

## **12. SEXUALLY TRANSMITTED INFECTIONS**

### **12.1 General Guidelines**

Effective management of sexually transmitted infections (STIs) is one of the cornerstones of STI and HIV control, as it prevents the development of complications and sequelae, decreases the spread of these diseases in the community, reduces the transmissibility of HIV and offers a unique opportunity for targeted education about HIV prevention. Appropriate treatment of STI patients at their first encounter with a health care provider is, therefore, an important public health measure. When this involves adolescent patients, there is the potential to influence future sexual behaviour and care-seeking practices at a critical stage of development.

Accurate laboratory-proven diagnosis of STI is not always possible. Management guidelines recommended in this section are based on the diagnosis of STI-associated syndromes and the provision of a comprehensive management package including provision of antibiotics for the STI syndrome, provision of health education, promoting treatment compliance through education, promoting risk reduction behaviour, provision of condoms, providing information on partner referral and treatment and arranging for follow-up examination. To prevent further spread it is essential that all contacts of persons with STI be treated.

### **12.2 STI Case Management**

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

### 12.3 Syndromic management

Aetiological diagnosis of STI is problematic in many settings. It places constraints on time, resources, costs and access to treatment. In addition, the sensitivity and specificity of commercially available tests can vary significantly, thus, affecting negatively, the reliability of laboratory testing for STI diagnosis. In settings where laboratory facilities are available there must be suitably qualified personnel with adequate training to perform technically demanding procedures, and the establishment of external quality control is mandatory. Syndromic management is based on the identification of consistent groups of symptoms and easily recognized signs (syndromes), and the provision of treatment that will deal with the majority of organisms responsible for producing a syndrome.

<b>STI-related syndromes and their causes</b>	
<b>STI syndrome</b>	<b>STI-related causes of syndrome</b>
Urethral discharge	<i>Neisseria gonorrhoeae</i> , <i>Chlamydia trachomatis</i> , <i>Trichomonas vaginalis</i> , <i>Ureaplasma urealyticum</i>
Genital ulcer	Herpes simplex virus, <i>Treponema pallidum</i> , <i>Haemophilus ducreyi</i> , <i>C. trachomatis</i>
Vaginal discharge	<i>T. vaginalis</i> , <i>Candida albicans</i> , anaerobic bacteria (bacterial vaginosis), <i>N. gonorrhoeae</i> , <i>C. trachomatis</i>
Lower abdominal pain in women	Anaerobic bacteria, <i>N. gonorrhoeae</i> , <i>C. trachomatis</i> , group B streptococci
Inguinal lymphadenitis (bubo)	<i>Haemophilus ducreyi</i> , <i>C. trachomatis</i> (Types L1, L2, L3)
Acute scrotal swelling	<i>Neisseria gonorrhoeae</i> , <i>Chlamydia trachomatis</i> ( <u>Note</u> : Non-STI causes include infection with pyogenic bacteria such as <i>E.coli</i> and viruses such as mumps virus)
Neonatal conjunctivitis	<i>Neisseria gonorrhoeae</i> , <i>Chlamydia trachomatis</i> ( <u>Note</u> : Non-STI causes include infection with pyogenic bacteria such as staphylococci and streptococci)

### 12.4 Selection of drugs

Antimicrobial resistance of several sexually transmitted pathogens has been increasing in many parts of the world and this has rendered some low-cost regimens ineffective. Recommendations to use more effective drugs frequently raise concerns about cost and possible misuse. A two-tier drug policy with the provision of less effective drugs at the peripheral health care

level and the most effective and usually more expensive drugs only at a referral level may result in an unacceptable rate of treatment failures, complications and referrals, and may erode confidence in health services. This approach is not recommended. The drugs used for STI in all health care facilities should be at least 95% effective. Drugs selected for treating STI should meet the following criteria:

- High efficacy (at least 95%)
- Low cost
- Low toxicity levels
- Acceptable tolerance
- Organism resistance unlikely to develop or likely to be delayed
- Single dose
- Oral administration
- Not contraindicated for pregnant or lactating women

### **12.5 Principles of management of STIs**

Persons with STIs have become infected as a result of risky sexual behaviour and activity. When managing persons with STIs the opportunity should be taken to educate and counsel patients about the nature of the infection, its modes of transmission and its relationship to HIV infection and AIDS. During the consultation an assessment must be made of the patient's perception of risk and the reasons for engaging in risky behaviour should be determined. With this information patients may be educated individually and counseled to modify behaviour.

The general principles of managing patients with STIs are summarised in the following table:

<b>Principles of management of STIs</b>	
Diagnosis of STI syndrome	Diagnosis based on history and clinical examination. The clinical finding of abnormal signs is necessary in order to make a diagnosis
Non-drug related treatment	Primary prevention through safer sexual behaviour and safer sexual activity.
Special requirements	Room where patient can be interviewed and examined in private; examination couch; light source; specula; disinfectant to soak used instruments; disposable gloves; autoclaving equipment
Provide education	All patients should be provided with education regarding the nature of the infection and its modes of transmission and be informed that HIV, the cause of AIDS, is acquired in the same way as other STIs are
Counseling	Assess reasons for engaging in unsafe sexual activities and counsel according to risk, i.e., influence of alcohol, separation from spouse. Counsel on abstaining from casual sex, having sex with only one lifelong mutually faithful partner and to avoid situations that may promote unsafe sexual activity.
Treatment compliance	All patients should be counselled on treatment compliance and adherence to treatment
Promote condom use	Educate on the correct use of condoms by carrying out a condom demonstration and on the correct disposal of used condoms. Provide the patient with a supply of condoms. Inform the patient as to where condoms, both male and female condoms, may easily be acquired in future
Partner treatment	Arrange for all sexual partners to be treated
Follow-up plan	Arrange to review patient in 7 days time
Social services support	Drugs for STI treatment may not be affordable by all patients and should be provided
First line treatment	Is the recommended treatment given when the patient makes first contact with the health facility
Second line treatment	Is the recommended when the patient returns with symptoms and signs after having been given first line treatment. There is no likelihood of re-infection or poor treatment compliance
Third line treatment	Is given after the patient has had first and second line treatment and has been seen by an expert and laboratory tests have been carried out

## 12.6 Urethral Discharge in Men

The commonest causes are *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. The two commonly co-exist. Uncommonly *Trichomonas vaginalis* causes a urethral discharge in men. Therefore all males with urethral discharge should be treated for both gonorrhoea and chlamydial infection. Often the two infections coexist and both infections present with similar symptoms and signs in men. All contacts of men with urethral discharge syndrome should be treated.

### 12.6.1 Treatment of urethral discharge

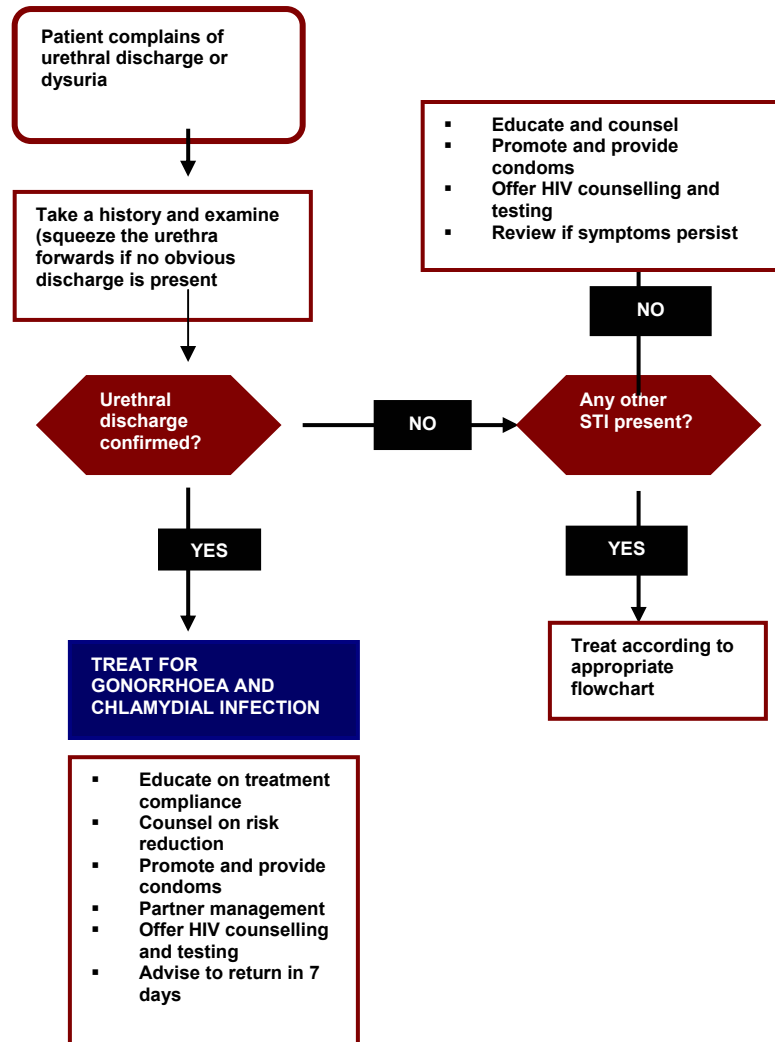
Male patients complaining of urethral discharge and/or dysuria should be examined for evidence of discharge. If none is seen, the urethra should be gently massaged from the base of the penis towards the meatus.

First line treatment for urethral discharge						
Drug	Codes		Adult dose	Route	Frequency	Duration
Kanamycin (for gonococcal infection)	C	V	2g	IM	Once	Single dose
AND						
Doxycycline (for chlamydial infection)	C	V	100mg	PO	BID	7 days

Alternative treatment for urethral discharge						
Drug	Codes		Adult dose	Route	Frequency	Duration
Norfloxacin (for gonococcal infection)	C	C	800mg	PO	Once	Single dose
AND						
Doxycycline (for chlamydial infection)	C	V	100mg	PO	BID	7 days

- If the recommended first line and alternative drugs are not available refer the patient to the next level

### 12.6.2 Flowchart for the management of urethral discharge in men



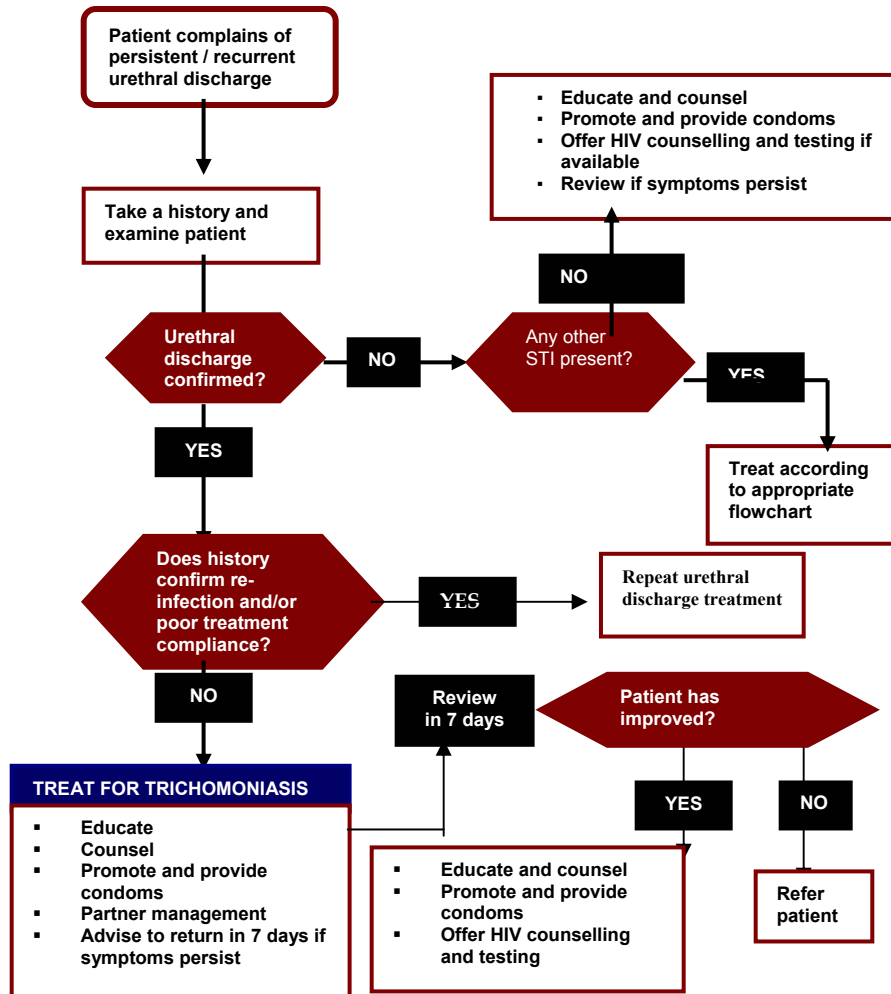
### 12.7 Treatment of Persistent/Recurrent Urethral Discharge

If the patient still has a urethral discharge, or evidence of urethritis 7 days after start of treatment, suspect re-infection or poor treatment compliance, and if this is the case re-start first line treatment. In some cases there may be infection with *Trichomonas vaginalis*. Therefore if re-infection is not suspected and treatment compliance is good give the patient treatment for trichomoniasis. If symptoms still persist the patient must be referred for expert opinion and investigations.

Treatment for persistent urethral discharge						
Drug	Codes		Adult dose	Route	Frequency	Duration
<b>Metronidazole</b> (for trichomoniasis)	C	V	2g	PO	Once	Single dose

- If the patient fails to respond to this refer the patient for investigations and appropriate treatment

**12.7.1 Flowchart for the management of persistent/recurrent urethral discharge in men**



## **12.8 Genital Ulcers with or without bubo in Men and Women**

The commonest cause of genital ulcers in both men and women is genital herpes simplex virus infection. Syphilis and chancroid also cause genital ulcers but their prevalence has dropped significantly. Clinical differentiation between the causes of genital ulcers is inaccurate except if the patient gives a clear history of recurrent attacks of vesicular lesions that may crust and heal spontaneously or the clinical appearance of lesions that are superficial ulcers, when the diagnosis of genital herpes may be suspected. It should be noted that syphilis may remain undetected in the body for long periods of time and clinical manifestations may only occur when long-term sequelae develop. It is therefore felt that patients with genital ulcers be carefully interviewed and examined to rule out syphilis. Immunosuppressed persons with HIV infection frequently develop attacks of genital herpes that produce lesions, which persist and become secondarily infected. Hence it is important to bear in mind all three diagnosis whenever managing persons with genital ulcers syndromically.

### **12.8.1 Recurrent or vesicular genital lesions**

These are usually due to genital herpes simplex virus infection.

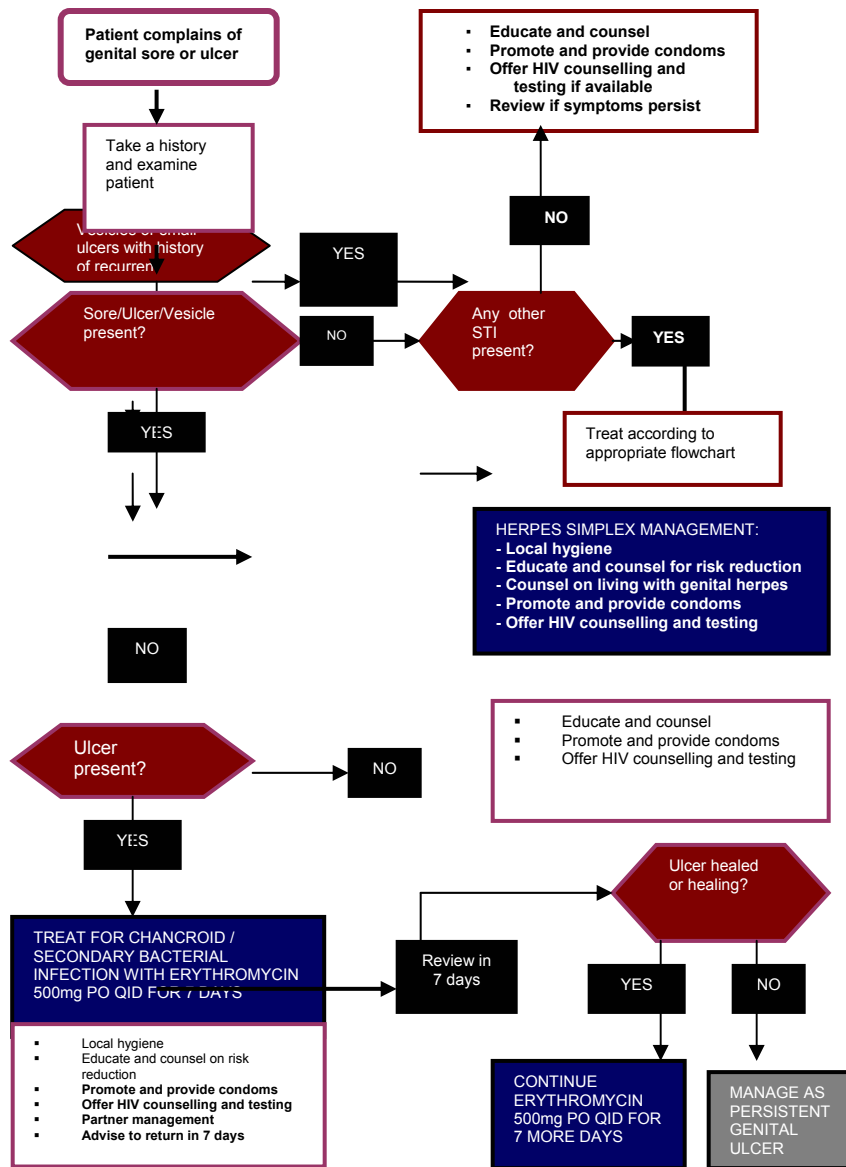
### **12.8.2 Treatment of genital ulcers**

In persons with genital ulcers take a history and examine patients, and determine whether the lesions could be genital herpes. If the lesions are vesicles or superficial ulcers suggestive of genital herpes then the only treatment to offer is counseling for genital herpes and advice on local hygiene such as washing twice a day with soap and water.

If the patient has overt genital ulcers then it is possible that the patient has syphilis, chancroid or infected genital herpes lesions. Granuloma inguinale and lymphogranuloma venereum may also cause genital ulceration, but these infections are not commonly encountered in clinical practice.

It is therefore recommended that all persons with obvious genital ulcers are advised on local hygiene and are given erythromycin 500mg PO QID for 7 days and then re-assessed. If at the end of 7 days of treatment the ulcers show signs of healing or are healed then the patient should receive another 7 days treatment with erythromycin 500mg PO QID, in case the lesions are caused by syphilis. If the ulcers persist after 7 days of treatment then the patient is treated for persistent genital ulcers as described in the next section.

<b>First line treatment for genital ulcers</b>						
<b>Drug</b>	<b>Codes</b>		<b>Adult dose</b>	<b>Route</b>	<b>Frequency</b>	<b>Duration</b>
<b>Erythromycin</b> (for chancroid, syphilis and secondary bacterial infection)	C	V	500mg	PO	QID	14 days



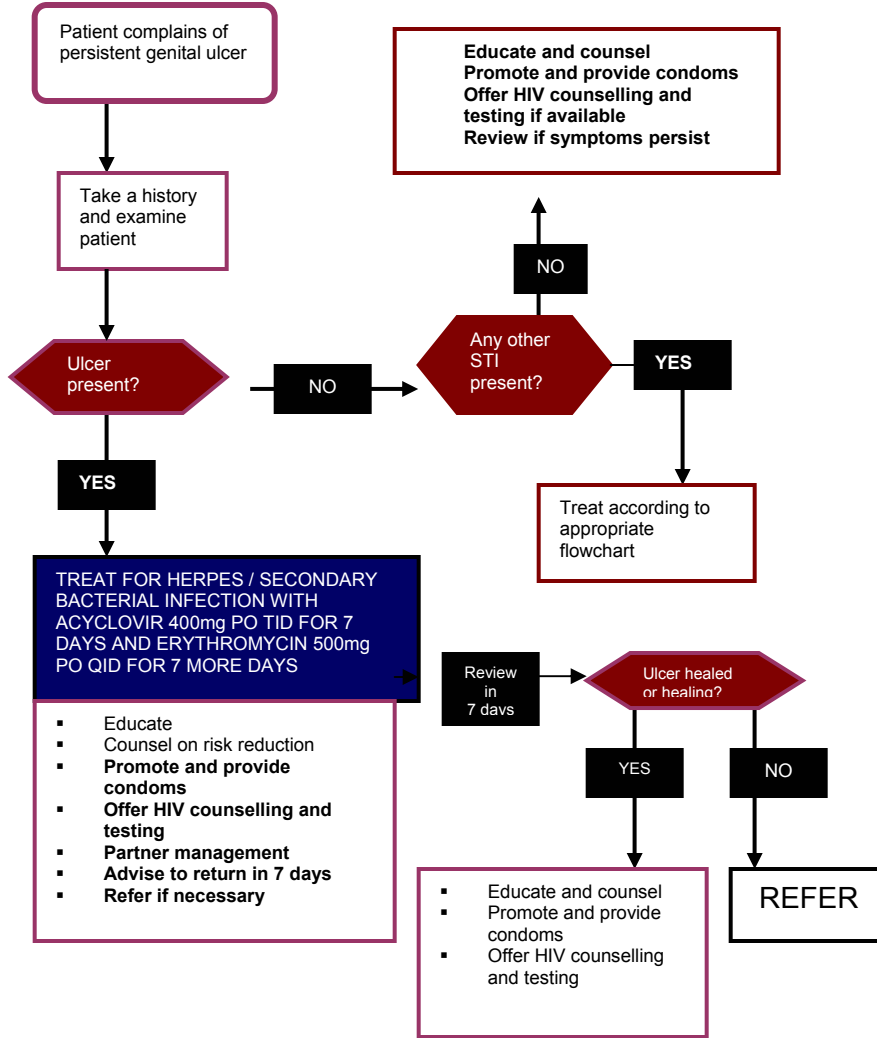
#### 12.8.4 Treatment of Persistent Genital Ulcers

Patients who present with genital ulcers that show no signs of healing after 7 days treatment with erythromycin may have persistent genital herpes and should be managed with a specific anti-herpes virus drug, and should continue with erythromycin in case syphilis is also present. The following treatment should be given to persons presenting with persistent genital ulcers:

<b>First line treatment for persistent genital ulcers</b>						
<b>Drug</b>	<b>Codes</b>		<b>Adult dose</b>	<b>Route</b>	<b>Frequency</b>	<b>Duration</b>
Erythromycin (for bacterial infection and syphilis)	C	V	500mg	PO	QID	For total 14 days
AND						
Acyclovir (for herpes simplex infection)	B	E	400mg	PO	TID	7 days
AND, LOCAL HYGIENE						

**NOTE:** The patient would already have received 7 days of erythromycin, and so will need treatment for another 7 days, making the total duration of erythromycin 14 days

### 12.8.5 Flowchart for the management of persistent genital ulcers in men and women



### 12.8.6 Alternative Treatment for Genital Ulcers using Intramuscular Penicillin

Alternatively patients may be managed for genital ulcers by being given treatment for syphilis, chancroid and bacterial infection using erythromycin 500mg PO QID for 7 days (for chancroid and bacterial infection) and benzathine penicillin 2.4 million units IM as single dose (for syphilis). Patients are then reviewed and if genital ulcers persist then they should receive herpes simplex virus treatment with acyclovir 400mg PO TID. If patients fail to respond to this they should be referred for expert opinion and investigations. This regimen is summarized below.

<b>Alternative treatment for genital ulcers</b>						
<b>Drug</b>	<b>Codes</b>		<b>Adult dose</b>	<b>Route</b>	<b>Frequency</b>	<b>Duration</b>
<b>Erythromycin</b> (for chancroid, and secondary bacterial infection)	C	V	500mg	PO	QID	7 days
<b>AND</b>						
<b>Benzathine penicillin</b> (for syphilis)	C	V	2.4 million units	IM (half dose into each buttock)	ONCE only	Single dose
<b>On review in 7 days:</b>						
<b>Genital ulcers have healed</b>			<b>no further treatment is given</b>			
<b>Genital ulcers persist give:</b>						
<b>Acyclovir</b> (for genital herpes)	B	E	400mg	PO	TID	7 days

## 12.9 Vaginal Discharge in Women

A spontaneous complaint of abnormal vaginal discharge is most commonly due to a vaginal infection such as candidiasis, trichomoniasis or bacterial vaginosis. It may also be the result of mucopurulent cervicitis caused by *N. gonorrhoeae* or *C. trachomatis*. The clinical detection of cervical infection is difficult because women with gonococcal or chlamydial cervical infection are often asymptomatic.

Among women presenting with discharge, one can attempt to identify those with an increased likelihood of being infected with *N. gonorrhoeae* and/or *C. trachomatis*. Microscopy adds little to the diagnosis of cervical infection and is not recommended. It is therefore recommended that all women with vaginal discharge confirmed on clinical examination should be treated for both gonococcal **and** chlamydial infection, and in addition depending on the type of discharge they should be treated for either candidiasis or trichomoniasis.

### 12.9.1 Treatment of vaginal discharge

Patients complaining of vaginal discharge should be examined for evidence of vaginal discharge and a decision should be made on the type of discharge found. Patients should be treated according to the type of discharge present.

**CAUTION IN PREGNANCY:**

**Doxycycline, tetracycline, norfloxacin and ciprofloxacin should not be used during pregnancy, or in lactating women. In pregnant women chlamydial infection is best treated with erythromycin while kanamycin should be used for gonococcal infection.**

**First line treatment of profuse/frothy/malodorous/purulent vaginal discharge**

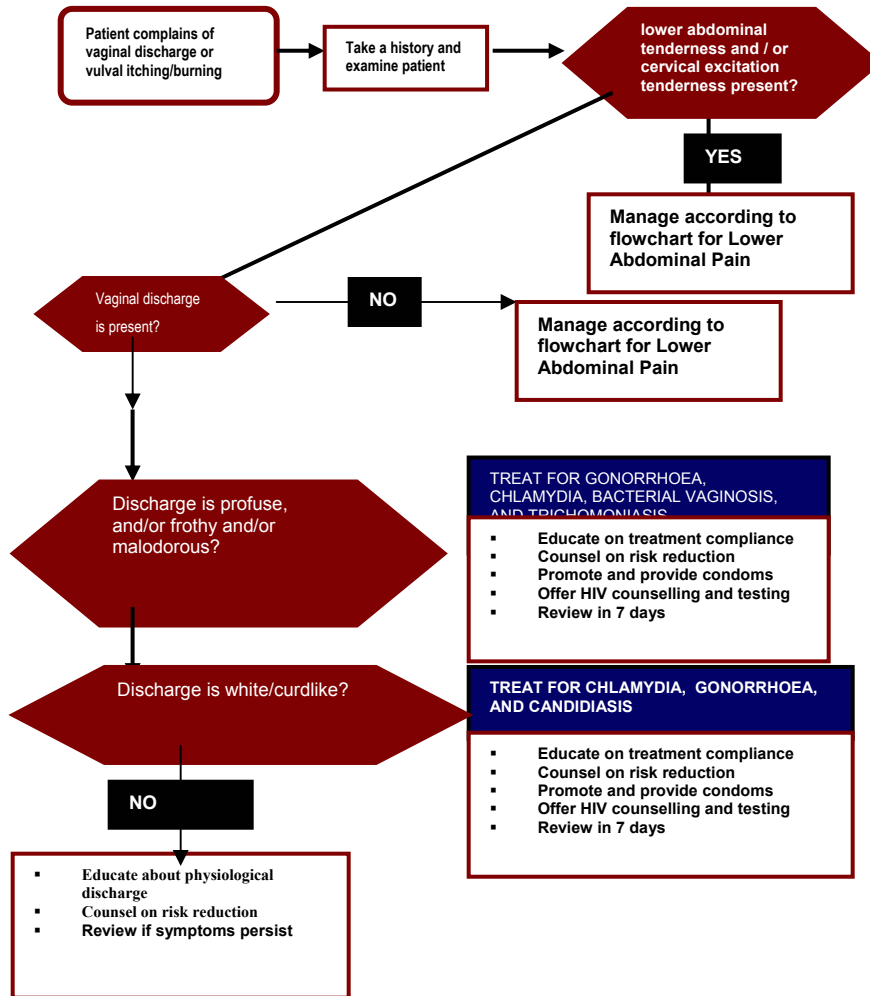
Drug	Codes		Adult dose	Route	Frequency	Duration
<b>Kanamycin</b> (for gonococcal infection)	C	V	2g	IM (1g into each buttock)	Once	Single dose
<b>AND</b>						
<b>Doxycycline</b> (for chlamydial infection)	C	V	100mg	PO	BID	7 days
<b>AND</b>						
<b>Metronidazole</b> (for bacterial vaginosis and trichomoniasis)	C	V	400mg	PO	BID	7 days

**First line treatment of white/curd-like vaginal discharge**

Drug	Codes		Adult dose	Route	Frequency	Duration
<b>Kanamycin</b> (for gonococcal infection)	C	V	2g	IM (1g into each buttock)	Once	Single dose
<b>AND</b>						
<b>Doxycycline</b> (for chlamydial infection)	C	V	100mg	PO	BID	7 days
<b>AND</b>						
<b>Miconazole</b> (for candidiasis)	C	V	200mg	Intravaginally	TID	3 days

- Alternative gonorrhoea treatment is norfloxacin 800mg PO in a single dose
- Alternative chlamydial treatment is erythromycin 500mg PO QID for 7 days
- Alternative candida treatment is:
  - Clotrimazole, 200 mg intravaginally, daily for 3 days
  - Clotrimazole, 500 mg intravaginally, as a single dose
  - Fluconazole, 150 mg orally, as a single dose
  - Nystatin, 100 000 IU intravaginally, daily for 14 days

12.9.2 Flowchart for the management of vaginal discharge in women



### 12.10 Lower Abdominal Pain in Women

There are many causes of lower abdominal pain in women. Some of the causes are trivial and need only re-assurance after examination, while others are serious requiring immediate surgical or gynaecologic intervention. An STI-related cause is pelvic inflammatory disease (PID). This is a serious complication of STI as it is associated with significant morbidity and mortality as well as serious long-term sequelae, such as, predisposition to ectopic pregnancy and infertility.

PID is defined as infection the female genital tract above the internal os of the cervix. Acute primary PID is caused by ascending infection from the cervix of gonococcal, chlamydial or anaerobic bacterial infection resulting in endometritis, salpingitis, salpingo-oophoritis and pelvic peritonitis. Women presenting with lower abdominal should be carefully assessed and examined to rule out the possibility of a gynaecologic or surgical emergency, such as, threatened, septic or incomplete abortion, retained products of conception, ectopic pregnancy, and acute appendicitis.

Women with acute PID usually present with a history of lower abdominal pain, often associated with vaginal discharge and irregular menstruation and on examination there is lower abdominal and pelvic tenderness and cervical excitation tenderness. Women with PID who do not have features of peritonitis, such as, abdominal guarding, rigidity or rebound tenderness, and do not have abdominal masses, vaginal bleeding or shock, may be treated for PID on an outpatient basis. Those women with lower abdominal pain who have any of the following features should be referred for expert opinion and management:

- History of missed, delayed or overdue period
- Recent (in the last 6 weeks) history of delivery or abortion
- Abdominal guarding, rigidity or rebound tenderness
- Abdominal mass
- Vaginal bleeding
- Shock

### 12.10.1 Treatment of pelvic inflammatory disease

The outpatient management of PID should include treatment for gonococcal chlamydial and anaerobic bacterial infection. All patients should be reviewed 72 hours after initiating treatment and if there is no significant improvement then the patient should be referred for expert opinion. If the patient has responded to treatment then treatment should be continued for at least 10 days.

First line treatment of PID						
Outpatient basis						
Drug	Codes		Adult dose	Route	Frequency	Duration
<b>Kanamycin</b> (for gonococcal infection)	C	V	2g	IM (1g into each buttock)	Once	Single dose
<b>AND</b>						
<b>Doxycycline</b> (for chlamydial infection)	C	V	100mg	PO	BID	14 days
<b>AND</b>						
<b>Metronidazole</b> (for anaerobic bacterial infection)	C	V	400mg	PO	BID	14 days

Alternative gonorrhoea treatment:

- Ceftriaxone 250mg IM in a single dose
- Ciprofloxacin 500mg PO in a single dose

<b>Second line treatment of PID Inpatient basis</b>						
<b>Drug</b>	<b>Codes</b>		<b>Adult dose</b>	<b>Route</b>	<b>Frequency</b>	<b>Duration</b>
<b>Ceftriaxone</b> (for gonococcal infection)	C	V	250mg	IM	Once daily	5 days
<b>AND</b>						
<b>Doxycycline</b> (for chlamydial infection)	C	V	100mg	PO	BID	14 days
<b>AND</b>						
<b>Metronidazole</b> (for anaerobic bacterial infection)	C	V	400mg	PO	BID	14 days

Alternative gonococcal treatment:

- Ciprofloxacin 500mg PO BID for 4 days
- Spectinomycin 1g IM QID for 4 days

Alternative chlamydia treatment:

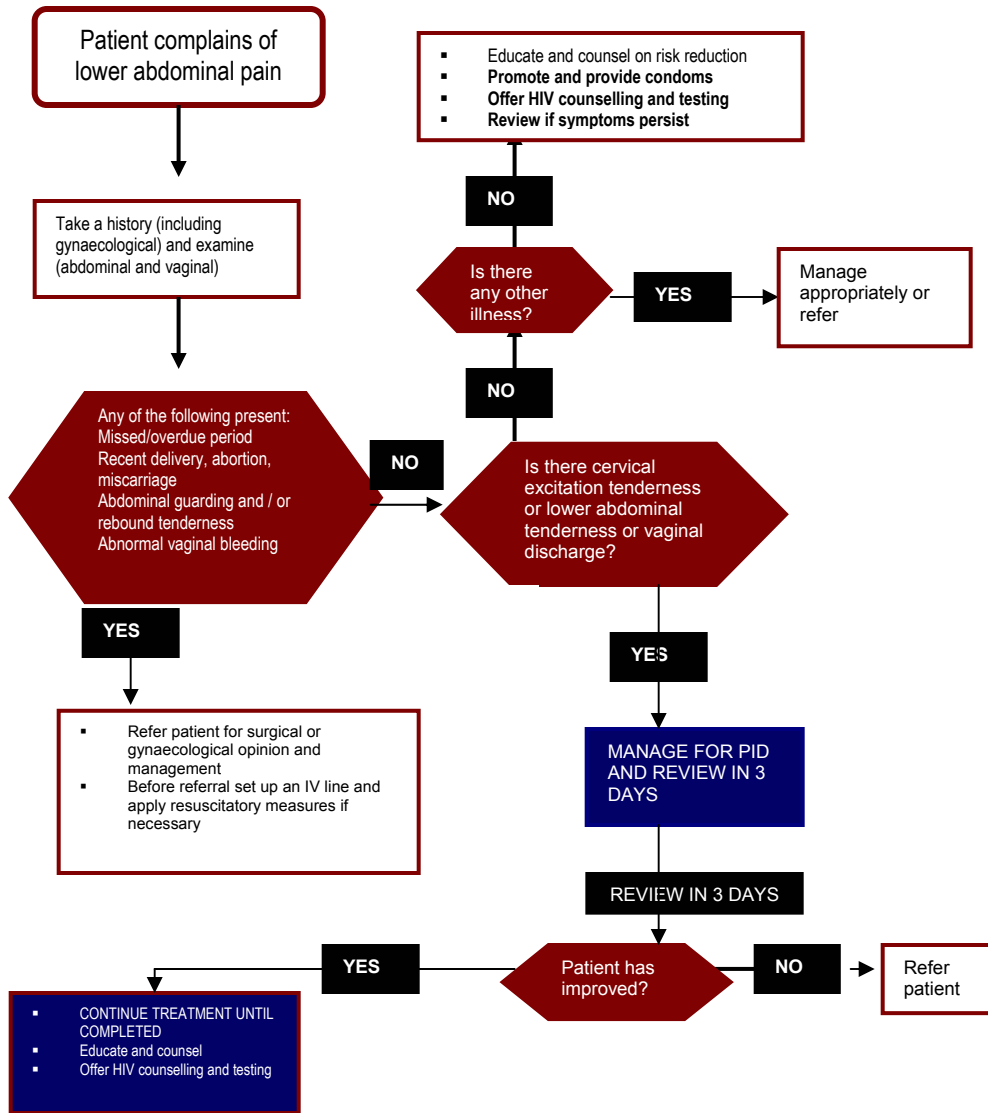
- Doxycycline 100mg IV BID for 4 days followed by 100mg PO BID for 10 days
- Tetracycline 500mg IV QID for 4 days followed by doxycycline 100mg PO BID for 10 days

Alternative anaerobic bacterial treatment:

- Metronidazole 400mg IV BID for 4 days then 400mg PO BID for 10 days
- Chloramphenicol 500mg IV or PO QID for 4 days then metronidazole 400mg PO BID for 10 days

<b>Third line treatment of PID Inpatient basis</b>						
<b>Drug</b>	<b>Codes</b>		<b>Adult dose</b>	<b>Route</b>	<b>Frequency</b>	<b>Duration</b>
<b>Clindamycin</b>	C	V	900mg	IV	TID	4 days
<b>AND</b>						
<b>Gentamicin</b>	C	V	1.5mg/kg	IV	TID	4 days
<b>THEN</b>						
<b>Metronidazole</b>	C	V	400mg	PO	BID	14 days
<b>AND</b>						
<b>Doxycycline</b>			100mg	PO	BID	14 days

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



## 12.11 Inguinal Bubo without Genital Ulcers

An inguinal bubo is defined as acute suppurative inguinal lymphadenitis. Affected lymph nodes are enlarged, tender, and hot and may be fluctuant if pus formation occurs. A number of conditions can cause acute suppurative inguinal lymphadenopathy including, septic skin lesions on the thighs, buttocks, lower abdomen, lower back and perineum. STI-related causes of inguinal buboes include chancroid and lymphogranuloma venereum (LGV). In persons with buboes caused by chancroid, genital ulcers are usually present, while in LGV buboes may develop without the appearance of genital ulcers. LGV is an infection of the lymphatics and infected patients may develop genital lymphoedema which will resolve if early effective treatment is instituted or may develop into permanent elephantiasis if treatment is not given and fibrosis of the lymphatics occurs. The bubo on chancroid is usually unilocular while the bubo in LGV is multilocular.

### 12.11.1 Treatment of inguinal buboes

In managing persons with inguinal buboes a careful examination should be performed in search of skin lesions on the lower limbs, lower back and abdomen, and the perineum. If a genital ulcer is present then the patient should be treated as for genital ulcer disease. If septic skin lesions are found these should be managed appropriately. If a bubo is found in person and no genital ulcers are found then the patient should be treated for LGV and chancroid. Fluctuant buboes should be aspirated with a wide bore needle every 3 days if necessary.

#### First line treatment of LGV

Drug	Codes	Adult dose	Route	Frequency	Duration
Doxycycline	C V	100mg	PO	BID	14 days

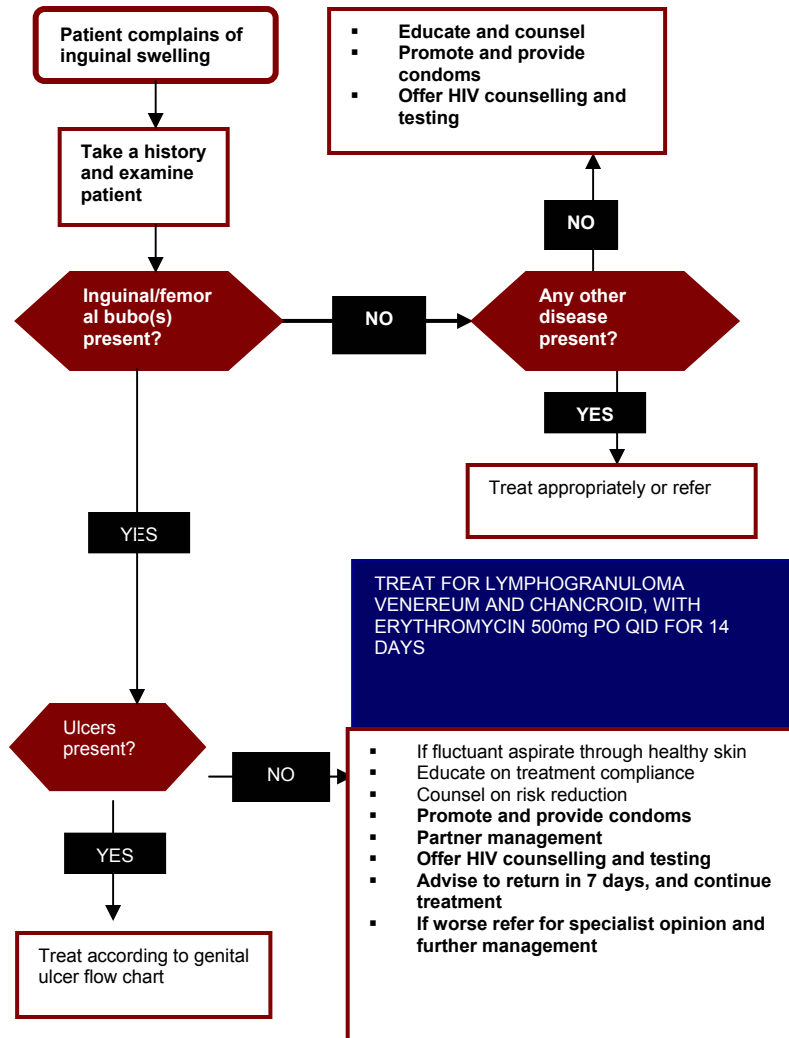
Alternative treatment for LGV:

- Erythromycin 500mg PO QID for 14 days
- Tetracycline 500mg PO QID for 14 days

<b>First line treatment of chancroid</b>						
<b>Drug</b>	<b>Codes</b>		<b>Adult dose</b>	<b>Route</b>	<b>Frequency</b>	<b>Duration</b>
Erythromycin	C	V	500mg	PO	QID	7 days

**It may be most convenient to treat all patients with inguinal buboes with erythromycin 500mg PO QID for 14 days.**

12.11.2 Flowchart for the management of bubo



## 12.12 Acute Scrotal Swelling

Acute scrotal swelling may occur in persons with acute epididymo-orchitis, testicular torsion and scrotal trauma, and in those with irreducible or strangulated inguinal hernia. Patients should be examined carefully in order to exclude these conditions. The STI-related causes of acute scrotal swelling include gonococcal and chlamydial infection. Infection with mumps virus and bacteria such as *Escherichia coli*, *Klebsiella spp*, *Pseudomonas aeruginosa*, *Brucella spp*, can also lead to epididymitis. In areas of high prevalence filariasis in the early stages may cause epididymo-orchitis.

### 12.12.1 Treatment of acute scrotal swelling

In managing persons with acute scrotal swelling it is important to exclude surgical causes, and to refer those who may have a surgical cause for appropriate management. A history should be taken and patients should be examined carefully. If no surgical cause is found and it is suspected that the patient has acute epididymo-orchitis then the patient should be treated as follows:

First line treatment for acute scrotal swelling						
Drug	Codes		Adult dose	Route	Frequency	Duration
Kanamycin (for gonococcal infection)	C	V	2g	IM	Once	Single dose
<b>AND</b>						
Doxycycline (for chlamydial infection)	C	V	100mg	PO	BID	14 days

Alternative gonorrhoea treatment is

- Norfloxacin 800mg PO in a single dose

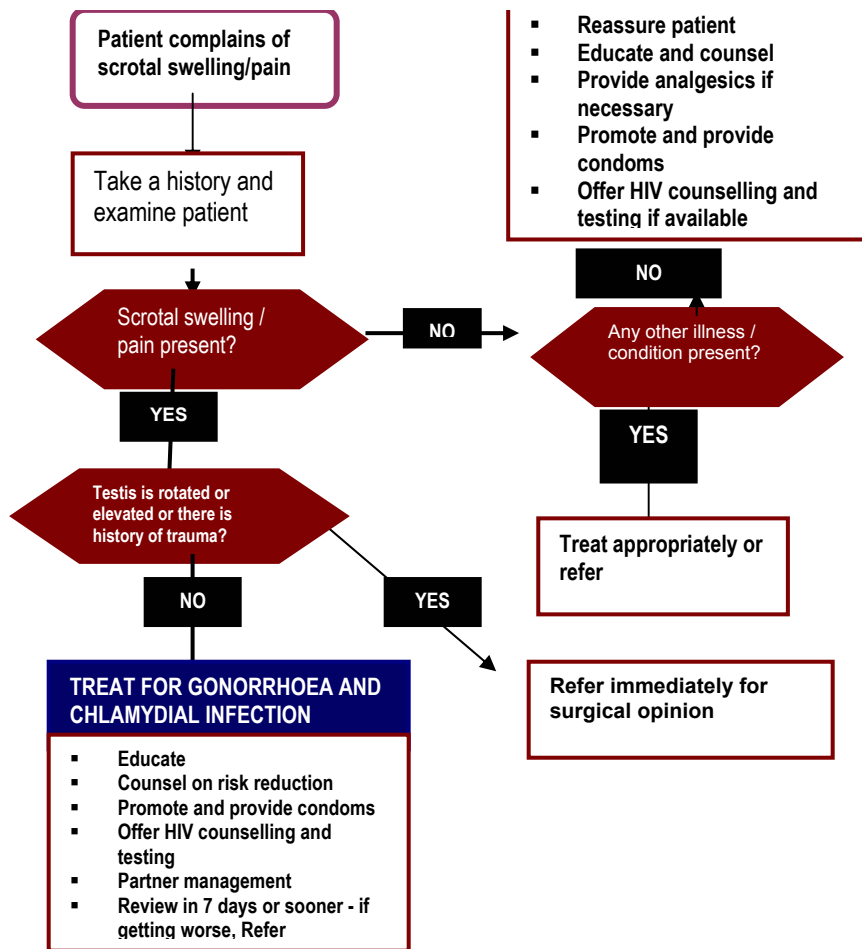
Alternative chlamydia treatment is

- Tetracycline 500mg PO QID for 14 days
- Erythromycin 500mg PO QID for 14 days

For pain relief give

- Paracetamol 500mg PO TID, and if necessary,
- Scrotal support

### 12.12.2 Flowchart for the management of acute scrotal swelling



### 12.13 Purulent Neonatal Conjunctivitis

Ophthalmia neonatorum is defined as conjunctivitis with discharge (purulent neonatal conjunctivitis) occurring in a neonate within the first month of life.

The condition is commonly caused by gonococcal, chlamydial and bacterial infection.

STI-related causes include *N. gonorrhoeae* and *C. trachomatis*. Gonococcal ophthalmia neonatorum if not treated early and effectively can lead to blindness in babies. The condition is preventable by detecting and treating maternal gonococcal and chlamydial infection during pregnancy and by instilling **1% tetracycline eye ointment** carefully into the conjunctival sacs of every baby as soon as possible after birth. Other bacterial infections, such as, *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Haemophilus* spp. And *Pseudomonas* spp can also cause purulent neonatal conjunctivitis.

### 12.13.1 Treatment of purulent neonatal conjunctivitis

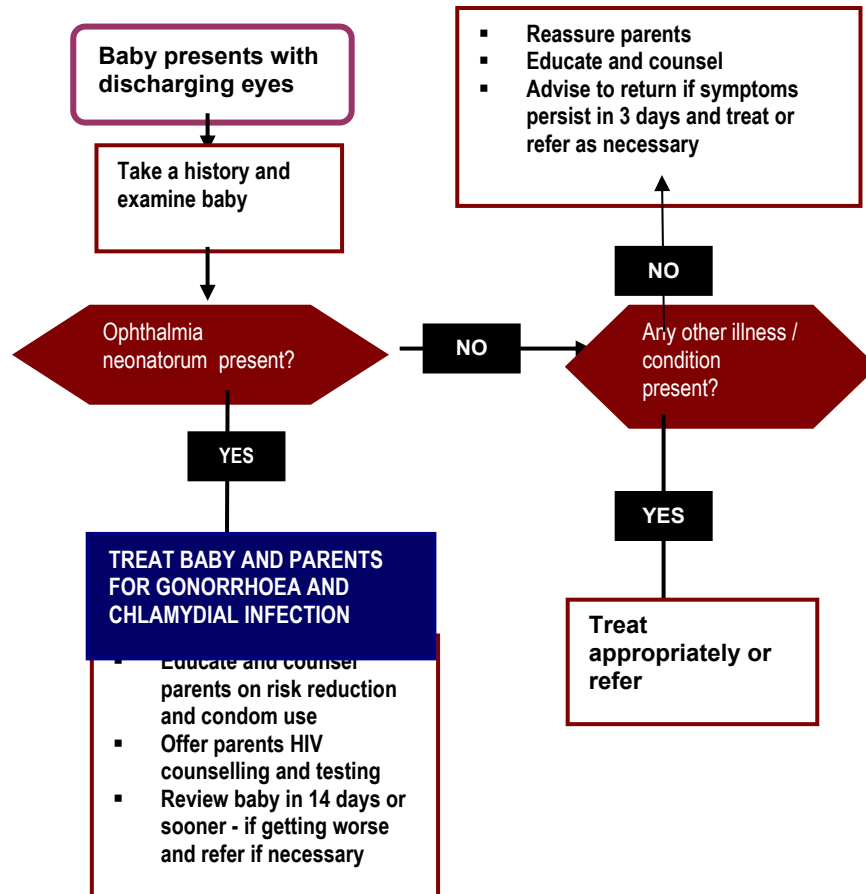
Once a diagnosis of ophthalmia neonatorum is made the baby and the parents should be treated.

The treatment is summarised below:

First line treatment for acute scrotal swelling						
Drug	Codes		Infant dose	Route	Frequency	Duration
<b>Kanamycin</b> (for gonococcal infection)	C	V	25mg/kg	IM	Once	Single dose
<b>AND</b>						
<b>Erythromycin</b> (for chlamydial infection)	C	V	16mg/kg	PO	TID	14 days

- The mother should receive kanamycin 2g IM single dose and erythromycin 500mg PO QID for 7 days
- The father should receive kanamycin 2g IM single dose and doxycycline 100mg PO BID for 7 days

### 12.13.2 Flowchart for the management of purulent neonatal conjunctivis



### 12.14 Recurrent or Vesicular Genital Lesions

These are usually due to genital herpes. Advise the patient to wash frequently with soapy water and give the patient analgesics if the lesions are

very painful. In patients with genital ulcers, manage them as detailed in the section on management of genital ulcers.

### 12.15 Granulating Ulcers Without Bubo

These are most likely to be lesions of granuloma inguinale, a condition also known as Donovanosis and caused by *Calymmatobacterium granulomatis*. This condition is not commonly seen in patients in Zimbabwe. It should be remembered that persons who are immunosuppressed may not develop a bubo and occasionally persistent genital ulcers without bubo formation may occur as a result of genital herpes or chancroid in persons with immunosuppression and HIV infection.

Patients should be managed as for genital ulcers. Specific treatment for granuloma inguinale is:

First line treatment for granuloma inguinale						
Drug	Codes		Adult dose	Route	Frequency	Duration
Doxycycline	C	V	100mg	PO	BID	14 days

Alternative treatments for granuloma inguinale include:

- Tetracycline 500mg PO QID for 14 days
- Erythromycin 500mg PO QID for 14 days
- Trimethoprim 160mg/sulphamethoxazole 800mg PO BID for 14 days
- Azithromycin 1g PO initially, then 500mg PO OD for 14 days

### 12.16 Genital warts (Condylomata acuminata)

Genital warts are caused by the human papilloma virus (HPV). A large number of different strains of the virus are known to cause disease in

humans. Some HPV strains are associated with cervical cancer and anogenital cancers.

### 12.15.1 Treatment of genital warts

Treatment of external genital and perianal warts:

#### First line treatment for external genital and perianal warts

Drug	Codes		Adult dose	Route	Frequency	Duration
Podophyllin paint 20%	B	N	Apply to warts and wash off after 4 hours	Apply to warts	Once weekly	3 weeks

**CAUTIONS:** For **external use only**. Do NOT use podophyllin in pregnancy. Do not apply to the cervix, urethra or anal mucosa.

### 12.16.2 Cervical, urethral and vaginal warts:

These should not be treated with podophyllin. Patients should be referred for electrocautery, cryotherapy or surgical excision

### 12.17 Molluscum Contagiosum

Molluscum contagiosum is caused by the molluscum contagiosum virus. The infection is not always acquired sexually, commonly being transmitted through contaminated towels. The lesions of molluscum contagiosum may occur on any part of the body. The condition presents as papules with a central umbilication. The contents of the papules when expressed are seen as a white cheesy material.

#### 12.17.1 Treatment of molluscum contagiosum

The lesions of molluscum contagiosum may resolve spontaneously. If not, then each lesion should be pricked with a sharpened "orange-stick" or

needle and the contents of the lesion expressed. This alone may be sufficient, or each lesion can then be touched carefully with liquefied phenol.

Lesions of molluscum contagiosum may become extensive and large in immunosuppressed persons with HIV infection. If the lesions are very extensive and are very large then the patient should be referred for specialist attention.

### 12.18 Pediculosis pubis (Pubic lice)

Pediculosis pubis is caused by the pubic louse *Phthirus pubis*. This is a parasitic infestation and may be transmitted sexually from person to person or may be transmitted through bed clothes. Patients usually complain of itchiness in the hairy areas around the genitals and often excoriations are present. Careful visualization will reveal the lice as dark spots on the skin and the nits (egg containing sacs) at the junction between the skin and the hairs.

Patients with pediculosis pubis and their sexual partners should be treated as follows:

First line treatment for pubic lice						
Drug	Codes		Adult dose	Route	Frequency	Duration
Gammabenzene hexachloride 1%	C	V	Apply to hairy areas below umbilicus and wash off after 24 hours		Two applications 10 days apart	

**Caution:** Do **not** use gammabenzene hexachloride in pregnancy and lactation - refer mothers to district level for benzyl benzoate.

**Alternative in pregnancy, lactating mothers or children < 6 months:**

First line treatment for pubic lice						
Drug	Codes		Adult dose	Route	Frequency	Duration
Benzyl benzoate emulsion 20%	B	N	Apply to hairy areas below umbilicus and wash off after 24 hours		Two applications 7 to 10 days apart	

For children dilute the benzyl benzoate 1:1 with water  
 For infants dilute the benzyl benzoate 1:3 with water

Alternative treatments include,

- lindane, 1% lotion or cream, rubbed gently but thoroughly into the infested area and adjacent hairy areas and washed off after 8 hours. Lindane must not be used during pregnancy or lactation
- Permethrin 1%, applied as above

Re-treatment is indicated after 7 days if lice are found or eggs are observed at the hair-skin junction. Clothing or bed linen that may have been contaminated by the patient in the two days prior to the start of the treatment should be washed and dried well, or dry-cleaned.

### 12.19 Scabies

Scabies is caused by the mite *Sarcoptes scabiei*. The infection is often sexually transmitted in adults. However, there clearly are situations in which scabies is transmitted through close body contact not related to sexual activities. This is true in circumstances in which people are living in very close quarters such as in schools, poor housing complexes and in institutions such as nursing homes and psychiatric hospitals. Patients with scabies usually present with pruritus associated with a papular eruption on the forearms, web spaces of the hands, buttocks, umbilicus and genitals.

Patients with scabies may be managed as follows:

First line treatment for scabies						
Drug	Codes		Adult dose	Route	Frequency	Duration
Gammabenzene hexachloride 1%	C	V	Apply from neck down to toes and wash off after 8-12 hours in children and 24 hours in adults		Single application is sufficient	

**Caution:** Do **not** use gammabenzene hexachloride in pregnancy and lactation - refer mothers to district level for benzyl benzoate.

**Alternative in pregnancy, lactating mothers or children < 6 months:**

First line treatment for scabies		Codes		Adult dose	Route	Frequency	Duration
Drug		B	N	Apply from neck down to toes and wash off after 24 hours		Two applications 24 hours apart	
Benzyl benzoate emulsion 20%							

- For children dilute the benzyl benzoate 1:1 with water
- For infants dilute the benzyl benzoate 1:3 with water

Alternative treatments include,

- lindane, 1% lotion or cream, rubbed gently but thoroughly into the infested area and adjacent hairy areas and washed off after 8 hours. Lindane must not be used during pregnancy or lactation
- Permethrin 1%, applied as above
- 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 (crotamiton has the advantage of an antipruritic action).
- 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.

## 12.20 Syphilis

The following sections describe the management of syphilis when a specific diagnosis has been made.

### 12.20.1 Treatment of early syphilis

Early syphilis is defined as syphilis that has less than 2 years duration and includes primary, secondary and early latent stages of syphilis.

Early syphilis is managed as follows:

First line treatment for early syphilis						
Drug	Codes		Adult dose	Route	Frequency	Duration
Benzathine penicillin	C	V	2.4 million units	IM	Once only	Single dose
OR						
Doxycycline	C	V	100mg	PO	BID	14 days
OR						
Erythromycin	C	V	500mg	PO	QID	14 days

### 12.20.2 Treatment of late syphilis

Late syphilis is defined as syphilis that has more than 2 years duration and includes latent, gummatous, cardiovascular and neurologic syphilis, and syphilis of unknown duration. Late syphilis is managed as follows:

Late latent syphilis

First line treatment for late latent syphilis						
Drug	Codes		Adult dose	Route	Frequency	Duration
Benzathine penicillin	C	V	2.4 million units	IM	Once weekly	3 weeks (i.e., 3 doses)
OR						
Doxycycline	C	V	100mg	PO	BID	30 days

## 2. Latent syphilis in pregnancy

### First line treatment for latent syphilis in pregnancy

Drug	Codes		Adult dose	Route	Frequency	Duration
Benzathine penicillin	C	V	2.4 million units	IM	Once weekly	3 weeks (i.e., 3 doses)
<b>OR</b>						
Erythromycin	C	V	500mg	PO	QID	30 days

## 3. Neurosyphilis, cardiovascular syphilis and Gummatous syphilis

Neurosyphilis includes meningovascular syphilis, optic atrophy, syphilis meningitis, tabes dorsalis, general paresis and also abnormalities found in the cerebrospinal fluid without clinical signs (i.e., latent neurosyphilis) in a person with positive blood serologic tests for syphilis.

### First line treatment for neurosyphilis, cardiovascular and gummatous syphilis

Drug	Codes		Adult dose	Route	Frequency	Duration
Benzyl penicillin (aqueous)	C	V	5 million units	IV	QID	14 days
<b>OR</b>						
Doxycycline	C	V	100mg	PO	BID	30 days
<b>OR</b>						
Erythromycin	C	V	500mg	PO	QID	30 days

## 4. Babies born to mothers who were found to have positive syphilis serology during pregnancy

Babies born to women found to have syphilis during pregnancy should be treated **even if** the mother had been adequately treated during pregnancy as follows:

**First line treatment of babies born to mothers found to have syphilis during pregnancy**

Drug	Codes		Infant dose	Route	Frequency	Duration
Benzathine penicillin	C	V	50 000 units/kg	IM	Once	Single dose

**5. Congenital Syphilis (babies clinically infected):**

Congenital syphilis is also divided into the early and late stages. Early congenital syphilis is less than 2 years duration while late congenital syphilis is more than 2 years duration.

**First line treatment of early congenital syphilis**

Drug	Codes		Adult dose	Route	Frequency	Duration
Benzyl penicillin (aqueous)	C	V	50 000 units/kg	IV	TID	10 days
<b>OR</b>						
Procaine benzyl penicillin	C	V	50 000 units/kg	IM	OD	10 days

**First line treatment of late congenital syphilis**

Drug	Codes		Adult dose	Route	Frequency	Duration
Benzyl penicillin (aqueous)	C	V	50 000 units/kg	IV	QID	14 days
<b>OR</b>						
Procaine benzyl penicillin	C	V	50 000 units/kg	IM	OD	14 days
<b>OR</b>						
Erythromycin	C	V	16mg/kg	PO	TID	30 days

## 12.21 STIs during pregnancy

All pregnant women attending for antenatal care should have a history taken and should be carefully examined. A diagnosis of STI may be made on the syndromic basis depending on the symptoms and signs. If a diagnosis of STI is made then the patient should be managed according to the guidelines and flowcharts provided in this document. Comprehensive syndromic case management should be given. If the patient does not have symptoms then a diagnosis of STI can be made using laboratory tests.

### 12.21.1 Managing pregnant women found to have positive syphilis serology

All pregnant women attending for antenatal care should have blood tests for syphilis. The rapid plasma reagin (RPR) test is a non-treponemal screening test for syphilis and is easy to perform without the need of sophisticated equipment. The test is performed on a card and the result of the test may be obtained in less than 10 minutes. False positive results do occur in some patients and the test does not distinguish between syphilis and yaws (framboesia). Some laboratories may carry out different laboratory tests for syphilis including the Venereal Diseases Research Laboratory (VDRL) test or the *Treponema pallidum* haemagglutination assay (TPHA). The latter test is a specific test for syphilis and is usually carried out as a confirmatory test after finding a positive RPR or VDRL test.

In order to prevent the development of congenital syphilis all pregnant women found to have a positive RPR test or a positive VDRL should be treated for syphilis immediately. If subsequently the TPHA is found to be negative then the treatment may be discontinued. However there should be no delay in commencing treatment as the patient may not return for another antenatal visit and may be lost to follow up.

The following treatment regimen is recommended in managing pregnant women found to have a positive RPR test result during pregnancy:

*Patient is NOT allergic to penicillin*

Give benzathine penicillin 2.4 million units intramuscularly each week for 3 weeks. Because of the volume of injection to be given it is advisable to give half the volume into each buttock at each session.

*Patient is allergic to penicillin*

Give patient erythromycin 500 mg orally 4 times a day for 14 days.

### **12.21.2 Managing the baby born to a mother who had a positive syphilis test during pregnancy**

All babies born to women who had a positive blood test for syphilis during pregnancy should be given treatment for syphilis regardless of whether or not the mother had received full treatment during pregnancy. The baby should receive:

Benzathine penicillin 50 000 units / kg body weight by intramuscular injection

### **12.21.3 Managing partners of women found to have a positive blood test for syphilis**

Partners of women found to have positive blood test for syphilis should be referred for treatment. If the partner has symptoms of STI then he should be treated for the STI and should also receive benzathine penicillin 2.4 million units. If the partner has no symptoms or signs of STI and there is no recent history (in the last 9 months) of STI then a blood test for syphilis should be carried out. If the test is positive then he should receive benzathine penicillin 2.4 million units intramuscularly weekly for 3 weeks. It is important to counsel both partners regarding the need for treatment. It is also important to explain that a discordant result does not indicate infidelity and that such results occur because pregnancy itself may lead to false positive results and also because the tests currently in use cannot distinguish between yaws and syphilis.

### **12.21.4 STI drugs that should not be used during pregnancy**

A number of drugs are harmful to either the mother during pregnancy or to the foetus. These should not be used during pregnancy and lactation. The STI drugs that should not be used during pregnancy and lactation include:

- Doxycycline
- Tetracycline
- Ciprofloxacin
- Norfloxacin
- Podophyllin

It is advisable not to use metronidazole during the first trimester of pregnancy.

### **12.22 STIs in Children**

During the past decade, sexual abuse of children and adolescents has come to be recognized as a serious public health problem. The management of the victims is emerging as an important aspect of child and adolescent health care throughout the world. A standardized approach to the management of sexually transmitted infections in children and adolescents who are suspected of having been sexually abused is important because the infection may be asymptomatic. An STI which remains undiagnosed and untreated may result in complications at a later stage.

All children suspected of having been sexually abused should be screened routinely for STI, and all children diagnosed with an STI should be investigated for the source of infection. The identification of a sexually transmissible agent in a child beyond the neonatal period, in the vast majority of cases, is suggestive of sexual abuse. However, exceptions do exist, e.g. rectal or genital infection with *C. trachomatis* in young children may be due to perinatally acquired infection, which may persist for up to 3 years. In addition, bacterial vaginosis and genital mycoplasma have been identified in both abused and non-abused children. Genital warts, although suggestive of assault, are not specific for sexual abuse without other evidence. When the only evidence of sexual abuse is the isolation of an organism or the detection of antibodies to a sexually transmissible agent, findings should be carefully confirmed and considered.

Health workers who suspect abuse must consider the options available for specialized counseling, social support and redress. It must be stressed that the psychological and social support services should be included for complete management of these patients.

Children should be examined carefully and gently and should be assured that they will not be hurt. The sexually abused child has already been traumatized both physically and emotionally and the examination should not add to this agony. It is preferable not to use any form of instrumentation and definitely not to use a speculum to examine the cervix. Specimen collection should be carried out painlessly and swabs for collection of specimens should not be inserted into the vagina or penis.

### **12.22.1 Initial examination**

At the initial examination a history should be taken and the child should be examined. An inspection of the external genitalia should be carried out and findings should be recorded.

Specimens should be taken of any discharge that is present in the vagina and anus and the urethral meatus. Specimens should be sent for gram stain and microscopy, culture for *N. gonorrhoeae* and identification of *C. trachomatis* and *T. vaginalis*. A sample of venous blood should also be collected for baseline testing for syphilis, hepatitis B virus and HIV. These tests will need to be repeated three weeks and three months after the sexual abuse.

At the initial visit, if it very soon after the sexual abuse, swabs and smears may reveal negative results as the organisms may not have had enough time to multiply to sufficient concentrations to be able to be identified and hence the swabs and cultures will need to be repeated at least one week after the event.

The perpetrator of the crime, if possible, should also be examined for STIs and have an HIV test performed.

### 12.22.2 Managing children with STIs and those exposed to STIs and HIV infection

In all children with STIs recruit the help of experts early during the cause of the illness. It is also necessary to enroll the services of counsellors and social workers in all cases.

#### 1. Post-exposure prophylaxis for HIV infection

There are insufficient data to make an evidence-based recommendation on prophylactic treatment to be offered to children that have been sexually abused. However it is felt that post-sexual exposure and if the HIV status of the perpetrator is positive or unknown then sexually abused children should be commenced on antiretroviral therapy as soon as possible after the event and no later than 3 days of the event.

The following regimen is recommended:

<b>RECOMMENDED POST SEXUAL EXPOSURE PROPHYLACTIC REGIMEN IN CHILDREN</b>				
<b>Drug</b>	<b>Dose</b>	<b>Frequency</b>	<b>Route</b>	<b>Duration</b>
<b>Zidovudine</b>				
Less than 28 days age	4mg/kg	BID	PO	4 weeks
4 weeks to 13 year age	180mg/m <sup>2</sup>	BID	PO	4 weeks
AND				
<b>Lamivudine</b>				
Age less than 30 days	2mg/kg	BID	PO	4 weeks
Age more than 30 days or weight less than 60kg	4mg/kg	BID	PO	4 weeks
More than 60kg weight (Maximum dose)	150mg	BID	PO	4 weeks
AND				
<b>Nevirapine</b>				
Aged 15-30 days: first 2 weeks	5mg/kg	OD	PO	2 weeks
Aged 15-30 days: after 2 weeks				
Aged >30 days: first 2 weeks	120mg/m <sup>2</sup>	BID	PO	2 weeks
Aged >30 days: after 2 weeks	120mg/m <sup>2</sup>	BID	PO	2 weeks
	200mg/m <sup>2</sup>	BID	PO	2 weeks

#### 2. Children found to have positive syphilis serology

Children found to have positive syphilis serology should be treated for syphilis as follows:

**First line treatment of acquired syphilis in children**

Drug	Codes		Adult dose	Route	Frequency	Duration
Benzyl penicillin (aqueous)	C	V	50 000 units/kg	IV	QID	10 days
OR						
Procaine benzyl penicillin	C	V	50 000 units/kg	IM	OD	10 days
OR						
Erythromycin	C	V	16mg/kg	PO	TID	14 days

**3. Children found to have vaginal discharge**

After specimens have been collected for gram-stain microscopy, wet prep microscopy and gonococcal culture and chlamydial identification, the following treatment should be given:

**First line treatment of vaginal discharge in children**

Drug	Codes		Adult dose	Route	Frequency	Duration
Ceftriaxone	C	V	50mg/kg	IM	Once	Single dose
AND						
Erythromycin	C	V	16mg/kg	PO	TID	10 days
AND						
Metronidazole	C	V	5mg/kg	PO	TID	7 days

**4. Children found to have genital ulcers**

If the child presents within 1 week of the event with genital ulcers treat him/her as follows:

**First line treatment of genital ulcers in children within 7 days of abuse**

Drug	Codes		Adult dose	Route	Frequency	Duration
Ceftriaxone	C	V	50mg/kg	IM	Once	Single dose
AND						
Erythromycin	C	V	16mg/kg	PO	TID	10 days

If the child presents with genital ulcers after 1 week of the event treat him/her as follows:

**First line treatment of genital ulcers in children after 7 days of abuse**

Drug	Codes		Adult dose	Route	Frequency	Duration
Ceftriaxone	C	V	50mg/kg	IM	Once	Single dose
<b>AND</b>						
Procaine benzyl penicillin	C	V	50 000 units/kg	IM	OD	10 days
<b>OR</b>						
Erythromycin	C	V	16mg/kg	PO	TID	14 days

**5. Children found to have genital warts**

These children should be referred for expert opinion and treatment with podophyllin, excision, cauterization or cryotherapy.