allergic people unless they undergo induction of drug tolerance (also referred to as "desensitization") to temporarily eliminate IgE-mediated hypersensitivity (refer to Annex C for the Desensitization Protocol). Penicillin skin testing should be performed before desensitization as it can reliably identify people at high risk for IgE-mediated reactions to penicillin. People who report a history of penicillin reaction and who are skin-test negative can receive conventional penicillin therapy, whereas people with positive skin test results should be desensitized before initiating treatment.

[1] CDC. 2015. *Management of Persons Who Have a History of Penicillin Allergy* [Online]. USA: U.S. Department of Health & Human Services. Available: https://www.cdc.gov/std/tg2015/pen-allergy.htm

## Genital Herpes Simplex Virus Infections (HSV-2)

Herpes simplex virus type 1 (HSV-1) primarily causes oral herpes which is not an STI but it can be transmitted to the genitals via oral sex to cause genital herpes.
Herpes simplex virus type 2 (HSV-2) is the primary cause of genital herpes which is usually life-long and recurrent.

The major public health importance of HSV-2 is its potential role in facilitating HIV transmission. A person who has HSV-2 is at a three times the risk of acquiring HIV[2] and a person who has HIV and HSV-2 co-infection is more likely to spread HIV to others[3]. HSV-2 is almost always sexually transmitted. The incubation period of genital herpes is 2 to 12 days but may occur more than 12 months later.

Most people with HSV may have mild unrecognised infections but continue to shed the virus into the genital tract, thus may continue to transmit to another person unknowingly.

**Clinical Features**

**First episode**

After initial infection, chronic HSV-2 infection typically leads to intermittent viral shedding from the genital mucosa even in the absence of symptoms. As a result, HSV-2 is often transmitted by people who are unaware of their infection or who are asymptomatic at the time of sexual contact.
Pain is less severe during recurrences and the lesions heal in 5–10 days without antiviral treatment.

| **First episode** | |
|---|---|
| **Duration** | Features |
| **4-7days** | ➢ Bilateral clusters of erythematous papules,<br>➢ vesicles or ulcerations on the external genitalia, in the perianal region or on the buttocks.<br>➢ This occurs only in 10–25% of primary infections.<br>➢ Patients present with genital pain and itching and 80% of women also report dysuria.<br>➢ Constitutional symptoms: fever, headache, myalgias and malaise.<br>➢ Cervicitis and tender inguinal and femoral lymphadenopathy frequently accompany initial infections. |
| **2-3weeks** | ➢ New lesions appear and existing lesions progress to vesicles and pustules and then coalesce into ulcers before crusting over and healing.<br>➢ Lesions on mucosal surfaces may be ulcerative without initially presenting as vesicles. |
| **Atypical presentation** | ➢ Small erosions and fissures, as well as dysuria or urethritis without lesions.<br>➢ Recurrent episodes - Pain is less severe during recurrences, and the lesions heal in 5–10 days without antiviral treatment |
| **Prodromal period** | ➢ Tingling, paresthesias and pain.<br>➢ Have fewer lesions than the first episode and are usually present unilaterally and without systemic symptoms. |

[2] Kinghorn GR, Abeywickreme I, Jeavons M. Efficacy of combined treatment with oral and topical acyclovir in first episode genital herpes. Genitourin Med. 1986;62(3):186–8.
[3] Nilsen AE, Aasen T, Halsos AM. Efficacy of oral acyclovir in the treatment of initial and recurrent genital herpes. Lancet. 1982;2(8298):571–3.

**For recurrent clinical episode**

Most patients with a first-episode of genital HSV-2 infection will have recurrent episodes of genital lesions. Episodic or suppressive antiviral therapy will shorten the duration of genital lesions. Because many patients benefit from antiviral therapy, options for treatment should be discussed with all patients.
When treatment is started during the prodrome or within 1 day after onset of lesions, many patients who have recurrent disease benefit from episodic therapy. If episodic treatment of recurrences is chosen, the patient should be provided with antiviral therapy, or a prescription for the medication, so that treatment can be initiated at first sign of prodrome or genital lesions.

**For suppressive therapy (> 6 recurrences per year)**

Daily suppressive therapy reduces the frequency of genital herpes recurrences by >75% among patients who have frequent recurrences (i.e. six or more recurrences per year).
Safety and efficacy have been documented among patients receiving daily therapy with acyclovir for as long as 6 years, and with valaciclovir and famciclovir for 1 year.
Suppressive therapy has not been associated with emergence of clinically significant acyclovir resistance among immunocompetent patients.
Suppressive treatment with acyclovir reduces, but does not eliminate, asymptomatic viral shedding. Therefore, the extent to which suppressive therapy may prevent HSV transmission is unknown.

**Herpes in Pregnancy and Neonates**

During the first clinical episode of genital herpes, treat with oral acyclovir. Vaginal delivery in women who develop primary genital herpes shortly before delivery puts babies at risk for neonatal herpes. Babies born to women with recurrent disease are at very low risk. Genital cultures late in pregnancy are poor predictors of shedding during delivery. Careful history and physical examination serve as a guide to the need for caesarean section in mothers with genital herpes lesions.

**Herpes and HIV Co-infection**

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

**Diagnosis**

HSV-2 is often diagnosed clinically. However, laboratory testing is required to differentiate between HSV-1 and HSV-2. When vesicles are not present, laboratory confirmation may be needed to rule out other causes of genital ulcers. Laboratory methods for the diagnosis of HSV-2 include direct detection from lesions and indirect serological methods.

**Treatment**

Antiviral therapy offers clinical benefits such as altering the recurrence of herpes, reduces formation of new lesions, duration of the pain, healing time and viral shedding. Counselling regarding the natural history of the disease, sexual and perinatal transmission, and how to decrease transmission is also integral to herpes management.

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| ***For first clinical episode*** | **Acyclovir** 400mg PO 3X daily for 10 days<br><br>**OR**<br><br>**Acyclovir** 200mg PO 5X daily for 10 days<br><br>**OR**<br><br>**Valaciclovir** 500mg PO 2X daily for 10 days<br><br>➢ **Topical Lignocaine jelly** 2% is a useful adjunct to Acyclovir in managing severe first episodes. It should be applied frequently but not longer than 24 - 36 hours due to risk of sensitization. | *Topical therapy with acyclovir produces only minimal shortening of the duration of symptomatic episodes and is not recommended* |
| ***For recurrent clinical episode*** | **Acyclovir** 400mg PO 3X daily for 5 days<br><br>**OR**<br><br>**Acyclovir** 800mg PO 2X daily for 5 days<br><br>**OR**<br><br>**Acyclovir** 800mg PO 3X daily for 2 days<br><br>**OR**<br><br>**Valaciclovir** 500mg PO 2X daily for 5 days | |
| ***For suppressive therapy ( ≥ 6 recurrences per year)*** | **Acyclovir** 400mg PO BD continuously<br><br>**OR**<br><br>**Valaciclovir** 500mg PO OD continuously | *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.* |
| **Severe Disease** | **Acyclovir** 5-10 mg/kg IV every 8 hours, 5-7 days or until clinical resolution is attained. | |

| | | |
|---|---|---|
| **Treatment for Neonates** | **Acyclovir** 20mg/kg intravenously every 8 hours<br>➢ Skin, Eye & Mouth minimum 14 days<br>➢ Disseminated/CNS minimum 21 days | |
| **Herpes and HIV co-infection** | The recommended regimen in severe herpes simplex lesions with co-infection with HIV is acyclovir 400mg orally 3-5 times daily until clinical resolution is attained. | |

## Lymphogranuloma Venereum

Lymphogranuloma venereum (LGV) is an uncommon sexually transmitted disease (STD) caused by *Chlamydia trachomatis*. LGV is endemic in certain areas of Africa, Southeast Asia, India, the Caribbean, and South America. It is rare in industrialized countries, but in the last 10 years has been increasingly recognized in North America, Europe, and the United Kingdom as causing outbreaks of proctitis among men who have sex with men (MSM).

This condition is characterized by self-limiting genital papules or ulcers followed by painful inguinal and/or femoral lymphadenopathy, which may be the only clinical manifestation at presentation. Lymphogranuloma venereum (LGV) is caused by *Chlamydia trachomatis* serovars L1, L2 or L3.

**Clinical Features**

Tender unilateral inguinal and/or femoral lymphadenopathy
Genital ulcer or papule at site of inoculation (often self-limiting)
Proctocolitis or inflammatory changes of perirectal or perianal lymphatic tissues resulting in fistulas and strictures (in women, and in men who have sex with men)

**Diagnosis**

Diagnosis is by exclusion of other causes of inguinal lymphadenopathy or genital ulcers.

**Treatment**

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Lymphogranuloma venereum** | **Doxycycline** 100mg orally twice daily for 14 days | Not recommended due to lack of evidence surrounding efficacy data |

**Management of sexual partner(s)**

Persons who have had sex with a patient with LGV within the last 30 days before onset of symptoms should be counselled, and asked to be examined and offered the same recommended treatment regimen.

## Granuloma Inguinale (Donovanosis)

This is a genital ulcerative disease caused by the intracellular gram-negative bacterium *Klebsiella granulomatis* (also known as *Calymmatobacterium granulomatis).* This is said to be endemic in some tropical and developing countries like Papua New Guinea, Central Australia and India.

**Clinical Features**

Painless and progressive ulcerative lesions without regional lymphadenopathy. Lesions are highly vascular ["beefy red appearance"] and can bleed easily on contact. Variations may include: hypertrophic, necrotic or sclerotic lesions.
Infection can spread outside the genital region and cause infection in the pelvis, or disseminate to intraabdominal organs, bones or mouth.

**Diagnosis**

The causative organism is very difficult to diagnose.

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Donovanosis** | **Azithromycin** 500mg PO OD for 7 days<br><br>**OR**<br><br>**Azithromycin** 1g PO once weekly for at least 4 weeks, until complete resolution of lesions | **Doxycycline** 100mg PO BD for a minimum of 4 weeks, until complete resolution of lesions |

**Note**,

- that relapse can occur 6-18 months after effective therapy, and may need re-treatment regimen.
- The addition of a parenteral aminoglycoside such as gentamicin should be strongly considered for HIV-infected patients.

**Follow-up**

Patients should be followed clinically until signs and symptoms have resolved.

**Management of sexual partner(s)**

Sex partners of the index patient with Donovanosis within 60 days before onset of patient's symptoms can be counselled, examined and offered treatment.

# Chancroid

Chancroid is a bacterial sexually transmitted disease (STD) caused by infection with *Haemophilus ducreyi*. It is characterized by painful necrotizing genital ulcers that may be accompanied by inguinal lymphadenopathy. It is a highly contagious but curable disease.

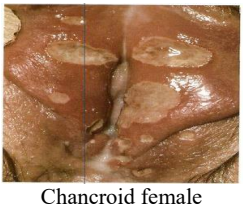
**Clinical Features**

The combination of a painful genital ulcer and tender suppurative inguinal adenopathy suggests the diagnosis of chancroid.
These include:

- presence of multiple, deep painful genital ulcers with ragged undermined edges typically on the prepuce in uncircumcised men and in coronal sulcus in men and on the vulva and less commonly in cervix in women;
- perianal in those engaging in receptive anal intercourse, extra genital lesions (e.g. fingers) may occur as a result of accidental inoculation.

Complications include:

- bubo formation or tender inguinal lymphadenopathy and,
- suppurative inguinal adenopathy and,
- phagedaena or rapidly spreading, necrotic ulceration of the penile tissue.


Chancroid female


Chancroid male

**Diagnosis**

For both clinical and surveillance purposes, a probable diagnosis of chancroid can be made if all of the following criteria are met:

i. the patient has one or more painful genital ulcers;
ii. the clinical presentation, appearance of genital ulcers and, if present, regional lymphadenopathy are typical for chancroid;
iii. the patient has no evidence of *T. pallidum* infection by darkfield examination of ulcer exudate or by a serologic test for syphilis performed at least 7 days after onset of ulcers and
iv. an HSV PCR test or HSV culture performed on the ulcer exudate is negative.

A definitive diagnosis of chancroid requires the identification of *H. ducreyi* on special culture media that is not widely available from commercial sources; even when these media are used, sensitivity is <80%.
Patients with genital ulcers should also be tested for syphilis, herpes, chlamydia and donovanosis and offered HIV testing as it is a risk factor for the acquisition of HIV.

The combination of a painful genital ulcer and tender suppurative inguinal adenopathy highly suggests a diagnosis of chancroid. Other causes of genital ulcers such as syphilis and herpes should also be ruled out.

**Treatment**

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Chancroid** | **Azithromycin** 1g PO as a single dose<br><br>**OR**<br><br>**Ceftriaxone** 500mg in 2ml of 1% lignocaine IMI stat<br><br>**OR**<br><br>**Ciprofloxacin** 500mg PO BD for 3 days | Not recommended. |
| **Ulcerative lesion** | ➢ No special treatment is required.<br>➢ Ulcerative lesions should be kept clean and,<br>➢ Fluctuant lymph nodes should be aspirated as required through the surrounding healthy skin.<br>➢ Incision and drainage or excision of nodes may delay healing and is not recommended. | (From old version of Fiji STI guideline):<br><br>**Podophyllotoxin 0.5%** solution or 0.15% cream or gel<br>➢ twice daily for three days,<br>➢ followed by four days of no treatment,<br>➢ then restart the cycle to a maximum of four times (total volume of podophyllotoxin should not exceed 0.5ml per day)<br><br>*Solution is more suited for external use while cream is suitable for perianal, introital area and under the foreskin.*<br><br>*Use of this treatment in pregnant and lactating women is contraindicated.* |

**Follow up**

Advice patients to refrain from sexual contact for 7 days after treatment is given.
Review patient 7 days after initiating treatment – All patients should be followed up until there is a clear evidence of improvement or cure. In patients infected with HIV, treatment may appear less effective, but this may be due to co-infection with genital herpes or syphilis. Since chancroid and HIV infection are closely associated and therapeutic failure is likely to be seen with increasing frequency, patients should be followed up weekly until there is clear evidence of improvement.

**Management of sexual partner(s)**

Sex partners of index patients with chancroid should be counselled, examined and treated presumptively regardless of whether symptoms of the disease are present, especially if the patient had sex with the partner(s) 2 weeks preceding the patient's onset of symptoms.

## Trichomoniasis (or Trichomonias vaginalis infections)

Trichomoniasis (or "trich") is a very common sexually transmitted disease (STD). It is caused by infection with a protozoan parasite called Trichomonas vaginalis. Although symptoms of the disease vary, most people who have the parasite cannot tell they are infected.

**Clinical features**

In women, majority may be asymptomatic, but some may present with an:

- offensive, frothy vaginal discharge - A change in their vaginal discharge (i.e., thin discharge or increased volume) that can be clear, white, yellowish, or greenish with an unusual fishy smell. Trichomoniasis can cause a foul-smelling vaginal discharge.
- vulvar itching and
- dyspareunia (pain during sexual intercourse) and
- painful urination.

Men who have trichomoniasis typically have no symptoms. Some may present with non-gonococcal urethritis or urethral discharge and/or dysuria.

- Itching or irritation inside the penis;
- Burning after urination or ejaculation;
- Discharge from the penis

Pregnant women who have trichomoniasis might be at higher risk of delivering their babies prematurely.

**Diagnosis**

Motile, flagellated protozoal organisms in either a vaginal wet preparation or in specific culture medium. Trichomonads are not visible in gram-stained smears. Trichomonads may sometimes be seen in Papanicolaou-stained cervical cytology smears, but this test should not be used as a substitute for the specific investigations described above.

**Treatment**

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Trichomoniasis** | **Metronidazole** 2g PO in a single dose (best option for **pregnant women**),<br><br>**OR**<br><br>**Tinidazole** 2g PO in a single dose | Metronidazole 400mg or 500mg PO BD for 7 days<br><br>**OR**<br><br>Tinidazole 500mg PO BD for five days.<br><br>***No alcohol consumption up to 24 hours after taking the last dose of medication.*** |
| | *Asymptomatic women with trichomoniasis should be treated with the same regimen as symptomatic women.* | *Patients taking metronidazole or other imidazoles should be cautioned not to consume alcohol while they are taking the drug and up to 24 hours after taking the last dose.* |

| | | |
|---|---|---|
| **Trichomoniasis in pregnancy** | **Metronidazole in the first trimester is <u>not recommended.</u>** | Metronidazole can be used during the **second and third** trimesters.<br><br>The minimum effective dose (2g PO in a single dose) should be used. |
| **Patients not cured with the repeated course of metronidazole** | **Metronidazole** 2g PO daily, together with 500 mg applied intravaginally each night for 3-7 days.<br><br>*Vaginal preparations of metronidazole are available in many parts of the world, but are only recommended for the treatment of refractory infections, not for the primary therapy of trichomoniasis.* | An alternative regimen consists of 400mg or 500mg metronidazole PO BD for 7 days. |
| **Neonatal infections** | No treatment needed, self limiting. | *Infants with symptomatic trichomoniasis or with urogenital colonization persisting past the fourth month of life should be treated with metronidazole 5mg/kg PO 3 times daily for 7 days* |
| **Trichomonas vaginalis urethritis** | **Metronidazole** 400mg or 500 mg PO BD for 7 days | Tinidazole 500mg PO BD for 5 days. |

**Management of sexual partner(s)**

All sexual partners should be notified and treated, and patients should be advised against sexual intercourse until both the index patient and the partner(s) are treated and are asymptomatic. Trichomoniasis is frequently asymptomatic in men but is increasingly recognized as a cause of symptomatic non-gonococcal, non-chlamydial urethritis.

**Follow Up**

If symptoms persist, patients should be asked to return. Reinfection should be carefully ruled out. Patients who may not fully respond to the initial treatment may do well with a repeat course for seven days. To prevent reinfection with the organism that causes trichomoniasis, both partners should be treated.

## Candidiasis

Vulvo-vaginal candidiasis usually is not acquired through sexual intercourse. Although treatment of sexual partners is not recommended it may be considered for women who have recurrent infection. A minority of male sex partners may have balanitis, which is characterized by erythema (redness) of the glans penis.

### Clinical Features

Non-offensive "curd or stale milk-like" vaginal discharge, vulval itching and soreness. Clinical examination may reveal vulval erythema (redness) or excoriations and vulval oedema.

### Diagnosis

*C. albicans* is isolated on fungal culture. Microscopy: wet preparation (saline, 10% KOH) or Gram stain of vaginal discharge demonstrates yeasts or pseudohyphae. *C. albicans* is also detected in Pap smears.

### Treatment

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Vulvovaginal candidiasis** | **Miconazole or clotrimazole** 200mg intravaginally daily for 3 days<br><br>**OR**<br><br>**Clotrimazole** 500mg intravaginally as a single dose<br><br>**OR**<br><br>**Fluconazole** 150mg PO as a single dose<br><br>*Diabetic and recurrent to go on Fluconazole* | Nystatin 100,000 IU intravaginally daily for 14 days |
| **Vulvovaginal candidiasis in pregnancy** | Only topical azoles should be used to treat pregnant women.<br><br>Of those treatments that have been investigated for use during pregnancy, the most effective are<br>➢ miconazole,<br>➢ clotrimazole,<br>➢ butoconazole and,<br>➢ terconazole | Predisposing factors such as:<br>➢ antibiotic use,<br>➢ the use of antiseptic/antibiotic vaginal preparations or, vaginal douching be reduced or eliminated.<br><br>Other underlying factors for recurrent vulvovaginal candidiasis include: uncontrolled diabetes mellitus, immunosuppression and corticosteroid use.<br><br>*Simultaneous treatment of a rectal focus with oral nystatin or* |

| | | |
|---|---|---|
| | | *fluconazole is not useful in preventing recurrences.* |
| **Vulvovaginal candidiasis and HIV infection** | Prolonged treatment is generally required, and chronic suppressive therapy is frequently employed. | *Candidiasis at several sites, including the vulva and vagina, is an important correlate of HIV disease. It is often quite severe and frequently relapses.* |
| **Balanoposthitis** | Topical application of a nystatin or clotrimazole lotion of cream twice daily for 7 days. | |

**Management of sexual partner(s)**

Vulvovaginal Candidiasis is not usually acquired through sexual intercourse thus treatment of sex partners is not recommended but may be considered in women who have recurrent infection. A minority of male sex partners might have balanitis, which is characterized by erythematous areas on the glans penis associated with pruritus or irritation. These men benefit from treatment with topical antifungal agents Miconazole cream 2% applied twice daily for 7 days to relieve the symptoms.

**Follow up**

Patients should be instructed to return for follow-up visits only if symptoms persist or recur within 2 months of onset of initial symptoms. If a patient presents with repeated severe forms of Candidiasis, it is highly recommended for the patient to undergo HIV Testing Services.

## Bacterial Vaginosis (BV)

Bacterial vaginosis (BV) is a clinical syndrome that results from replacement of normal hydrogen peroxide-producing *Lactobacillus sp*. in the vagina by high concentrations of anaerobic bacteria such as Gardnerella *vaginalis* and *Mycoplasma hominis*. The cause of the microbial alteration is not fully understood, BV is an endogenous reproductive tract infection usually associated with the use of antiseptic/antibiotic vaginal preparations or vaginal douching.

Treatment of sexual partners has not been demonstrated to be of benefit. Predisposing factors such as the use of antiseptic/antibacterial vaginal preparations and vaginal douching should be reduced or eliminated in someone presenting with BV. The relationship between altered flora and the acquisition of HIV is yet to be established.

There is evidence that BV is associated with an increased incidence of adverse pregnancy outcomes (e.g. premature rupture of membranes, preterm delivery and low birth weight). Symptomatic pregnant women should be treated, and those with a history of previous pre-term delivery should be screened to detect asymptomatic infections. Pregnant women with recurrence of symptoms should be re-treated. Screening of asymptomatic pregnant women without a prior history of preterm delivery is not recommended.

**Clinical Features**

Homogenous white non-inflammatory discharge, smoothly coats the vaginal walls. “Fishy odour” of vaginal discharge before or after adding 10% KOH.

**Diagnosis**

Presence of clue cells seen by microscopy, pH of vaginal discharge > 4.5.

**Treatment**

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Bacterial vaginosis** | **Metronidazole** 400mg or 500mg PO BD for 7 days | Metronidazole 2g PO as a single dose<br><br>**OR**<br><br>Clindamycin 2% vaginal cream, 5g intravaginally at bedtime for 7 days<br><br>**OR**<br><br>Metronidazole 0.75% gel, 5g intravaginally BD for 5 days<br><br>**OR**<br><br>Clindamycin 300mg PO BD for 7 days |
| **Bacterial Vaginosis** | **Metronidazole** 200mg or 250mg PO 3 times daily for 7 days, after the first trimester | Metronidazole 2g PO as a single dose<br><br>**OR** |

| | | |
|---|---|---|
| **in Pregnancy** | Metronidazole 2g PO as a single dose, if treatment is imperative during the first trimester of pregnancy (see text above)<br><br>*Metronidazole is not recommended for use in the first trimester of pregnancy, but it may be used during the second and third trimesters. If treatment has to be given during the first trimester, then in order to reduce the risks of any adverse effects, lower doses are recommended.* | Clindamycin 300mg PO BD for 7 days<br><br>**OR**<br><br>Metronidazole 0.75% gel, 5g intravaginally BD for 7 days |
| **Bacterial vaginosis and surgical procedures** | **Metronidazole** 400mg or 500mg PO BD for 7 days | *Women with bacterial vaginosis, scheduled to undergo reproductive tract surgery or therapeutic abortion, should receive treatment with metronidazole.* |

Patients taking metronidazole should be cautioned not to consume alcohol while they are taking the drug and up to 24 hours after taking the last dose

**Follow-up**

Patients should be advised to return if symptoms persist as re-treatment may be needed.

## Pelvic Inflammatory Disease

Pelvic inflammatory disease (PID) refers to infections of the female upper genital tract - the uterus, fallopian tubes, ovaries or pelvic cavity. This includes endometritis, salpingitis, tubo-ovarian abscess and pelvic peritonitis.

Lower abdominal pain in women is usually defined as any discomfort or pain in the abdominal region below the umbilicus. It may be caused by various conditions such as menstrual pain, irritable bowel syndrome, appendicitis, ectopic pregnancy and PID among others.

All sexually active women presenting with lower abdominal pain should be carefully evaluated for pelvic inflammatory disease. In addition, routine bimanual and abdominal examination and if possible, speculum examination should be carried out on all women with presumptive STI.

PID is highly probable when one or more of the above clinical manifestations are seen in a woman with adnexal tenderness, evidence of lower genital tract infection and cervical excitation. It can lead to generalized peritonitis and ectopic pregnancy which are potentially fatal conditions.

Clinical manifestations suggestive of PID include lower abdominal pain, dyspareunia (pain during sexual intercourse), vaginal discharge, meno-metrorrhagia (bleeding between menstrual periods), dysuria, fever and sometimes nausea and vomiting. Consider PID in all cases of abdominal tenderness and pelvic pain in female even in the absence of fever.

Referral for further assessment or hospitalization of patients with acute PID should be seriously considered when:

- the diagnosis is uncertain;
- surgical emergencies such as appendicitis and ectopic pregnancy cannot be excluded;
- a pelvic abscess is suspected;
- severe illness precludes management on an outpatient basis;
- the patient is pregnant;
- the patient is unable to follow or tolerate the outpatient regimen; or
- the patient has failed to respond to outpatient treatment.

Recommended **Outpatient** Treatment Options for Pelvic Inflammatory Disease

| Condition | First choice<br>Choose one from each box (= 3 drugs) | Effective substitutes |
|---|---|---|
| **Gonorrhoea** | **Ceftriaxone** 250mg IMI as a single dose (for sub divisional/divisional hospitals and hub centres)<br><br>**OR**<br><br>**Cefixime** 400mg PO as a single dose | AAP (Amoxicillin 2.5g plus Augmentin 1g plus Probenecid 1g PO as a single dose); then, Amoxicillin 500mg PO 3 times daily for 7 days.<br><br>Alternatively, where amoxycillin + clavulanate is not available, use:<br><br>*Amoxycillin 3g PO as a single dose*<br><br>***PLUS***<br><br>*Probenecid 1g PO as a single dose* |
| **Chlamydia** | **Doxycycline** 100mg PO BD for 14 days | Doxycycline 100mg PO BD for 14 days |

| | | |
|---|---|---|
| | **OR**<br><br>**Azithromycin** 1g PO as a single dose<br><br>**PLUS**<br><br>**Azithromycin** 1g PO as a single dose 1 week later | **OR**<br><br>Azithromycin 1g PO as a single dose<br><br>**PLUS**<br><br>Azithromycin 1g PO as a single dose 1 week later |
| **Anaerobes** | **Metronidazole** 400mg or 500mg PO BD for 14 days | Metronidazole 400mg or 500mg PO BD for 14 days |

Recommended **Inpatient** Treatment Options for Pelvic Inflammatory Disease

| **Condition** | **Option 1**<br>**Choose one from each box (= 3 drugs) and follow with oral outpatient therapy below** | **Option 2**<br>**Commonly available. Give all 3 drugs followed by oral outpatient therapy below** |
|---|---|---|
| **Gonorrhoea** | **Ceftriaxone** 2g IV once a day | Ampicillin 2g IV or IMI as a single dose, then 1g every 6 hours<br><br>**PLUS**<br><br>Gentamicin 4 -7 mg/kg body weight by IMI or IV injection once daily<br><br>**PLUS**<br><br>Metronidazole 500mg in 100ml by intravenous infusion every 12 hours OR metronidazole 400mg or 500mg PO or PR 12hourly |
| **Chlamydia** | **Azithromycin** 500mg IV daily | |
| **Anaerobes** | **Metronidazole** 500mg IV twice daily | |

***Note:***
*For both options, therapy should be continued until at least 2 days after the patient has improved and should then be followed by Doxycycline 100 mg orally twice daily, plus Metronidazole 400 mg orally twice daily for a total of 14 days.*

*Inpatient treatment for PID should be guided by blood culture and sensitivity testing, if possible, taken before starting the empirical treatment.*

## Anogenital Warts or Venereal Warts (Condyloma acuminata)

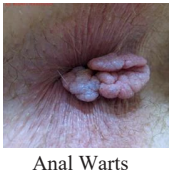
Venereal warts are caused by human papilloma virus (HPV). There are over 100 subtypes of HPV, of which 30 to 40 can be sexually transmitted. Most do not cause significant disease in humans. However, some subtypes – notably types 16 and 18, 31 and 33 – have been confirmed to cause cervical, rectal and penile cancer, respectively. Most anogenital warts are caused by HPV 6 and 11.

HPV is spread through direct skin-to-skin contact during oral, genital or anal sex with an infected partner. The viral particles are able to penetrate the skin and mucosal surfaces through microscopic abrasions. Once cells are invaded by HPV, a latent (quiet) period of months to up to three years may occur.

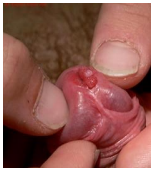
> Patients with external anal warts should also be examined for intra-anal warts by digital per rectal examination or standard anoscope. For women with cervical warts, refer for evaluation to exclude cervical cancer must be performed before initiating treatment.

**Clinical Features**

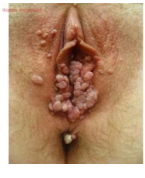
Small, flesh-coloured or grey swellings in the skin of genital area, perianal area, mouth, urethral meatus or cervix. Some symptoms include rectal bleeding after passage of stools with anal lesions, itching or discomfort in the genital area, bleeding with intercourse in vaginal and rectal warts. Several warts close together can take on a cauliflower shape.



Anal Warts



Penile Wart



Vulvar Warts

**Treatment:**

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Venereal warts** | **Podophyllotoxin** 0.5% solution or 0.15% cream or gel<br>➢ twice daily for three days,<br>➢ followed by four days of no treatment,<br>➢ then restart the cycle to a maximum of four times (total volume of podophyllotoxin should not exceed 0.5ml per day)<br><br>**OR**<br><br>**Imiquimod 5% cream**<br>➢ 3 times a week at bed time on alternate days until resolution (usually up to16 weeks).<br>➢ Wash after 6 – 10 hours of application.<br><br>**OR**<br><br>**Trichloroacetic acid (TCA) (80-90%)**<br>➢ applied carefully to the warts avoiding normal tissue,<br>➢ followed by powdering of the treated area with talc or sodium bicarbonate (baking soda) to remove unreacted acid.<br>➢ Repeat the application as 4 days on then 4 days off until the warts disappear. | *Use of this treatment in pregnant and lactating women is contraindicated.* |
| **Warts - Physical removal of warts by Provider** | **Cryotherapy** with liquid nitrogen, solid carbon dioxide, or a cryoprobe.<br>Repeat applications every 1-2 weeks.<br>(Cryotherapy is non-toxic, does not require anaesthesia and, if used properly, does not result in scarring.)<br><br>**OR**<br><br>**Electrosurgery**<br><br>**OR**<br><br>**Surgical removal** | |
| **Vaginal warts** | **Cryotherapy** (with liquid nitrogen)<br><br>**OR**<br><br>**Podophyllotoxin** 0.5% solution or 0.15% cream or gel (allow to dry before removing speculum)<br><br>**OR**<br><br>**TCA or BCA** (80-90%) | |
| **Cervical warts** | Management should include consultation with an expert Pap smear | *Treatment of cervical warts should not be started until the* |

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|---|---|---|
| | No TCA or podophyllotoxin | *results from a cervical smear test are known.*<br><br>*Most experts advise against the use of podophyllotoxin or trichloroacetic acid for cervical warts.*<br><br>*One of the alternative therapies listed above should therefore be used.* |
| **Meatal (or Urethral) warts** | **Cryotherapy**<br><br>**OR**<br><br>**Podophyllotoxin** 0.5% solution or 0.15% cream or gel | Accessible meatal warts may be treated with podophyllotoxin 0.5%<br><br>Great care should be taken to ensure that the treated area is dried before contact with normal opposing epithelial surfaces is allowed. |
| | Urethroscopy is necessary to diagnose intra-urethral warts, but they should be suspected in men with recurrent meatal warts. | Some experts prefer electrosurgical removal.<br><br>Intraurethral instillation of a 5% cream of fluorouracil or thiotepa may be effective, but<br><br>neither has been adequately evaluated.<br><br>**Podophyllotoxin should not be used.** |

**Note:**
*Some experts advise against the use of podophyllin 10-25% for warts. Large amounts of podophyllin should not be used because it is toxic and easily absorbed; its use during pregnancy and lactation is contraindicated. Low success rates with podophyllin are reported. Therefore, most experts now advise the use of podophyllotoxin 0.5% solution or 0.15% cream or gel, instead.*
Follow-up is not required if symptoms resolve, except for anxious patients or for warts that are difficult for patient to visualize. Contact tracing is not recommended as majority of partners may have been infected subclinically. Pregnant women with extensive vaginal warts to be referred to obstetricians for further management (in view of delivery mode).

## Scabies

The labelling of scabies as a sexually transmitted infection should be avoided when the likely cause is close body contact, in order to prevent stigmatization. In addition, the management recommendations are different for patients presenting with sexually acquired scabies (i.e. young adult living in good housing conditions). Management of such patients should include treatment of all sexual partners. For outbreaks of scabies related to non-sexual close body contact, treatment of all people involved is critical. Scabies is caused by the mite *Sarcoptes scabiei* which is transmitted by direct bodily contact. Scabies can also be transmitted through infested beddings, clothes, towels and others.

**Clinical Features**

Clinical diagnosis of scabies includes the presence of a typical burrow associated with itchy rash or papules in the genital area, sides and webs of fingers, wrists, axillae and areolae of breasts.

**Diagnosis**

Confirmatory diagnosis of scabies is made through detection of scabies mites, egg or faeces on microscopy.

**Treatment:**

| Condition | Recommended Treatment | Alternative treatment |
|---|---|---|
| **Adults, adolescents and older children** | **Permethrin** 5% cream applied thinly to all areas of the body from the neck and washed off thoroughly after 8 hours. Retreatment after 7 – 14 days is usually recommended.<br><br>**OR**<br><br>**Ivermectin** 200 mcg/kg PO in single dose, repeated once after 7 – 14 days (not recommended for children <15 kg).<br><br>Crusted scabies (manifested by thick scale, crusts and fissures), common among **immunodeficient, debilitated or malnourished patients** should be treated with combination therapy of :<br><br>**Permethrin** 5% topical full-body application daily for 7 days then twice weekly until cure.<br><br>**PLUS**<br><br>**Ivermectin** 200 mcg/kg PO single dose on days 1, 2, 8, 9, and 15.<br><br>*Lindane is not recommended for pregnant or lactating women. It should not be given to* | Lindane 1% lotion or cream applied thinly to all areas of the body from the neck down and washed off thoroughly after 8 hours.<br><br>**OR**<br><br>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<br>after the final application<br><br>**OR**<br><br>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 |

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| | *children <10 years old because of risk for systemic toxicity.*<br><br>*Resistance to Lindane has been reported in some areas.* | geographical areas (crotamiton has the advantage of an antipruritic action).<br><br>**OR**<br><br>Sulphur 6%, in petrolatum applied to the entire body from the neck down, nightly for 3 nights; patients may bathe before reapplying the product and should bathe 24 hours after the final application. |
| **Infants, children under 10 years of age, pregnant or lactating women** | **Permethrin** 5%, cream, applied in the same way as the sulphur regimen described above.<br><br>**OR**<br><br>**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).<br><br>**OR**<br><br>**Sulphur** 6%, in petrolatum applied to the entire body from the neck down, nightly for 3 nights; patients may bathe before reapplying the product and should bathe 24 hours after the final application. | Ivermectin elixir 200 mcg/kg orally in single dose, repeated once after 7 – 14 days (not recommended for children <15 kg). |

**Contacts**

Sexual contacts and close household contacts should be treated as above.
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.
For institutional outbreaks (prisons, nursing homes, boarding schools and hostels, etc) treating the entire population at risk is recommended**.**

**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.

## Pubic Lice (PHTHIRIASIS or PEDICULOSIS PUBIS)

**The transmission is usually by sexual contact. The louse, Phthirus pubis, is the causative agent. Adult lice infest strong hairs such as pubic hair, eyebrows and eyelashes. Lice eggs (nits) are strongly attached to hairs.**

**Treatment:**

**Permethrin** 1% cream rubbed gently and thoroughly into the infested area and adjacent hairy areas. Leave for 10mins and then washed off thoroughly.

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

Repeat treatment after one week to improve success rate.

- Isolate and wash all clothes, linen and towels used in the previous 3 days.
- Shaving of pubic hair and/or manual removal of nits is not required.
- Advise patient to refrain from sexual contact for 7 days after treatment is administered.
- Provide patients with fact sheets for STIs.
- Simultaneous treatment of contacts and all household members.
- Review after one week to assess for symptom resolution, follow-up on contact tracing and to provide further sexual health education and counselling.

## Neonatal Conjunctivitis

Neonatal conjunctivitis or Ophthalmia neonatorum is characterised by a purulent conjunctivitis (redness, swelling of the eyelids, and purulent/bloody discharge from the eyes or "sticky eyes") in a baby less than one month of age. Common causes of neonatal conjunctivitis are Gonorrhoea (a neonatal emergency which may result in blindness within 24 hours due to damage to the cornea) and Chlamydia. **It is mandatory to discuss all cases with the Divisional Paediatric Unit.**

**Ophthalmia neonatorum prophylaxis**

To prevent gonococcal ophthalmia neonatorum, a prophylactic agent should be instilled into both eyes of all newborn infants. Ocular prophylaxis is warranted because it can prevent sight-threatening gonococcal ophthalmia; it is safe, easy to administer, and is inexpensive.

All newborn babies should have preventive eye prophylaxis carried out as follows:

- As soon as the baby is born, carefully wipe both eyes with dry, clean cotton wool.
- Then, apply 1% Tetracycline eye ointment into the neonate's eyes.
- Open both eyes and the eye ointment placed in the lower conjunctival sacs and not on the eyelids or cheeks.

**Ophthalmia Neonatorum Prophylaxis:** WHO Recommended Regimen

- **Erythromycin** (0.5%) ophthalmic ointment:
  - instilled into both eyes of all neonates as soon as possible after delivery, regardless of whether they are delivered vaginally or by cesarean section.
  - Ideally, ointment should be applied using single-use tubes or ampules rather than multiple-use tubes.
  - If prophylaxis is delayed (i.e., not administered in the delivery room), a monitoring system should be established to ensure that all infants receive prophylaxis.

Erythromycin is the only antibiotic ointment recommended for use in neonates. (Gentamycin ointment is associated with severe ocular reactions in neonates and should not be used; bacitracin is not effective, and povidone iodine has not been studied adequately. If erythromycin ointment is not available, infants at risk for exposure to N. gonorrhoeae (especially those born to a mother at risk for gonococcal infection or with no prenatal care) can be administered ceftriaxone 25–50 mg/kg IV or IM, not to exceed 125 mg in a single dose.

**Treatment**

- Mandatory discussion with and/or referral to Divisional Paediatric Unit for proper management.
- Test conjunctival exudates for culture and sensitivity if applicable.
- All newborn infants with conjunctivitis should be treated for both *N. gonorrhoeae* and *C. trachomatis,* because of the possibility of mixed infection.
- They should be hospitalized if possible and evaluated for signs of disseminated infection.
- One dose of Ceftriaxone is adequate therapy for gonoccocal conjunctivitis.
- Where Ceftriaxone is not available, give Penicillin G 50,000 IU/kg IV every 12 hours during the first 7 days of life and every 8 hours thereafter for a total of 7 days.
- Multiple dose Erythromycin must be provided to ensure Chlamydia treatment.
- Frequent irrigation of the eyes with saline is a useful adjunctive therapy.

- Treat mother and her partner(s) for Gonorrhoea and Chlamydia.
- Use of topical eye antibiotic alone is inadequate and is unnecessary if systemic treatment is given.

## Hepatitis B

Refer to the Fiji Hepatitis B Care and Treatment Guidelines.

5

# KEY CONSIDERATIONS UNDERLYING TREATMENT

# SECTION V KEY CONSIDERATIONS UNDERLYING TREATMENT

## The choice of Antimicrobial regimens

i. **High efficacy** - Efficacy is the most important criterion in choosing among available regimens. STI therapy regimens should ideally cure at least 95% of those infected with a bacterial STI. 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 (WHO STI Guideline 2003).

ii. **Safety** - Toxicity is a second major concern in STI treatments because of the frequency with which patients become re-infected and their consequent exposure to repeated courses of antimicrobials. In addition, treatment of resistant STI agents often requires achievement of relatively high serum levels of antimicrobials, in some cases for periods of 7 days or more. Combination regimens further increase the risk of adverse drug reactions.
Pregnancy, relatively common in sexually active groups with a high incidence of STIs, represents a special situation in which additional considerations of foetal 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.

iii. **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: repeat treatment, further spread, complications and selection for increased microbial resistance.

iv. **Compliance and acceptability** - Patient compliance with STI treatment regimens is a continuing problem seriously limiting the effectiveness of multidose regimens. 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.

v. **Availability** - The geographical distribution and availability of drugs vary considerably. The availability of all required drugs could be improved by their inclusion on national essential drugs lists.

vi. **Co-existing infection** – When several STI are prevalent in a population, co-infection may be a common occurrence. Unfortunately, the ability to treat common co-infections with single drugs has been reduced by the development of resistance to the tetracyclines among *N. gonorrhoeae.* In most cases, dual therapy is now required for simultaneous gonococcal and chlamydial infections. Coincident chancroid and syphilis require a multi-drug regimen.
The severity of disease caused by several sexually transmitted pathogens (e.g. herpes simplex virus, *H. ducreyi*, *T. pallidum*) may be increased in HIV infection and AIDS, and treatment must be intensified and prolonged.

Note: Antimicrobial resistance to some STI pathogens (e.g. *N. gonorrhoeae*) continues to increase globally, and although appearing slow to reach Fiji, is likely to increase in the near future. Therefore, monitoring of susceptibility – both laboratory-based and clinically – is critical to ensure effective treatment and limit the spread of resistant organisms.

## Common drugs used in the treatment of sexually transmitted infections

### 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 neonatorum 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

Of the newer macrolides azithromycin is currently considered the drug of choice for treating chamydial infection. The drug has a prolonged bioavailability that permits single-dose administration and it accumulates within cells. Azithromycin 1gm single dose therapy has been shown to be as effective as a week-long course of doxycycline 100mg twice daily in the treatment of chlamydia. However, azithromycin is a proprietary drug making its cost significantly higher than a combination of single-dose gonorrhea therapies combined with a week-long course of doxycycline.

### SULPHONAMIDES

The addition of trimethoprim to sulphonamides does not increase their antichlamydial activity. A three-day regimen of sulfamethoxazole and trimethoprim is inadequate for chlamydial infection. Different sulphonamides are available in various parts of the world. These drugs differ somewhat in their pharmacology. Equivalent doses may be used in the treatment of STI.

### 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. Ciprofloxacin is considered to be the agent with the greatest activity against *N. gonorrhoeae*.

Diligent monitoring for quinolone resistance is paramount as this group of affordable drugs remains effective in most parts of the world. Experience with treating chlamydial infection with fluoroquinolones is limited. Of the currently studied agents, ofloxacin has the greatest potential when given as 300mg twice daily for 7 days. This combination would be effective against both gonorrhoea and chlamydial infection, but the usefulness of this regimen is limited by the drug's high cost and the duration of therapy that may affect compliance.

### TETRACYCLINES

A number of tetracyclines of equal efficacy are available. These can be substituted for doxycycline and tetracycline hydrochloride as appropriate.

# Antimicrobial Resistance

**Antimicrobial resistance in *N.GONORRHOEAE***

There are two main types of antibiotic resistance in *N. gonorrhoeae*:

i. **chromosomal resistance** - involves penicillins and a wide range of other therapeutic agents such as tetracyclines, spectinomycin, erythromycin, quinolones, thiamphenicol, and cephalosporins;
ii. **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 sulphonamides in the 1930s. Its significance today is that chromosomal resistant strains are often resistant to a number of antimicrobial agents that have been used to treat gonorrhoea. There is also cross-resistance between penicillin and the second and third generation cephalosporins. Although not yet of any 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. Lack of standardization of sensitivity testing methodology continues to be a problem. Standard methods should be used for sensitivity testing and should include a set of reference strains.

**Antimicrobial resistance in *H. DUCREYI***

*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 is required.

Plasmid-mediated resistance has been found against ampicillin, sulphonamides, tetracycline, chloramphenicol, and streptomycin. All *H. ducreyi* strains now contain beta-lactamase coding plasmids, several of which have been described. Neither penicillin nor ampicillin is now effective against chancroid. Tetracycline resistance 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 sulphonamides is now widespread, and strains with reduced sensitivity to trimethoprim are becoming increasingly prevalent in South-East Asia, in parts of Africa and in North America. Where strains remain sensitive to trimethoprim, treatment with this agent alone or combined with a sulphonamide remains effective.

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# ASYMPTOMATIC INFECTIONS

# SECTION VI ASYMPTOMATIC INFECTIONS

## Asymptomatic Infections

Asymptomatic infection means that though an infection is present the patient has no symptoms or signs of infection. Not all persons who have an STI actually develop symptoms. Infection may remain in the body for varying periods of time, often only becoming obvious when a complication of the infection has developed. Regardless of whether or not a person has symptoms of infection, infected persons can transmit infection to their sexual partners.

Infected persons may remain to have no symptoms or signs of infection in the following situations:

- During the incubation period of the infection
- During the period of latency of the disease
- During the entire length of the illness
- Between clinical recurrences of an illness
- With incomplete treatment

Diagnosis for asymptomatic infections can be done only through screening program. The population that can be targeted in screening programmes include:

- People with high risk behaviours such as those with multiple partners, male to male sex, and extramarital sex
- Antenatal women at first visit
- Women aged 15 to 40 years presenting for a pap smear
- Sexually active youth below 25 years of age
- Blood donors

**Presumptive treatment:**

Presumptive treatment according to WHO is a one-time treatment given for a presumed infection in a person, or group of people, at high risk of infection. This is a form of asymptomatic treatment. It is often given in repeated intervals as a form of periodic presumptive treatment. Periodic presumptive treatment is usually given to high risk groups such as:

- Partners of STI patients
- Sex workers and their clients
- Men having sex with men
- Antenatal women

A single dose treatment is given to these high risk groups to treat common STIs such as Chlamydia and Gonorrhoea. This is repeated in periodic intervals to reduce the reservoir of infection among these high risk groups. This is complemented with condom, safer sex promotion and behaviour change interventions which aim to reduce Chlamydia prevalence in the population relatively rapidly. This is recommended for antenatal women and their partners in PICTs including Fiji with very high Chlamydia prevalence. This approach significantly reduces costs, protects newborns from infection, addresses issues of access to testing facilities and will free up laboratory capacity to expand testing to other key populations.

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# POST SEXUAL ASSAULT PROPHYLAXIS

# SECTION VII POST SEXUAL ASSAULT PROPHYLAXIS

For cases of sexual assault, discussion with the relevant sexual assault referral service is advised. For cases involving children, seek expert advice for prophylaxis and management.
Investigations for sexually transmitted infections and pregnancy and for forensic purposes should be performed on a case-by-case basis. The collection of specimens for forensic evidence should be undertaken by an experienced professional, and should follow established regional or local protocols.

Perform baseline screening for the following sexually transmitted pathogens:

1. Chlamydia trachomatis (where available),
2. Neisseria gonorrhoeae,
3. Treponema pallidum (syphilis),
4. hepatitis B virus (HBV),
5. hepatitis C virus (HCV) and
6. HIV.

Perform screening during the first presentation after the assault (before treatment), and on follow-up. If a pathogen is isolated, treat the infection.
Empirical therapy should cover gonorrhoea, chlamydia. If presentation within 72 hours, HIV PEP may be required as per HIV guidelines. Syphilis may be covered by this regimen, but other sexually transmitted infections may not be prevented. It is important that the patient is followed up with both clinical examination and serological tests.

**All survivors of sexual assault should be treated**.

1. For post-sexual assault prophylaxis in adults, use (3 drug regimen):

   ***Ceftriaxone*** 250mg in 2mL of 1% lignocaine IMI or 500mg IV as single dose

   ***PLUS***

   ***Azithromycin*** 1g PO as a single dose

   ***PLUS***

   ***Benzathine penicillin*** 2.4 million units IMI as a single dose

   Alternatively, where the above regimen is not available, use:

   ***Amoxycillin*** 2.5g PO as a single dose

   ***PLUS***

   ***Amoxycillin+clavulanate*** 500mg +125mg PO as a single dose

   ***PLUS***

   ***Probenecid*** 1g PO as a single dose

   ***PLUS***

***Azithromycin*** 1g PO as a single dose

***PLUS***

***Benzathine penicillin*** 2.4 million units IMI as a single dose

Alternatively, where amoxycillin + clavulanate is not available, use:

***Amoxycillin*** 3g PO as a single dose

***PLUS***

***Probenecid*** 1g PO as a single dose

***PLUS***

***Azithromycin*** 1g PO as a single dose

***PLUS***

***Benzathine penicillin*** 2.4 million units IMI as a single dose

2. Post-exposure prophylaxis against HIV and HBV (for individuals who do not have immunity for HBV on baseline screening) should also be given. Refer to HIV Care and ART Guidelines.

3. For post-sexual assault prophylaxis in children, use (as a four drug regimen):

***Ceftriaxone*** *25 mg/kg up to* 250mg IMI* as a single dose

***OR***

***Ciprofloxacin*** 15 mg/kg up to 1g PO as a single dose

.

***PLUS***

***Azithromycin*** 15 mg/kg up to 1g PO as single dose

***PLUS***

***Metronidazole*** 30 mg/kg up to 2g PO as a single dose OR 15 mg/kg up to 1g PO 12-hourly for 2 doses

***PLUS***

***Benzathine penicillin*** 50,000 units/kg up to 2.4 million units IMI as a single dose

**IMI injection of ceftriaxone is painful; reconstitute with 1% lignocaine.*

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# STI REPORTING AND SURVEILLANCE

# SECTION VIII STI REPORTING AND SURVEILLANCE

## Components of STI surveillance

The five components of STI surveillance that are necessary for effective STI control programmes are the following:

1. Case reporting
2. Prevalence assessment and monitoring
3. Assessment of STI syndrome aetiologies
4. Antimicrobial resistance monitoring
5. Special studies

**Case Reporting**

This is the process of reporting cases of notifiable diseases from health care providers or laboratories to public health authorities via the NNDSS (National Notifiable Disease Surveillance System). The type of case reporting used depends on the availability of laboratory tests in clinical care and availability of resources.

**Purpose of case reporting:**

i. Assess disease burden, by providing an indicator of minimum incidence of recently acquired infections.
ii. Monitor trends in incidence of recently acquired infections.
iii. Provide information required for management of patients and their sex partners.
iv. Provide information on which providers in the health care system are diagnosing and reporting the major STIs, to assist in planning and managing programme efforts.
v. Provide other data necessary for managing health services (e.g., pharmaceutical distribution).

**Types of case reporting:**

| Syndromic Case Reporting | Aetiologic Case Reporting |
|---|---|
| **Advantages:**<br>Practical to establish<br>No need of laboratory facilities<br>Can be performed at any level<br>Provides information to assess disease burden, monitor trends in incidence, assist in program planning and management and plan and manage delivery of health services. | **Advantage:**<br>High specificity for STI agents.<br>Provides highly credible assessment of the minimum disease burden.<br>Facilitates efforts at counselling and treating patients and their sexual partner(s). |
| **Limitations:**<br>Only urethral discharge and genital ulcer disease (non-vesicular) are potentially useful for monitoring trends in STI incidence.<br>Provides poor assessment of disease burden and trends in women.<br>Syndromes are not pathogen specific. | **Limitations:**<br>Requires well-developed systems of laboratory diagnosis incorporated into routine STI clinical care.<br>Requires diagnosis based on laboratory testing. |

Syndromic case reporting will be used by primary health care facilities using syndromic case management. Aetiologic case reporting will be done where laboratory tests are available and done to the patient.

**Case Definitions for Surveillance**

This is the standard terminology for deciding whether a person has a particular disease using clinical and/or laboratory criteria. This should be used throughout the country to allow data gathered from the reporting systems to be compared.

**Case Definitions for Syndromic STI Case Reporting:**

| STI Syndrome | Case Definition |
|---|---|
| **Male Urethral Discharge and/or Dysuria Syndrome (UDS)** | Urethral discharge and/or dysuria in men |
| **Anorectal Discharge Syndrome (ADS)** | Abnormal discharge from the anus or the rectum. |
| **Genital Ulcer Syndrome (GUS)** | Men and women presenting with genital ulcers that may be vesicular or non-vesicular |
| **Non-vesicular** | Ulcer on penis, scrotum or ano-rectum in men, or on labia, vagina or ano-rectum in women. (This syndrome can be caused by Syphilis, Chancroid, Lymphogranuloma venereum, Granuloma inguinal or Genital herpes). |
| **Vesicular (blisters)** | Genital or anal vesicles in men and women. (typically caused by Genital HSV infection) |
| **Inguinal Bubo Syndrome (IBS)** | One or more enlarged lymph nodes in the groin area, which are painful and may be fluctuant. |
| **Neonatal Conjunctivitis Syndrome (NCS)** | Conjunctivitis with discharge in a newborn within 4 weeks of delivery |
| **Vaginal Discharge Syndrome* (VDS)** | Abnormal vaginal discharge (indicated by amount, colour and odour) with or without lower abdominal pain or specific symptoms or specific risk factors |
| **Lower Abdominal Pain in Women* (LAP)** | Symptoms of lower abdominal pain and pain during sexual intercourse with examination showing vaginal discharge, lower abdominal tenderness on palpation, or temperature >38 degrees Centigrade. |

*Poor predictors of STI among women. WHO does not recommend reporting these syndromes for STI surveillance as they are not reliable for assessment of STI incidence or prevalence; health services may wish to collect data on these syndromes for their own health service planning needs. Source: Sexually Transmitted Infections Working Group for the Pacific. *Consensus document on sexually transmitted infections case definitions and minimum data set*. May 2008.

**Case Definitions for Aetiologic Case Reporting:**

| Specific STI | Case Definition |
|---|---|
| **Gonorrhoea** | Demonstration of *N. gonorrhoeae* in a clinical specimen by detection of antigen or nucleic acid, or<br>Observation of gram-negative intracellular diplococci in a urethral smear obtained from a male or<br>Isolation of N. gonorrhoea by culture |
| **Chlamydia** | Isolation of C. *trachomatis* by culture or<br>Demonstration of C. *trachomatis* in a clinical specimen by detection of antigen or nucleic acid |
| **Syphilis:**<br>**Primary/Secondary Syphilis**<br>**Confirmed**<br><br>**Probable**<br><br>**Latent Syphilis (Probable)**<br><br>**Neurosyphilis**<br><br>**Congenital Syphilis Probable**<br><br>**Confirmed** | <br>Demonstration of *T. pallidum* in clinical specimens by darkfield microscopy, direct fluorescent antibody (DFA-TP), or equivalent methods<br><br>An illness with ulcers (primary) or mucocutaneous lesions (secondary) and a reactive serologic test (non-treponemal or treponemal).<br><br>No clinical signs or symptoms of syphilis and<br>1) a reactive non-treponemal and treponemal test in a patient with no prior syphilis diagnosis; or<br>2) a non-treponemal test titer demonstrating fourfold or greater increase from the last non-treponemal test titer in a patient with a prior syphilis diagnosis.<br><br>A reactive serologic tests for syphilis and reactive RPR in cerebrospinal fluid (CSF)<br><br>A condition affecting an infant whose mother had untreated or inadequately treated syphilis at delivery, regardless of signs in the infant, or an infant or child who has a reactive treponemal test for syphilis and any one of the following:<br>Any evidence of congenital syphilis on physical examination<br>Any evidence of congenital syphilis on radiographs of long bones<br>A reactive cerebrospinal fluid (CSF) venereal disease research laboratory (VDRL)<br>An elevated CSF cell count or protein (without other cause)<br><br>A clinically compatible case that is laboratory confirmed. |
| **Genital Herpes (Herpes simplex virus infection)**<br>**Probable**<br><br>**Confirmed** | A clinically compatible case (in which primary and secondary syphilis have been excluded by appropriate serologic tests and darkfield microscopy, when available) with either a diagnosis of genital herpes based on clinical presentation (without laboratory confirmation) or a history of one or more previous episodes of similar genital lesions<br><br>A clinically compatible case with Laboratory confirmation:<br>Isolation of herpes simplex virus from cervix, urethra, or anogenital lesion, or |

| | |
|---|---|
| | Demonstration of virus by antigen detection technique in clinical specimens from cervix, urethra, or anogenital lesion, or<br>Demonstration of multinucleated giant cells on a Tzanck smear of scrapings from an anogenital lesion |
| **Genital Warts**<br>**Probable**<br><br>**Confirmed** | A clinically compatible case without histopathologic diagnosis and without microscopic or serologic evidence that the growth is the result of secondary syphilis<br><br>A clinically compatible case with:<br>Histopathologic changes characteristic of human papillomavirus infection in specimens obtained by biopsy or exfoliative cytology or<br>Demonstration of virus by antigen or nucleic acid detection in a lesion biopsy |
| **Granuloma inguinale (Donovanosis)** | A clinically compatible case with demonstration of intracytoplasmic Donovan bodies in Wright or Giemsa-stained smears or biopsies of granulation tissue |
| **Lymphogranuloma venereum**<br>**Probable**<br><br>**Confirmed** | A clinically compatible case with one or more tender fluctuant inguinal lymph nodes or characteristic proctogenital lesions with supportive laboratory findings of a single *C. trachomatis* complement fixation titer of >64<br><br>A clinically compatible case with:<br>Isolation of *C. trachomatis*, serotype L1, L2, or L3 from clinical specimen, or<br>Demonstration by immunofluorescence of inclusion bodies in leukocytes of an inguinal lymph node (bubo) aspirate, or<br>Positive microimmunofluorescent serologic test for a lymphogranuloma venereum strain of *C. trachomatis* |
| **Chancroid**<br>**Probable**<br><br>**Confirmed** | A clinically compatible case with both a) no evidence of *Treponema pallidum* infection by darkfield microscopic examination of ulcer exudate or by a serologic test for syphilis performed ≥7 days after onset of ulcers and b) either a clinical presentation of the ulcer(s) not typical of disease caused by herpes simplex virus (HSV) or a culture negative for HSV.<br><br>A clinically compatible case with isolation of H. ducreyi in clinical specimen. |

**Reporting Format**

For case reporting, aggregate NNDSS reports from all health facilities and units are sufficient for most purposes. These aggregated NNDSS reports are then entered into a computerised database at the central level (Health Information Unit [HIU]) and facilitates the analysis of these data by health district, type of reporting site, sex and age, and may make it easier to monitor which sites are reporting consistently.

**Procedure:**

1. All the medical officer/nurse practitioner in-charges from the health centers and subdivivisioanl hospitals fill in the NNDSS for their respective health facilities on a weekly basis. Triplicates are generated whereby one copy is sent to the Subdivisional Medical Officer (SDMO), one copy is sent to the Divisional Medical Officer (DMO) and one copy is sent to the HIU.
2. At the divisional hospital level, each department heads or a designated person, fills in their own NNDSS on a weekly basis. Triplicates are generated whereby one copy is sent to the Medical Superintendant (MS), one copy is sent to the DMO and one copy is sent to the HIU.
3. Laboratory results will be captured in the NNDSS by their respective health center in-charges (1) or hospital department heads (2).
4. HIU consolidates all the NNDSS data and then provides feedback on the consolidated data to the Divisional Surveillnce Response Officer (DSRO) and Divisional Health Information Officer (DHIO).
5. The DSRO and DHIO will then provide the feedback to the MS, DMO, SDMO, health center in-charges and hospital department heads.

**Analysis, Interpretation and Feedback of Case Reports**

STI case reporting data should be analysed at quarterly and annual intervals. Quarterly analysis may consist of the following:

- Comparison of the most recent quarterly number of case reports with the same quarter during the previous year.
- Examination of quarterly and annual trends in the number of reported cases and prevalence for the past 1-2 years, overall, and by the following categories: geographic area, gender, age group, provider type and reporting site.

Dissemination of STI surveillance data to health centres, clinicians, and laboratories who have reported the data can help to increase timely, valid and complete reporting.

Feedback of STI surveillance data may be in the following form:

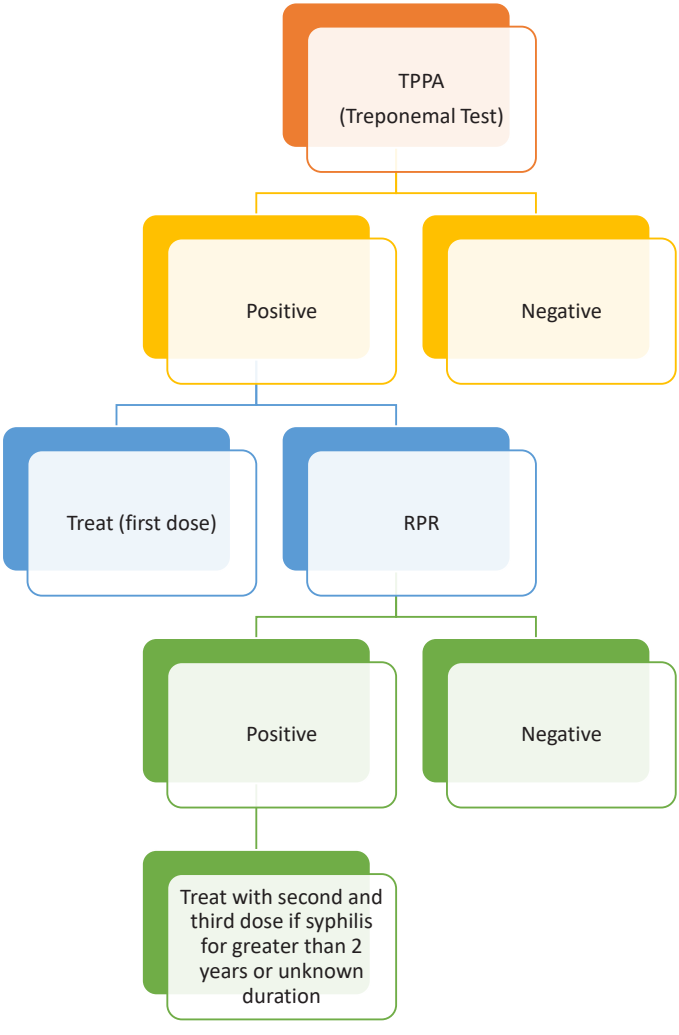
- Annual report*, with case numbers, rates, and trends by geographic area and demographic variables, and prevalence data by population.*
- Fact sheets *with tables and graphs that can be posted at health department offices and clinics, and provided in response to ad hoc inquiries.*
- Newsletters *for clinicians, laboratory personnel, and others; these may include brief reports of surveillance data, along with updated information on patient management.*
- Press releases *which highlight disease burden and trends, and which can be used as part of public information campaigns.*

09

# Annex

# ANNEXES

## Annex A: Syphilis Testing Algorithm



## Annex B: Desensitization Protocol

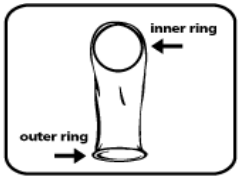
| Penicillin V suspension dose[a] | Amount[b] (units/mL) | mL | Units | Cumulative dose (units) |
|---|---|---|---|---|
| **1** | 1,000 | 0.1 | 100 | 100 |
| **2** | 1,000 | 0.2 | 200 | 300 |
| **3** | 1,000 | 0.4 | 400 | 700 |
| **4** | 1,000 | 0.8 | 800 | 1,500 |
| **5** | 1,000 | 1.6 | 1,600 | 3,100 |
| **6** | 1,000 | 3.2 | 3,200 | 6,300 |
| **7** | 1,000 | 6.4 | 6,400 | 12,700 |
| **8** | 10,000 | 1.2 | 12,000 | 24,700 |
| **9** | 10,000 | 2.4 | 24,000 | 48,700 |
| **10** | 10,000 | 4.8 | 48,000 | 96,700 |
| **11** | 80,000 | 1.0 | 80,000 | 176,700 |
| **12** | 80,000 | 2.0 | 160,000 | 336,700 |
| **13** | 80,000 | 4.0 | 320,000 | 656,700 |
| **14** | 80,000 | 8.0 | 640,000 | 1,296,700 |

[a] Interval between doses, 15–30 minutes; elapsed time, 4–8 hours; cumulative dose, 1.3 million units.

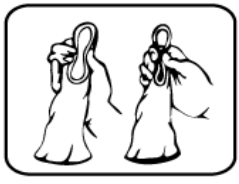
[b] The specific amount of drug was diluted in approximately 30 mL of water and then administered orally.

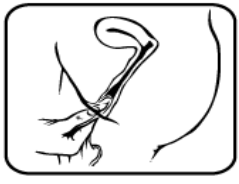
## Annex C: Female (internal) condom insertion

**Insert the condom into the vagina or anus before sexual contact to assist in the prevention of sexually transmitted infection and pregnancy.**




1. Check the expiration date. Open the package; handling carefully to avoid tearing the condom.
2. The condom already comes lubricated but more lubricant can be added as preferred, espcially when inserting it in the anus.
3. If inserting the condom in the anus, remove the inner ring. If inserting the condom in the vagina, leave the ring in.
4. Relax and get in a comfortable position; either standing with a foot on a chair, lying down or squatting.
5. If inserting in the vagina, squeeze together the inner ring at the closed end of the condom and gently slide in the inner ring into the vagina, just like a tampon.
6. Place the index finger on the inside of the condom, and push the inner ring up as far as it will go.
7. If inserting in the anus, just push the condom with your index finger up as far as it will go.
8. Be sure the condom is not twisted. Pull out the finger and let the outer ring hang about an inch outside of the vagina or anus.
9. Hold the condom open and guide the penis into the condoms opening - be sure that the penis is not entering on the side, between the condom and vagina or anus. If the condom moves out of place during sex, lubrication can be used either on the inside of the condom or on the penis.
10. To remove the condom, twist the outer ring and gently pull the condom out to avoid spilling the semen.
11. Dispose of the condom in the garbage (not in the toilet). Use only once as they are not reusable.





**Note:**

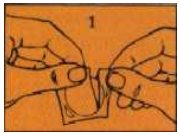
The female (internal) condom can be inserted up to 8 hours before any sexual intercourse.

This condom can also be used for anal sex by men who have sex with men (MSM) and transgender (TG) people.

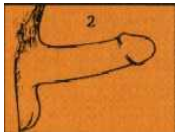
**ANNEX D: Male condom insertion**

**Insert the condom into the penis before sexual contact to assist in the prevention of sexually transmitted infection and pregnancy.**

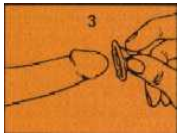
1. Check the expiry date on the packet. Open the packet carefully.




2. Wait until the penis is erect. Don't unroll the condom before putting it on.




3. Squeeze the teat on the tip of the condom between two fingers and hold it against the tip of the penis.
Note: You must always use a water-based lubricant eg. KY. Never use an oil-based lubricant e.g. Vaseline.




4. Gently unroll the condom, all the way down to the base of the penis.


5. Withdraw the penis immediately after ejaculating and hold the condom firmly on to the penis to stop any spillage. Point the penis downwards and slip the condom off carefully, holding it just below the teat.


6. Put the used condom in a plastic bag. Knot the bag and dispose of it in the garbage. Don't put it down the toilet. Condoms aren't biodegradable and can cause your toilet or septic tank to block up.

| Drug (formulations) | Indications (STI syndromes) | Contraindications, Precautions, Drug Interactions | Adverse Effects | Pregnancy & Breastfeeding | Administration & Counselling Points | Comments |
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| **Azithromycin** (500mg tabs) | Chlamydia (male urethritis, female cervicitis, PID, scrotal swelling) | *CI:* serious macrolide allergy, severe hepatic impairment<br>*DI:* Colchicine, rifabutin | *Common:* GI (nausea, diarrhoea, abdominal pain or upset).<br>*Infrequent:* Headache, vaginal thrush, fatigue, dizziness, skin rash. Serious adverse effects are rare. | *P :* Safe<br>*BF:* Safe, but may cause loose bowel motions in infant | • Nausea and stomach upset may occur but usually passes after a few hours<br>• Ask the patient to return if they vomit<br>• Women should be warned about the possibility of thrush | Macrolide antibiotic similar to erythromycin with broad spectrum cover, long half-life, good tolerability.<br>Also shown to be effective against other STIs such as chancroid, donovanosis, and early syphilis.<br>Replaced doxycycline as 1st choice chlamydia treatment, and is strictly for STI use only. |
| **Doxycycline** (100mg tabs) | Chlamydia (PID. Alternative chlamydia treatment in other syndromes) | *CI:* children <8yrs<br>*Prec:* hepatic impairment<br>*DI:* rifampicin, oral contraceptives, antacids, iron, calcium, zinc | *Common*: GI (nausea, vomiting, diarrhoea).<br>*Infrequent*: Oesophagitis, photosensitivity reactions, rash, tooth discolouration. | *P :* Unsafe all trimesters<br>*BF:* Safe in short courses if no alternative | • To avoid oesophageal damage, should be taken after food with a full glass of water and the patient instructed to remain upright for at least 30 minutes after administration<br>• Avoid excessive sun exposure, or wear protective clothing while on treatment. | Broad spectrum Tetracycline antibiotic.<br>Although doxycycline has been replaced by azithromycin as 1st choice agent for uncomplicated chlamydial infections, it remains very effective alternative option for these cases, and remains preferred treatment of choice in PID. |
| **AAP** (Amoxicillin 500mg caps, *Augmentin* (amoxicillin/ clavulanate) 500mg/125mg tabs, & | Gonorrhoea (male urethritis, female cervicitis, PID, scrotal swelling) | *CI:* penicillin hypersensitivity<br>*DI:* Probenecid may reduce excretion of several drugs (e.g. acyclovir, NSAIDs, | *Common*: Gastrointestinal (diarrhoea, nausea, upset stomach), vaginal thrush, allergy reactions. | *P :* Safe<br>*BF:* Safe, but may cause loose bowel motions in infant | • Check for penicillin allergy<br>• Nausea and stomach upset may occur but usually passes after a few hours | Broad spectrum penicillin & ß-lactamase inhibitor combination.<br>Probenecid increases plasma concentration and duration of action of the regimen.<br>Penicillin resistance to N.gonorrhea is widespread globally and will continue to be monitored in Fiji. |

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| Probenecid 500mg tabs | | rifampicin, glibenclamide) | *Infrequent*: Cholestatic jaundice. | | • Women should be warned about the possibility of thrush | Any treatment failure cases should be immediately referred for analysis to CWM Microbiology Laboratory. |
| **Ceftriaxone** (250mg vials) | Gonorrhoea (PID, neonatal conjunctivitis) | *CI:* previous allergy to cephalosporins, or severe penicillin allergy.<br>*Prec:* Renal impairment<br>*DI:* anticoagulants, IV calcium salts | *Common*: pain and redness at injection site, rash, headache.<br>*Infrequent*: Vaginal thrush, allergy reactions, pancreatitis. | *P :* Safe<br>*BF:* Safe, but may cause loose bowel motions in infant | • Check for severe penicillin allergy<br>• Given by IMI into buttock<br>• Administer with 2mls of 1% Lignocaine to minimise pain at injection site.<br>• Pain at injection site common but usually passes within a few hours. | Broad spectrum cephalosporin (3rd gen) injectable.<br>Reserved as 2nd line agent for gonococcal infection of all severities in all anatomical sites, including infants and pregnancy. |
| **Ciprofloxacin** (250mg tabs, 500mg tabs) | Gonorrhoea (2nd line treatment in male urethritis, female cervicitis, PID, scrotal swelling) | *Prec:* avoid in patients with history of epilepsy<br>*DI:* antacids, iron, calcium or zinc supplements | *Common*: rash, itch, GI (nausea, vomiting, diarrhoea, abdominal pain/upset)<br>*Infrequent*: headache, dizziness, restlessness, joint/muscle pain, tendonitis, raised liver enzymes, photosensitivity | *P :* <u>Unsafe</u> – concerns foetal arthropathy<br>*BF:* Safe, but may cause loose bowel motions in infant | • Nausea and stomach upset may occur but usually passes after a few hours<br>• Women should be warned about the possibility of thrush<br>• Avoid dairy products, antacids, iron, zinc or calcium supplements for 2 hours<br>• May cause mild dizziness, or increase the effects of caffeine | Broad spectrum quinolone antibiotic with long half-life, good tissue penetration.<br>Reserved as a 2nd line agent for gonorrhoea.<br>However quinolone resistance to N.gonorrhea is widespread globally and will continue to be monitored in Fiji. Any treatment failure cases should be immediately referred for analysis to CWM Microbiology Laboratory. |
| **Metronidazole** (200mg tabs) | Trichomoniasis & Bacterial Vaginosis (vaginal discharge, PID) | *Prec:* neurologic disease, or severe renal or hepatic impairment.<br>*DI:* alcohol, warfarin | *Common*: Nausea, vomiting, abdominal pain, diarrhoea, metallic taste, | *P:* Safe, but take in divided doses<br>*BF:* Safe, but take in divided doses after feeding infant | • Take with food to reduce stomach upset<br>• May cause bitter taste on tongue<br>• Avoid alcohol during treatment & for 24hrs after finishing course | Nitroimidazole antibiotic with activity against anaerobic bacteria and protozoa.<br>Parenteral formulation (500mg/100mLs) may be used in severe infections, and oral therapy is preferred if tolerated. |

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| | | | dizziness, headache. *Infrequent*: paraesthesiae, peripheral neuropathy (high dose). | | (may cause unpleasant reaction)<br>• Stop taking & return to clinic immediately if you have any numbness, tingling, pain or weakness in hands or feet | Concomitant alcohol use can cause disulfiram-type reaction (nausea, vomiting, flushing, headache, palpitations) |
| **Benzathine Penicillin** (2.4million unit (1.8g/vial) | Syphilis (genital ulcer disease) | *CI:* penicillin hypersensitivity (desensitisation may be considered in pregnancy)<br>*DI:* probenecid (beneficial interaction) | Accidental IV administration → severe neurovascular damage, causing temporary severe CNS effects.<br>*Infrequent*: penicillin hypersensitivity, Jarisch-Herxheimer reaction | *P :* Safe<br>*BF:* Safe | • Check for penicillin allergy<br>• Reconstitute vial as instructed by specific product information. Give by IM injection into buttock (doses above 1.5MIU as two divided injections in separate sites)<br>• Pain at injection site is common but usually passes within a few hours<br>• If you develop a rash or difficulty breathing, return to clinic immediately | Narrow spectrum penicillin antibiotic. It is a tissue depot formulation of benzylpenicillin (Pen G), which when injected IM, is slowly absorbed over 12 hours to few days, allowing prolonged low concentrations of penicillin into the bloodstream for up to 30 days |
| **Aciclovir** (200mg tabs) | Herpes simplex virus (genital ulcer disease if HSV suspected) | *Prec:* renal impairment<br>*DI:* aminophylline | *Common*: nausea, vomiting, diarrhoea.<br>*Infrequent*: rash, blood abnormalities, dizziness, psychological effects. | *P :* Safe<br>*BF:* Safe | • Take on an empty stomach (poor absorption otherwise)<br>• If taking 5 times a day, take every four *waking* hours – i.e. on waking up, then every 4 hours, then at bedtime<br>• Drink lots of fluid while taking tablets | Guanine analogue antiviral, active against herpes simplex and varicella-zoster virus. Does not eradicate infection, but can reduce severity of symptoms & duration of episode.<br>Parenteral formulation (250mg vials) may be required in severe infection |

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| | | | | | • may make you feel dizzy | |
| **Tetracycline eye ointment** (1% ointment, 3.5g tube) | Prevention of neonatal conjunctivitis | Nil – tetracycline eye ointment should be given to all infants after delivery | *Infrequent*: rash, stinging, burning. | N/A | • Ensure hands are clean before administering, avoid touching eyelids<br>• Apply directly to the eye at birth after cleansing eyes with sterile gauze<br>• Provide 1 application of ointment into each eye, close eyelids and massage gently to aid spread of ointment | Topical tetracycline antibiotic with broad spectrum, although limited activity against chlamydial conjunctivitis.<br>Should be given to all infants after delivery, for both vaginal or caesarean section delivery. |
| **Econazole Vaginal Pessaries** (150mg pessaries)<br>**Econazole Cream** (1% cream)<br>**Miconazole Vaginal Cream** (2% cream) | Candidiasis (vaginal discharge when indicated) | Nil significant | *Infrequent*: burning, stinging, itch, erythema, allergic reactions. | *P:* Avoid econazole pessary, use miconazole vaginal cream instead.<br>*BF:* all safe | • If irritation or sensitivity develops, discontinue use. Best given at night to improve retention of medicine. Consider wearing sanitary pad.<br>• **Econazole pessaries** - Insert gently as deeply as possible into the vagina using the applicator, nightly before bedtime.<br>• **Miconazole vaginal cream** – Fill applicator with cream and insert carefully into vagina, nightly before bedtime.<br>• This cream may damage contraceptive diaphragms and condoms; do not rely | Topical azoles are broad-spectrum antifungal agent.<br>Other azole antifungals (eg. clotrimazole) are considered clinically equivalent.<br>Pessaries or vaginal cream should be given for vaginal symptoms, regular cream should be used in addition to pessaries if external (vulvar) symptoms are present.<br>Full courses must be completed to ensure eradication of candida, even when symptoms have improved. |

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| | | | | | on these methods while using this cream. | |
| **Permethrin** (5% cream 30g tube) (1% lotion, not on EMF) | Scabies and Pubic Lice | *CI:* pyrethrin allergy, broken or infected skin. | *Common*: itch, redness and swelling is often associated with infestation itself, but can temporarily flare up a little with treatment. *Infrequent*: burning, stinging | *P :* Safe *BF:* Safe (wash from nipples before BF) | • **Scabies:** Apply to clean, cool, dry skin from the chin down. Avoid contact with eyes, mouth, & inside nose. Remember to also apply between fingers and toes, under nails, in skin folds, between buttocks, in groin areas. In children <2 years, elderly or immunocompromised people, or people with severe or resistant infestation, also apply to the scalp, neck, face and ears. Leave on skin for 8-14 hours, then wash off with warm soapy water and rinse thoroughly. Repeat treatment after 7 days.<br>• **Pubic lice:** Apply to damp hair after washing, leave on hair for 10 mins before rinsing with warm water. Remove eggs after treatment by combing with a fine tooth comb. Repeat treatment is not usually required, but should be carried out after a week if lice are found or | Pyrethroid chemical which causes paralysis in mites and lice.<br>Close personal (including sex partners) or household contacts must be examined and treated at the same time<br>Improvement usually occurs within a day or two of treatment, but itch can sometimes persist for 2-3 weeks after successful treatment.<br>Clothing and bedding should be washed thoroughly and dried well.<br>For scabies, adults will require a whole 30g tube for a single treatment, children 5-12 years ½ tube (15g), children 1-5 years ¼ tube, infants 6 months-1 year 1/8$^{th}$ of tube.<br>Permethrin 1% lotion or shampoo is not currently on the EMF, but may be obtained from private pharmacies. |

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| | | | | | eggs are observed at the hair-skin junction. | |
| **Podophylloto-xin** (0.5% topical solution) (not on EML) | Anogenital warts | *CI:* pregnancy, hypersensitivity, diabetes. | *Common*: burning, inflammation, pain and erosion. | *P:* Unsafe *BF:* Should be avoided due to uncertain safety | • Only paint onto the wart as it can burn the skin and cause ulcer – avoid administration to mucous membranes. It may help to put vaseline on the normal skin around the wart before putting the paint on.<br>• Apply twice a day for 3 days, followed by no treatment for 4 days. Repeat this weekly cycle for up to 4 weeks. Treat only intact lesions. Wash treatment area 1-2hrs after first application with water. In subsequent treatments, patient can wait 4-6 hrs before washing off agent. | Topical cytotoxic used to treat warts.<br>A cure rate of 20-50% can be expected if used as a single agent. Clearance rates are much higher if cryotherapy is used simultaneously. Note that cryotherapy may be a preferred non-pharmacological therapy.<br>Check with women of child-bearing age if pregnancy is possible.<br>Check dosage instructions very carefully before advising patient as it varies by preparation.<br>Podophyllotoxin is not currently on the EML, but may be obtained from private pharmacies. |

# 10

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