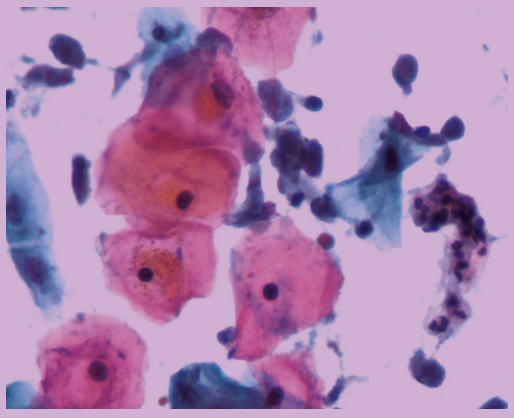
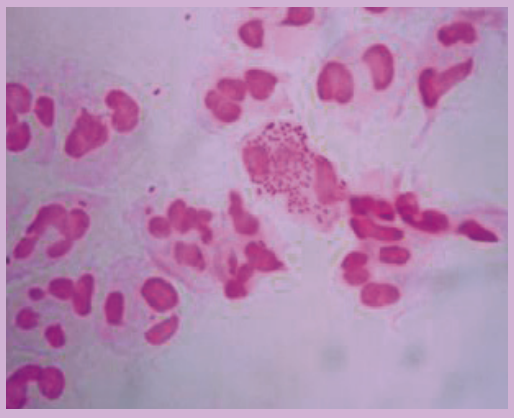
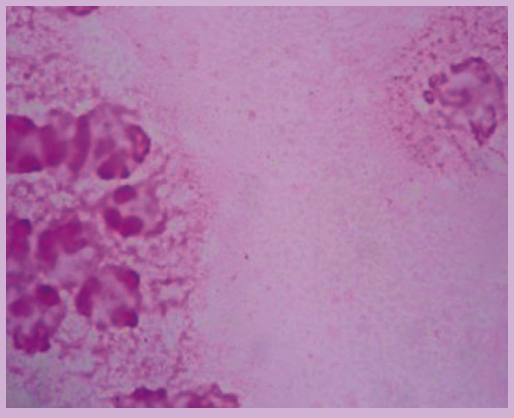
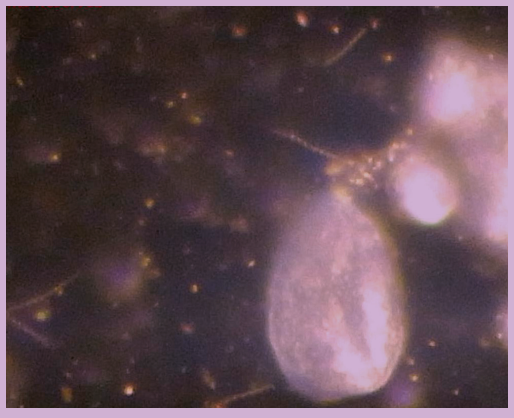
2022

NATIONAL GUIDELINES ON MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS

Government of Nepal
Ministry of Health and Population
National Centre for AIDS and STD Control
Teku, Kathmandu

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National Guidelines on Management of Sexually Transmitted Infections, 2022

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Pachali, Teku
Kathmandu, Nepal

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Foreword

Sexually transmitted Infections (STI) are among the most common causes of illness in Nepal. STI have a profound adverse impact on sexual, reproductive, maternal and child health. Nepal is committed to eliminate STI as public problem by 2030 and has continuously prioritized STI services for risk population.

Department of Health Services (DoHS), under the leadership of Ministry of Health and Population (MoHP), is committed to provide quality STI services at all levels of health care facilities. The National Center for AIDS and STD Control (NCASC) will continue to strengthen the PMTCT package for elimination of mother to child transmission of HIV, syphilis, hepatitis and prevention of maternal and neonatal morbidity due to STI. The guideline recommends the provision of high-quality STI service expansion especially prevention and care more widely into the areas of primary health care, sexual and reproductive health service, HIV prevention and care services. I hope this guideline will be helpful to capacitate the health worker for early diagnosis, management and control of STI.

I would like to express my sincere thanks to Dr Sudha Devkota, Director/ NCASC and her team for review and update of this guidelines in-line with new global evidence and recommendation.

Dr Dipendra Raman Singh
Director General

Government of Nepal
Ministry of Health and Population
National Centre for AIDS & STD Control

4261653
4262753
4258219

Fax: 4261406

Email: ncasc@ncasc.gov.np
Website: www.ncasc.gov.np
Taku, Kathmandu, Nepal

Ref. No. :

Date: .....

Foreword

Sexually transmitted infections (STI) are major public health problems. More than 1 million curable STI are acquired every day worldwide. The NCASC have always prioritized vulnerable population groups that are especially vulnerable to STIs mostly the sex workers and their clients, men who have sex with men, transgender people, young adults and adolescents, migrant, and mobile populations. The NCASC considers STI prevention and management as one of the important HIV prevention strategies and is also committed to end the vertical transmission of syphilis in line with the National Strategy for HIV 2022-2026.

The current National STI guidelines provides updated, evidence-informed clinical and practical recommendations on case management of people with symptoms of STI. The National Guidelines recommend a syndromic approach for the management of the STI. I am confident that this guideline will guide and facilitate policy makers, program managers, health care providers, stakeholders, and partners to design and deliver quality STI services to achieve to end the epidemic of STI.

I would like to thank all the representatives and participants from the MoHP, technical experts from private and medical sectors and stakeholders for their valuable contribution during the consultative process to revise and update this national guideline. My sincere thanks to WHO country office, Nepal for its continuous technical support to develop this important national guideline.

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Dr Sudha Devkota
Director

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AIDS	acquired immune deficiency syndrome
ANC	antenatal clinic
BV	bacterial vaginosis
FP	family planning
GNID	gram-negative intracellular diplococci
HCV	hepatitis C virus
HCW	health care worker
HIV	human immunodeficiency virus
HMIS	health management information system
HSV	herpes simplex virus
IUCD	intra uterine contraceptive device
IU	international unit
IM	intramuscular
IV	intravenous
KOH	potassium hydroxide
LAP	lower abdominal pain
LGV	lymphogranuloma venereum
MLM	male labor migrant
MSM	men who have sex with men
MSW	male sex worker
NAAT	nucleic acid amplification test
NG/CT	*Neisseria gonorrhoeae/Chlamydia trachomatis*
NGO	non- government organisation
NCASC	National Centre for AIDS and STD Control
PDPT	patient delivered partner treatment
PID	pelvic inflammatory disease
RPR	rapid plasma reagin
RST	rapid syphilis test
STI	sexually transmitted infections
TCA	trichloracetic acid
TG	transgender
TPHA	*Treponema pallidum* hemagglutination assay
TPPA	*Treponema pallidum* particle agglutination assay
TV	*Trichomonas vaginalis*
VDS	vaginal discharge syndrome
VDRL	Venereal Disease Research Laboratory
VVC	vulvovaginal candidiasis
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

The WHO Global progress report on HIV, viral hepatitis and sexually transmitted infections 2021 estimates 374 million new cases of STI per year: 128 million new cases of *Chlamydia trachomatis*, 82 million new cases of *Neisseria gonorrhoeae*,156 million new cases of *Trichomonas vaginalis* and 7.1 million new cases of *Treponema pallidum* (syphilis).

STI have direct effect on maternal and child health. The adverse effects may range from infertility, maternal morbidity and adverse pregnancy outcomes. Mother-to-child transmission of STI may also result in stillbirth, neonatal death, low-birth weight, prematurity, sepsis, pneumonia, neonatal conjunctivitis and congenital deformities.

STI increase the risk of sexual transmission and acquisition of HIV. Concurrent HIV in an STI patient may increase the infectivity and complicate treatment, which may further increase in mental health co-morbidities like anxiety, depression and dementia.

1.1 The Global Strategy on STI

The 2022–2030 global health sector strategies on HIV, viral hepatitis and sexually transmitted infections seek to end AIDS and the epidemics of viral hepatitis and sexually transmitted infections by 2030.

The GHSS target for STI for 2030 are:

- 90% reduction of *T. pallidum* incidence globally.
- 90% reduction in *N. gonorrhoeae* incidence globally.
- ≤ 50 cases of congenital syphilis per 100 000 live births in 80% of countries.
- sustain 90% national coverage with the human papillomavirus vaccine in their national immunization programme in at least 80% in every country.

The Global Health Sector Strategy recommends the provision of high-quality STI prevention and care integrated into the primary health care centres, sexual and reproductive health services, and HIV preventive and care services.

In addition to integrating STI services into routine services, outreach service interventions to specific populations may be required based on the epidemic dynamics and country context.

1.2 National response on STI

The National Center for AIDS and STD Control (NCASC) under the MoHP is responsible for ensuring STI services at the health facilities in Nepal. Few significant landmarks related to STI are as follows:

- In 1994, the first National STI Control Programme was started in Nepal.
- The first National STI Case Management Guideline was developed in 1995.
- The National Strategic Plan on HIV (2016-2021) was developed with the aim of ending the AIDS epidemic as a public health threat by 2030 and also targets for the elimination of vertical transmission of HIV.

1.3 Objective of the guidelines

The objective of the guidelines is to provide updated, evidence-informed clinical and practical recommendations on case management of people with symptoms of STI. The national guidelines recommend a syndromic approach for the management of the STI.

Target audience of the guidelines:

- Programme managers for STI prevention and control at the national and provincial level.
- Health-care providers at the primary health-care facilities.
- Policy makers, stakeholders and partners in providing services for STI prevention and care, such as local and international agencies, non-governmental organizations and community-based organizations.

1.4 Guidelines development process

The National STI treatment guidelines was previously updated in 2014. In 2021, the NCASC initiated an update of the National STI guidelines based on new global recommendation and local evidence.

NCASC and WHO consulted with a group of national experts which included STI experts, clinicians, researchers, representatives from the Department of Health Services, programme managers and key stakeholders in the domain of STI. Consultative meetings were held in November 2021 and April 2022 to set priorities for the STI program, review the evidence and make recommendations. The STI guidelines was reviewed and approved after the consultations. (Annex 5: Acknowledgement).

CHAPTER 2

CASE MANAGEMENT FOR PEOPLE WITH STI

Appropriate and comprehensive approach of STI case management should be available to people at their first point of contact with the health-care system.

The objectives of STI case management are:

- To provide treatment, obtain cure, reduce infectivity and reduce the risk of developing complications of STI.
- To reduce or prevent future risk-taking behaviour and link to other preventive services.
- To provide treatment for sexual partners.

Key Services for Person with STI

- Take correct medical and sexual history.
- Establish a correct diagnosis and provide effective treatment.
- Provide health education and counselling on infection, risk reduction and on compliance with treatment.
- Promotion and/or provision of condoms.
- Promotion and/or provision of PrEP (based on risk assessment and national guidelines on PrEP).
- Promotion and/or provision of other preventive interventions, such as vaccines against hepatitis B and HPV, where appropriate.
- Encouragement to notify sex partners, and
- Clinical follow-up.

2.1 History-taking and risk assessment

In order to establish a correct diagnosis, the health-care provider should ensure that there is a conducive environment to enable people with STI symptoms to discuss them comfortably. There should be a mutually respectful and trustworthy relationship between the health care provider and the patient which determines the outcome of clinical diagnosis and treatment.

Proper history taking with emphasis on sexual history are the essential components to understand the likelihood of a person being infected with STI. Effective interviewing and counselling skills, characterized by respect, compassion, and a non-judgmental attitude towards all patients are essential to obtaining a thorough sexual history and delivering effective prevention messages.

The Five P's approach for health care providers for obtaining sexual histories from clients: partners, practices, protection from sexually transmitted infections, past history of sexually transmitted infections, and pregnancy intention

1. Partners
- "Are you currently sexually active?"
- "What is the gender(s) of your partner(s)?"

2. Practices
- "To understand any risks for sexually transmitted infections (STI), I need to ask more specific questions about the kind of sex you have had recently."
  - "Do you have vaginal sex?"
  - "Do you have anal sex?"
  - "Do you have oral sex?"

3. Protection from STI
- "Do you and your partner(s) discuss prevention of STI and HIV?"
- "Do you and your partner(s) discuss getting tested?"
- "Do you use condoms?"

4. Past history of STI
- "Have you ever been tested for STI and HIV?"
- "Have you ever been diagnosed with STI in the past."
- "Have any of your partners had STI?"
- "Is there any question about your sexual health that concerns you?"

5. Pregnancy intention
- "Do you plan to have (more) children in the future?"
- "Are you or your partner using contraception or practicing any form of birth control?"
- "Would you like to know more about how to prevent pregnancy?"

2.2 Clinical examination of people with STI

The person should be well-informed about the examination and consent should be obtained. Any examination of the anogenital area should preferably be conducted in the presence of an attendant (female attendant when examining a female patient if the health care provider is a male and vice versa).

Table 1: Steps to follow when examining men

General measures	▪ Wash hands thoroughly and put on clean gloves with each patient. ▪ Explain about the steps of the examination. ▪ Ask the patient to lie down and expose the genital area from umbilicus to knee level. ▪ Cover with a blanket and expose the part of the body to be examined.
Inspection	▪ Looking inside the mouth for signs of oral thrush, oral sores or other lesions. ▪ Looking at the skin over the abdomen for rashes and obvious swelling. ▪ Checking the pubic area for evidence of other STI. ▪ Checking for any skin rashes on the palms of the hands, soles of the feet, thighs and buttocks. ▪ Checking the external genitals – penis and scrotum – and noting any discharge and other lesions, such as ulcers and warts. ▪ Checking the area around the anus for a discharge, rashes (such as condylomata lata) and warts. ▪ Checking the groin for swellings and sores.
Palpation	Palpation must be done gently to ensure that no tender areas are pressed and hurt unintentionally. The health-care provider will be able to identify the following: ▪ Palpating the inguinal region (groin), axillae, submandibular areas and neck looking for enlarged lymph nodes and buboes. ▪ Palpating the scrotum, the testis, epididymis and spermatic cord on each side, and note any signs of discomfort suggestive of tenderness. ▪ Examining the penis, any rashes, warts or sores. ▪ Asking the person to pull back the foreskin, if present, and looking at the glans penis and urethral meatus for discharge or any other lesions. ▪ Palpating any genital ulcers for tenderness and induration and looking for phimosis and paraphimosis. ▪ Examining the glans penis and urethral meatus for discharge or any other lesions. ▪ If no obvious discharge is present, the patient may be asked to milk the urethra gently from the base towards the urethral meatus to determine any discharge. ▪ The patient may be asked to bend the knees towards the chest to expose the perineum, buttocks and anal region. If the patient is examined in the standing position, he may be asked to turn his back to you and bend over, spreading his buttocks slightly to examine the anus for ulcers, warts, rashes or discharge. ▪ At the end of the examination, the gloves are removed, and both the health-care provider and the patient must wash their hands.

Table 2: Steps to follow when examining women

General measures	▪ Wash hands thoroughly and put on clean gloves with each patient. ▪ Ask the patient to undress from chest down and lie on the table or couch to enable examination. ▪ Cover with a modesty blanket exposing only the part of the body to be examined when ready. ▪ Examination of a woman during menstruation is not contraindicated.
Inspection	▪ Looking inside the mouth for signs of oral thrush, oral sores or other lesions. ▪ Looking at the skin over the abdomen for rashes and any obvious swellings. ▪ Checking the pubic area for evidence of other STI. ▪ Checking for any skin rashes on the palms of the hands and soles of the feet. ▪ Checking the thighs and buttocks for rashes. ▪ Checking the area around the anus for rashes and warts. ▪ Checking the groin for swellings and sores, and ▪ Checking the external genitalia and taking note of any discharge, or other lesions, such as warts, condylomata lata and excoriations on the vulva.
Palpation	The general palpation by the health-care provider should include the groin, axillae, submandibular areas and neck for enlarged painful lymph nodes. The patient lying down on table should be asked to bend her knees towards the chest and separate them and the following should be observed: ▪ Inspection of the vulva, perineum (between the vagina in front, the buttocks behind and the medial sides of the thighs on both sides), and the perianal skin for rashes, sores, warts and swelling. ▪ Inspection between the labia of the vagina and the urethral opening for any obvious lesions or discharge and any vaginal discharge. ▪ Note: the colour of the discharge: yellow, white and/or blood stained; the smell: a "fishy smell"; the type of vaginal discharge: frothy, thick or sticky. ▪ A bimanual examination should be carried out with one hand on the pelvic area of the abdomen and the other hand with two fingers inserted inside the vagina, feeling for masses and tenderness and checking for cervical motion tenderness by moving the cervix gently from side to side to elicit uterine and/or adnexal tenderness, and ▪ A speculum examination should be performed next to visualize the cervix and vaginal mucosa.

2.3 Establishing a diagnosis

Ideally, everyone presenting with a condition assumed to be an STI should be diagnosed through a process of obtaining the medical and sexual history, physical examination and laboratory testing of relevant specimens from either the lesion, blood or urine. However, such a process is constrained by a lack of inexpensive and reliable diagnostic tests.

A syndrome-based approach to manage STI has been developed and adopted in many countries. The syndromic management approach is based on identifying consistent groups of symptoms and easily recognized signs (syndromes) thus providing effective treatment for all the organisms known to cause them. Patients with STI can be treated promptly at all health facilities without any referral services for treatment and do not need to wait for the lab results, thus, enhancing the opportunities to treat all the STI patients while they are seeking the health services. In addition, syndromic management approach has a high sensitivity, and covers the treatment for the most common pathogens of STI for a particular syndrome and is extremely effective for mixed infections.

2.4 Health education and counselling

Health-care providers should educate their patients about STI, including HIV. They should provide key messages to the person seeking care for STI on how the infections may have been contracted, how to prevent further infections, the importance of completing a course of treatment and abstaining from sexual intercourse until the completion of treatment.

Counselling of the patient should be done to reduce or change any risky sexual behaviour, advise to use preventive measures like condoms and limiting the number of sexual partners. The patients should also be offered screening for other infections like HIV and syphilis.

2.5 Partner notification and treatment

A person with STI can contract the infection from a sex partner who also had the infection. The attending (index) patient is also able to transmit the STI to other sex partners or the same partner (the source of the infection) who, in the meantime, may have been treated. The chain of transmission of the STI can be broken only if all the mutual sex partners are treated for the infections before they have further sex with each other.

STI such as gonococcal infections, chlamydial infections, syphilis and HIV may be asymptomatic, and people may not be aware that they are infected. Thus, partner notification can be one way to detect and treat asymptomatic individuals. Some reproductive tract infections, such as the bacteria responsible for bacterial vaginosis among women with vaginal discharge, are not sexually transmitted. Partner notification needs to be approached with caution for these women. *C. albicans* can be sexually transmitted, however, it is not classified as an STI, so the sex partners

of people with candidiasis do not need treatment unless they exhibit symptoms. Regardless of the method of partner notification and treatment, confidentiality, non-judgemental attitudes and absence of coercion must be observed.

2.6 Follow-up and referral

The patient may return for further assessment either because the condition has not resolved when treatment ends or it has recurred. The health-care provider will need to determine whether this resulted from poor compliance, or antimicrobial resistance or has been re-infected.

In case the patient needs to be referred to another level of care, it is the responsibility of the health-care provider at the first point of care to link with the higher level of health facilities.

2.7 Recording and reporting of STI cases

Recording and reporting of STI cases is one of the important components of management of STI. STI case reports provide important information for the planning of STI program, allocation of resources, and monitor the trends of STI/HIV. Health-workers should be trained regularly and assigned for recording and reporting of the STI cases at the health facility. All STI cases should be recorded on the official STI register and reported accordingly in the Integrated Health Information Management System.

STI register HMIS 7.2 (Annex-4) is for recording of STI cases at the service delivery sites including health post, primary health care center, public and non-public hospitals at all levels (federal, provincial, district, local). Testing, diagnosis and treatment of pregnant women for syphilis at antenatal care (ANC) check-up should be recorded in Maternal and Newborn Health Service Register (HMIS 3.6).

The STI cases are reported monthly using the HMIS reporting forms (HMIS 9.3: Basic Health Facility Reporting Form; HMIS 9.4: Public Hospital Reporting Form and HMIS 9.5: Non-Public Health Facility Reporting Form).

The STI register should be maintained at the STI treatment clinic and the clinic should identify the responsible person for recording and reporting. The clinic in-charge of the service center must ensure that the STI report is submitted to the HMIS system every month.

CHAPTER 3

SYNDROMIC MANAGEMENT OF STI

Syndromic management is used widely for the management of patients coming with symptoms of STI. Etiological diagnosis with the identification of causative organisms is still not possible in all the health facilities and may take time for results.

The five most common syndromes of STI have been listed as follows:

1. Urethral discharge syndrome
2. Vaginal discharge syndrome
3. Lower abdominal pain
4. Genital ulcer disease syndrome
5. Anorectal discharge syndrome

3.1 Urethral discharge syndrome

Urethral discharge syndrome is one of the most common STI among men. It is the presence of abnormal secretions from the urethra. It has the characteristic manifestations of urethritis and is often associated with burning sensation while passing urine and discharge from the urethra.

Etiology

The two most common causative agents of urethral discharge syndrome are *Neisseria gonorrhoeae* and *Chlamydia trachomatis.*

Non-gonococcal and non-chlamydial pathogens causing urethral discharge are *Trichomonas vaginalis* and *Mycoplasma genitalium.*

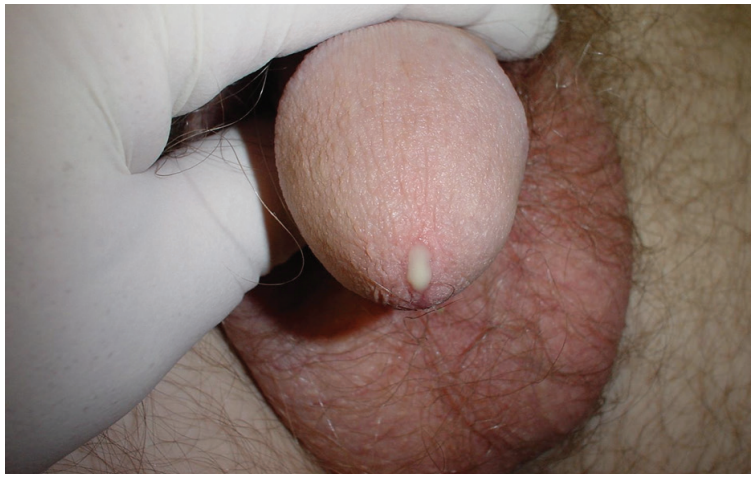
Clinical presentation

- Urethral discharge with or without dysuria.
- Urethral irritation, itching at the tip of urethra.
- Burning sensation during micturition.
- Urgency and frequency of micturition.
- Pain during erection and/or intercourse.

Examination findings

- Features of urethritis: urethral discharge, scanty to copious in quantity and clear to purulent in character.
  - If no discharge, urethral milking is done gently along the ventral aspect of the penis towards the meatus. If urethral milking does not yield discharge, advise the patient to visit the next day for re-evaluation.
- Erythema of urethral meatus, inner covering of prepuce and glans penis.
- Scrotal swelling.

Fig 1. STI associated urethritis with discharge from the penis



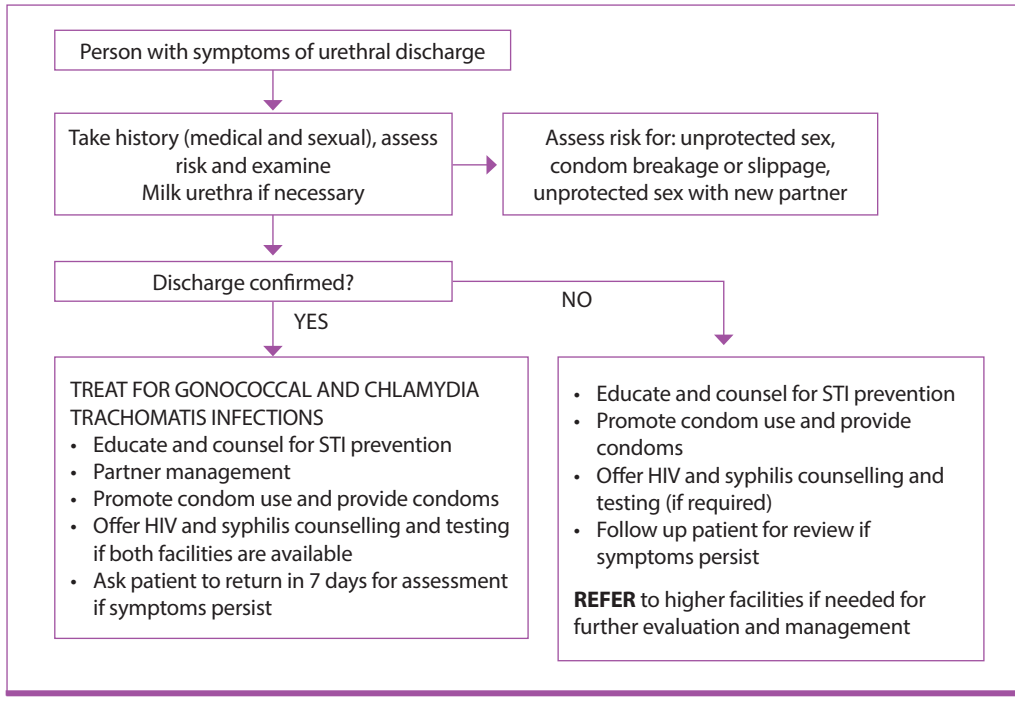
Persistent or recurrent urethral discharge

Persistent or recurrent burning sensation while passing urine with or without discharge may be seen in patients who have already received treatment for urethral discharge. This condition may result due to various reasons.

- Inadequate treatment.
- Poor compliance with the prescribed drugs.
- Reinfection with untreated partners.
- Drug resistant organisms.
- Infection with *Trichomonas vaginalis, Mycoplasma genitalium, Ureaplasma urealyticum.*
- Diabetes mellitus, immunosuppressive states.
- Post-surgical procedures.

Clinical management of urethral discharge syndrome is shown in Flow chart 1, 2 and Table 3

Flow chart 1: Management of urethral discharge from the penis



Flow chart 2: Management for men with persistent or recurrent urethral discharge

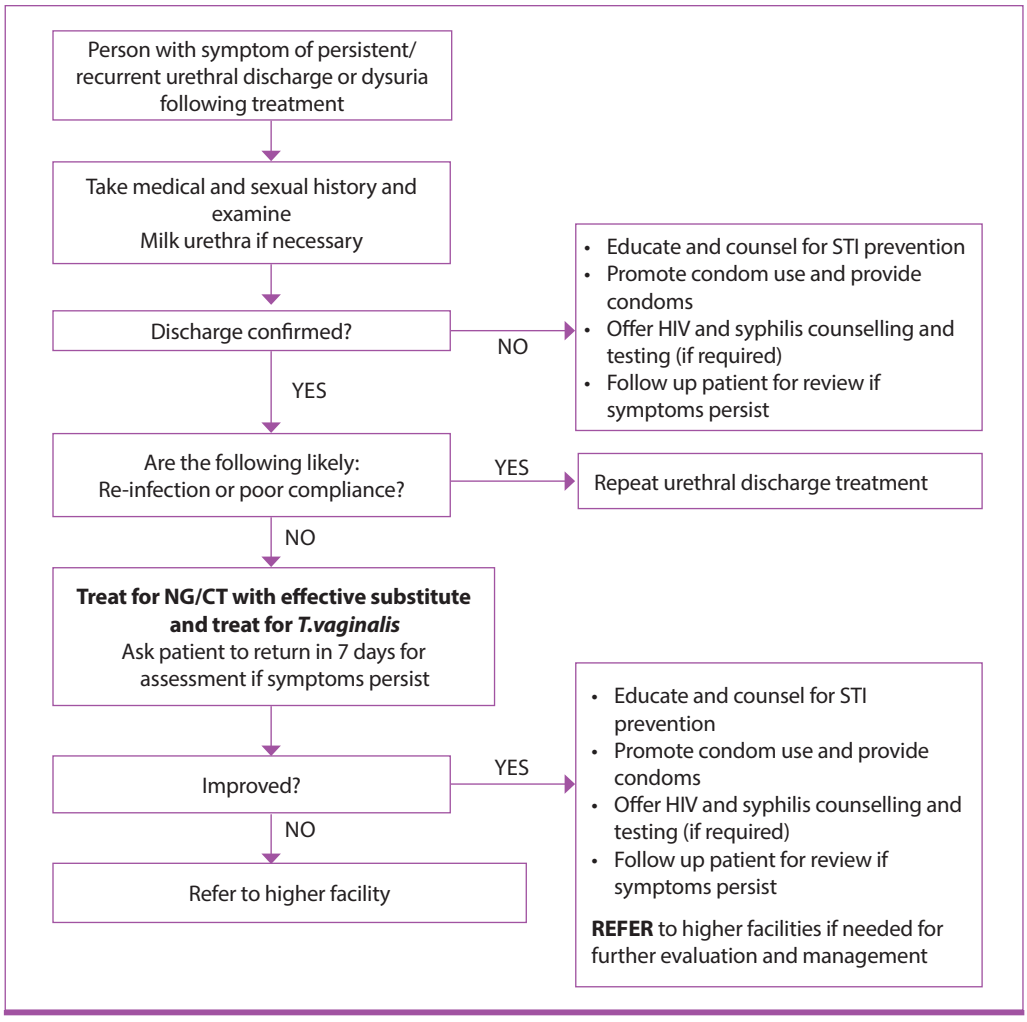


Table 3: Treatment of urethral discharge syndrome

First Line therapy for uncomplicated *Neisseria gonorrhoeae* and *Chlamydia trachomatis infection* **Cefixime 400mg,** orally, single dose * Plus **Azithromycin 1gm,** orally single dose (* Ceftriaxone 250mg, IM, single dose preferred for suspected resistance or recurrent discharge)		
Infections covered	**First line options**	**Effective substitutes**
N. gonorrhoeae	**Cefixime 400mg,** orally, single dose, Plus **Azithromycin 1gm,** orally, single dose	**Ceftriaxone 250mg,** IM, single dose, Plus **Azithromycin 1gm,** orally, single dose
C. trachomatis	**Doxycycline 100 mg,** orally, twice daily for seven days (to be given only if gonorrhea therapy did not include azithromycin)	**Azithromycin 1 gram,** orally, single dose, or **Erythromycin 500 mg,** orally, 4 times a day for 7 days, or **Ofloxacin 200–400 mg,** orally, twice a day for 7 days. (to be given only if gonorrhea therapy did not include azithromycin)
Additional therapeutic options for recurrent or persistent infections		
T. vaginalis	**Metronidazole 2 grams,** orally, single dose (five 400mg tablets)	**Metronidazole 400mg,** orally, twice daily for 7 days, or **Tinidazole 2grams,** orally, single dose, or **Secnidazole 2grams,** orally, single dose
M. genitalium	**Azithromycin 500 mg,** orally on day 1 and 250 mg daily on day 2 to day 5	

3.2 Vaginal discharge syndrome

Vaginal discharge syndrome is one of the common reasons in women attending a health facility. Vaginal discharge can be physiological and a healthy woman can have clear or white, odourless, non-irritant vaginal discharge that increases around the menstrual cycle, pregnancy, lactation, medications like oral contraceptive pills or while on IUDs (intrauterine devices).

The challenge for a health-care provider consulting a woman with vaginal discharge is to determine the cause of the discharge whether it is infectious or non-infectious. Abnormal vaginal discharge is due to the infection of vagina or the cervix. The symptoms include a vaginal discharge perceived by the woman to be abnormal with vulval irritation or itching accompanied by change in colour, odour and amount of the discharge. The three most common causes of abnormal vaginal discharge are bacterial vaginosis, trichomoniasis and candidiasis.

Among postpubertal women, *N. gonorrhoeae* and *C. trachomatis* infect the endocervix rather than the vagina, and they therefore may not present with vaginal discharge. These infections may be present without any clinically evident abnormality of the cervical os. If an abnormality is present at the cervical os because of infection with *C. trachomatis* or *N. gonorrhoeae*, it would be a mucus discharge or a purulent discharge (mucopus) or inflammation and friability of the cervical os.

In the context of STIs, it should therefore be emphasized that vaginal discharge more reliably indicates vaginal infections but poorly predicts cervical infection caused by *N. gonorrhoeae* and/or *C. trachomatis*.

STI risk assessment for abnormal vaginal discharge

The risk may be considered positive if any of the following criteria are met:

- If the client's sex partner has an STI.
- Having more than one sex partner in the previous three months.
- Having a new sexual partner in the previous three months.

Causative organisms of Vaginitis

- *Trichomonas vaginalis*
- *Candida albicans*
- *Gardnerella vaginalis*

Causative organisms of Cervicitis

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- Other organisms:
  - Genital herpes -2 (HSV-2)
  - Human papilloma virus

Vaginal infection (vaginitis)

Clinical presentation

- Vaginal discharge:
  - Thin, whitish discharge with fishy odor
  - Thick, profuse, malodorous, yellow-green, frothy
  - Purulent exudate from the vagina
  - White, thick and curd like discharge
- Itching
- Dysuria, burning sensation of urine, increased frequency
- Pain during intercourse
- Low backache
- Lower abdominal pain

Examination findings

Discharge from the vagina (may be from the vagina or cervix)

- Trichomoniasis - greenish frothy discharge
- Candidiasis - curdy white discharge
- Bacterial vaginosis – adherent discharge
- Mixed infections may present with atypical discharge
- Excoriations, redness and swelling in the vulval area

Cervical infection (Cervicitis)

Clinical presentation

- Frequently asymptomatic
- Vaginal discharge
- Genital itching
- Abnormal vaginal bleeding
- Dysuria
- Dyspareunia
- Lower abdominal pain
- Burning while passing urine, increased frequency

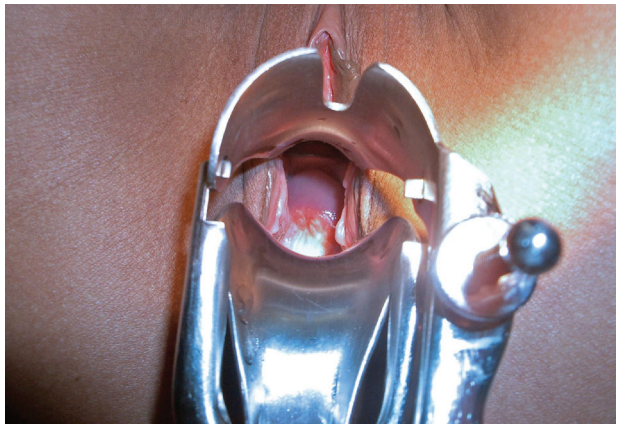
Per speculum examination

It is performed to differentiate between vaginitis and cervicitis. Speculum examination should be followed by bimanual pelvic examination to rule out pelvic inflammatory disease.

Examination findings

- Speculum examination may reveal a normal looking cervix in the presence of endocervical infection.
- Endocervical exudate visible in the cervix on an endocervical swab.
- Speculum examination may reveal an erythematous or severely eroded and associated with a muco-purulent cervical discharge.
- Cervix friable and easily bleed on contact.
- Strawberry appearance of cervix in *Trichomonas* infection.

Fig 2. Cervicitis viewed through a speculum examination



Clinical management of vaginal discharge syndrome is shown in Flow chart 3 and Table 4

Flow chart 3: Syndromic approach to the management of vaginal discharge

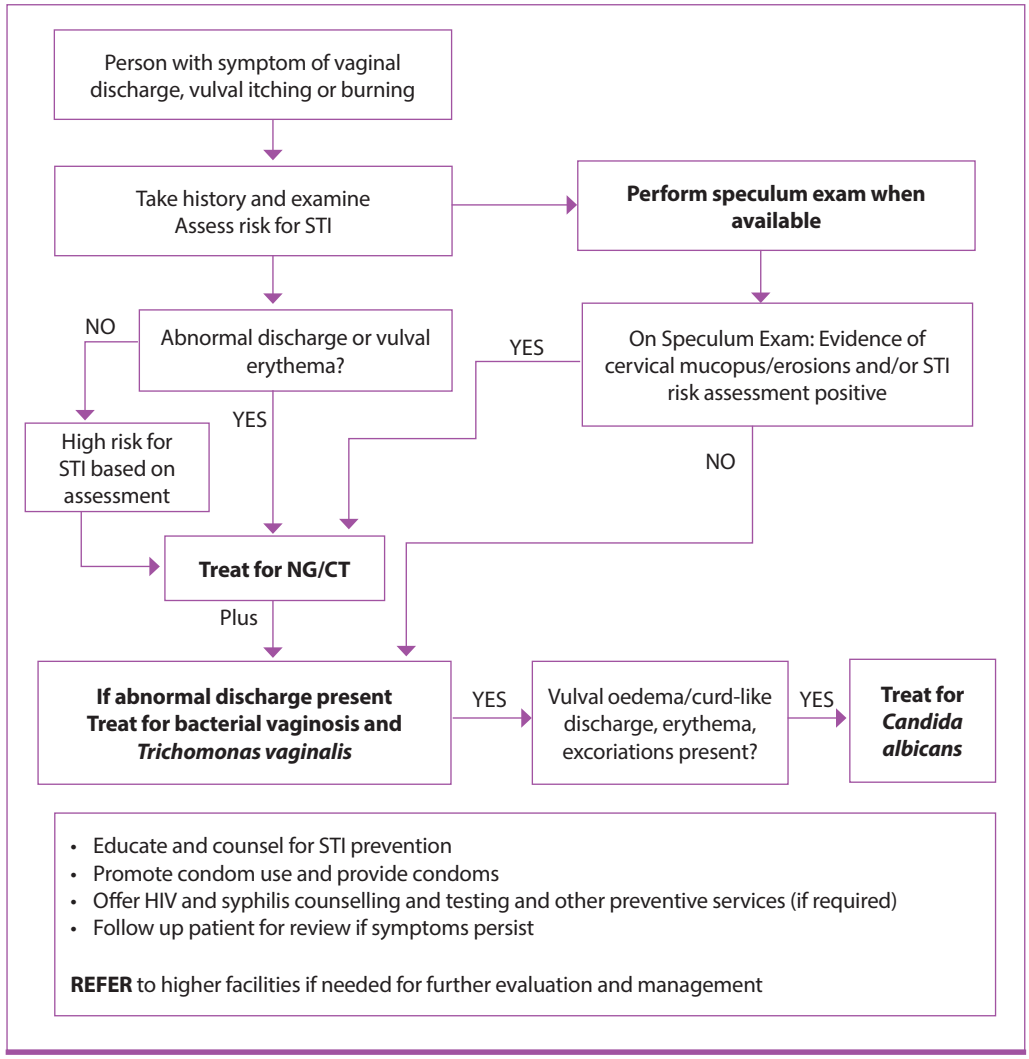


Table 4: Treatment options for abnormal vaginal discharge

Infections covered	First-line options	Effective substitutes	During pregnancy and breastfeeding women*
Bacterial vaginosis	**Metronidazole 400 mg,** orally, twice daily for 7 days	**Clindamycin 300 mg,** orally, twice daily for 7 days, *or* **Metronidazole 2 grams,** orally, single dose (five 400mg tablets)	**Metronidazole 200 mg,** orally, 3 times a day for 7 days, *or* **Clindamycin 300 mg,** orally, twice daily for 7 days
Trichomonas vaginalis	**Metronidazole 2 grams,** orally, in a single dose (Five 400mg tablets), *or* **Metronidazole 400 mg,** orally, twice daily for 7 days	**Tinidazole 2 grams,** orally, single dose, *or* **Tinidazole 500 mg,** orally, twice daily for 5 days, *or* **Secnidazole 2 grams,** orally, single dose	**Metronidazole 200 mg,** orally, 3 times a day for 7 days
Candida albicans (yeast infection)	**Fluconazole 150 mg,** orally, single dose, *or* **Clotrimazole vaginal tablet, 100 mg,** inserted at night for 7 nights	**Miconazole vaginal pessaries, 200 mg,** inserted at night for 3 nights, *or* **Nystatin, 200,000 units vaginal tablet**, inserted at night for 7 nights	**Miconazole 200 mg,** vaginal pessaries inserted once daily for 3 days, *or* **Clotrimazole vaginal tablet 100 mg,** inserted at night for 7 days, *or* **Nystatin pessaries 200,000 units,** inserted at night for 7 nights
Neisseria gonorrhoeae	**Cefixime 400 mg,** orally, single dose *plus* **Azithromycin 1 gram,** orally, single dose	**Ceftriaxone 250 mg,** intramuscularly, single dose *plus* **Azithromycin 1 gram,** orally, single dose	**Ceftriaxone 250 mg,** intramuscularly, single dose *plus* **Azithromycin 1 gram,** orally, single dose, or **Cefixime 400 mg,** orally, single dose, plus **Azithromycin 1 gram,** orally, single dose
Chlamydia trachomatis	**Doxycycline 100 mg,** orally, twice daily for 7 days (to be given only if gonorrhea therapy did not include azithromycin)	**Azithromycin 1 gram,** orally, single dose, or **Erythromycin 500 mg,** orally, 4 times a day for 7 days, or **Ofloxacin 200–400 mg,** orally, twice daily for 7 days (to be given only if gonorrhea therapy did not include azithromycin)	**Erythromycin 500 mg,** orally, 4 times a day for 7 days, or **Azithromycin 1 gram,** orally, single dose (to be given only if gonorrhea therapy did not include azithromycin)

*** In pregnancy, metronidazole should, ideally, be avoided in the first trimester**

3.3 Lower abdominal pain

Lower abdominal pain in woman are mostly due to pelvic inflammatory disease (PID). PID refers to a spectrum of inflammatory disorders of the upper female genital tract that may include endometritis, salpingitis, tubo-ovarian abscess and pelvic peritonitis. It results from ascending infection from the cervix and/or vagina. A broad range of pathogens, namely *N. gonorrhoeae, C. trachomatis,* bacteria causing bacterial vaginosis, are involved as the causative agents. Since differentiating between these clinically is not possible and precise microbiological diagnosis is difficult, the treatment regimens must be effective against a broad range of pathogens for complete management.

Causative organisms:

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- *Mycoplasma genitalium*
- *Gardnerella vaginalis*
- Anaerobic bacteria (Bacteroides spp, gram positive cocci)
- Enteric gram negative rods

Clinical presentation

- Pain lower abdomen/low backache
- Abnormal vaginal discharge
- Dysmenorrhoea (pain during menstruation)
- Dysuria (pain during urination)
- Dyspareunia (pain during intercourse)
- Associated with fever, nausea, vomiting

Examination findings

High temperature (above 38.5 degree Centigrade)

- **Per abdominal examination:**

Lower abdominal tenderness or guarding

- **Per speculum examination: (If feasible)**

Abnormal vaginal/cervical discharge
Cervical congestion, erosion or ulcers

- **Bimanual pelvic examination:**

Uterine/adnexal tenderness
Cervical excitation (tenderness on moving the cervix)

Indications for inpatient treatment

Hospitalization of people with acute pelvic inflammatory disease should be considered under the following circumstances.

- The diagnosis is uncertain.
- Surgical emergencies, such as appendicitis, ectopic pregnancy or pelvic abscess cannot be ruled out.
- A pelvic abscess is suspected.
- The person is pregnant.
- Severe illness precludes management on an outpatient basis.
- The person is unable to follow or tolerate an outpatient regimen.

Clinical management of lower abdominal pain is shown in Flow chart 4 and Table 5

Flow chart 4: Management of lower abdominal pain

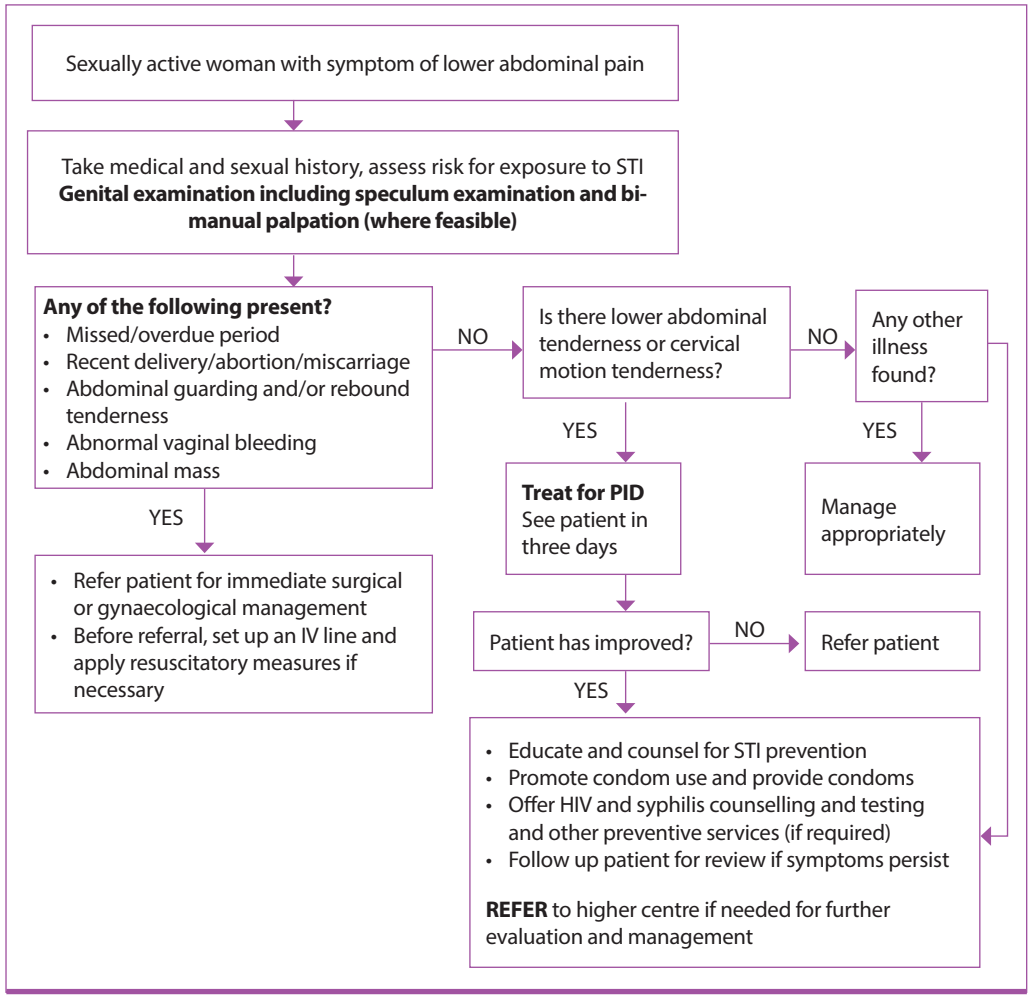


Table 5: Treatment options for pelvic inflammatory disease

Treatment for PID must include therapy for uncomplicated *N. gonorrhoeae*, *C. trachomatis* and anaerobic infections

Infections covered	First line options	Effective substitutes
N. gonorrhoeae* and *C. trachomatis	**Cefixime 400mg,** orally, single dose, *Plus* **Azithromycin 1gm,** orally, single dose *Or* **Doxycycline 100 mg,** orally, twice daily for 14 days	**Ceftriaxone 250mg,** IM, single dose, *Plus* **Azithromycin 1gm,** orally, single dose *Or* **Erythromycin 500 mg,** four times daily for 14 days
Treatment for anaerobic infection	**Metronidazole 400 mg,** orally, twice daily for 14 days	
For inpatients (with severe PID) **- Ceftriaxone** or other third generation cephalosporin IV daily* *plus* **- Doxycycline100 mg,** orally, twice a day for 14 days *plus* **- Metronidazole 400 mg,** orally, thrice a day for 14 days *dose and duration as per the severity and clinical judgement		

Follow up

- Schedule return visit after 3, 7 and 14 days to ensure compliance
  - To document symptomatic cure
  - To document results of tests done for HIV and syphilis.
- Patients should demonstrate substantial clinical improvement (e.g. defervescence, reduction in abdominal tenderness, reduction in uterine, adnexal, and cervical motion tenderness) within 3 days after initiation of therapy with subsequent follow-up on day 7 and 14.
- Patients who do not improve within this period usually require hospitalization, additional diagnostic tests and/or surgical intervention.
- If symptoms/signs persist, assess whether it is due to lack of treatment compliance or treatment failure or re-infection and advise prompt referral to a higher facility.

Note:

- The risk for PID associated with IUD use is primarily confined to the first 3 weeks after insertion and is uncommon thereafter.
- A urine pregnancy test should be done in all women suspected of having PID to rule out ectopic pregnancy.

3.4 Genital ulcer disease syndrome

Genital ulcer is a break in the continuity of the skin or mucus membrane of the genitalia and is mostly caused by bacteria and viruses. Genital ulcer facilitates transmission of HIV more than other sexually transmitted infections so the clinical manifestations and pattern of genital ulcer disease may be further altered in the presence of this infection.

Causative organisms

- HSV-1 and HSV-2 (commonest causative agents of genital ulcer disease)
- *T. pallidum* (syphilis)
- *H. ducreyi* (chancroid)
- *C. trachomatis* serovars L1–L3 (lymphogranuloma venereum)
- *Klebsiella granulomatis* (granuloma inguinale or donovanosis)

Clinical presentation

- Genital lesion
- Pain/burning sensation in and around genitalia
- Constitutional symptoms such as fever, headache, malaria, and muscular pain

Examination findings

- **Genital Herpes:** cluster of vesicular lesions in genital or perianal area. 30% to 70% cause of anogenital ulcers.
- **Syphilis:** one or more painless ulcer with indurated edges with a clean base. Palpable lymph-nodes. 5% to 10% cause of anogenital ulcers.
- **H. *ducreyi* – chancroid:** erythematous papule rapidly evolving to pustule and painful ulcer. Large, painful, fluctuant lymph nodes (buboes) may also occur.
- **Lymphogranuloma venereum (LGV):** Transient painless penile ulcer with painful, enlarged inguinal lymph nodes.
- **Granuloma inguinale (donovanosis):** painless ulcer without inguinal lymph nodes.

Good Practice

- Treatment for syphilis and herpes simplex virus on the same day.
- Treatment for herpes simplex virus if the ulcer is recurrent or vesicular, and treat for syphilis if the person has no history of recent treatment for syphilis (in the past three months).
- Performing serological tests for syphilis, if available, to attempt to identify active syphilis and for monitoring the response to treatment.
- The relative prevalence of causative organisms for genital ulcer disease varies considerably in different parts of the world and may change dramatically over time. The prevalence of chancroid and lymphogranuloma venereum (LGV) has been decreasing in low- and middle-income countries. Treatment for chancroid or LGV is not recommended for people with anogenital ulcers unless surveillance shows emerging cases in a geographical area.
- Referring men with persistent anogenital ulcers to a center with laboratory capacity and expertise to diagnose herpes or less common pathogens (lymphogranuloma venereum, donovanosis and chancroid) and other genital conditions.

Clinical management of genital ulcers is shown in Flow chart 5 and Table 6

Flow chart 5: Management of genital ulcers

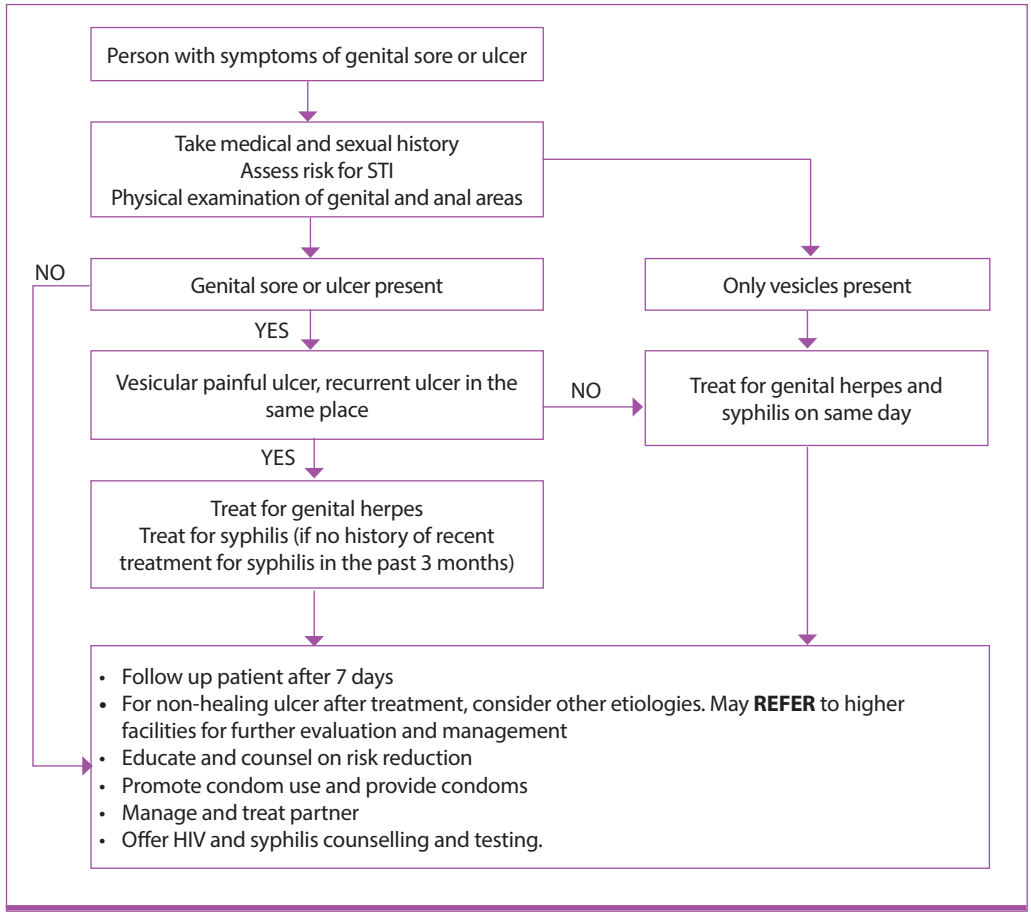


Table 6: Treatment for genital ulcer disease

Infections covered	First-line options	Effective substitutes	For pregnant and breastfeeding women and people younger than 16 years
Genital herpes			
First episode of genital HSV infection	**Acyclovir 400 mg,** orally, 3 times a day for 10 days	**Valaciclovir 500 mg,** orally, twice a day for 10 days, *or* **Famciclovir 250 mg,** orally, 3 times a day for 10 days	Use acyclovir only when the benefit outweighs the risk. The dosage is the same as for primary infection in non-pregnancy.
Episodic therapy: Recurrent episode of genital HSV infection	**Acyclovir 400 mg,** orally, 3 times a day for 5 days, *or* **Acyclovir 800 mg,** orally, twice daily for 5 days, *or* **Acyclovir 800 mg,** orally, 3 times a day for 2 days	**Valaciclovir 500 mg,** orally, twice daily for 3 days, *or* **Famciclovir 250 mg,** orally, twice daily for 5 days	**Acyclovir 400 mg,** orally, 3 times a day for 5 days, *or* **Acyclovir 800 mg,** orally, twice daily for 5 days, *or* **Acyclovir 800 mg,** orally, 3 times a day, for 2 days
Suppressive therapy*: Frequent recurrences (4-6 times or more per year with severe symptoms)	**Acyclovir 400 mg,** orally, twice daily for six months	**Famciclovir 250 mg,** orally, twice daily for six months, *or* **Valaciclovir 500 mg,** orally, once daily for six months	**Acyclovir 400 mg,** orally, twice daily for six months, *or* **Valaciclovir 500 mg,** orally, once daily for six months
Syphilis			
Syphilis (early) (treatment for primary, secondary and early latent less than two years since infection syphilis)	**Benzathine penicillin 2.4 million units,** intramuscularly in a single dose	**Doxycycline 100 mg,** orally, twice a day for 14 days, *or* **Erythromycin 500 mg**,** orally, 4 times a day for 14 days	**Benzathine penicillin 2.4 million units,** intramuscularly in a single dose, *or* **Erythromycin 500mg**,** orally, 4 times a day for 14 days
Syphilis (late) (treatment for late latent and tertiary syphilis)	**Benzathine penicillin 2.4 million units** by intramuscular injection, once weekly for 3 consecutive weeks	**Procaine penicillin 1.2 million units** by intramuscular injection, once daily for 20 consecutive days, *or* **Doxycycline 100 mg,** orally, twice daily for 30 days	**Erythromycin 500mg**** orally, 4 times a day for 30 days

* People receiving suppressive therapy may be assessed after 6 months and asked whether they want to continue or to change to episodic therapy.

** Although erythromycin is used to treat pregnant women, it does not cross the placental barrier completely and the fetus is not treated. The newborn infant therefore needs treatment soon after delivery.

3.5 Anorectal discharge syndrome

Anorectal sexually transmitted infections are the most common causes of anorectal discharge and growth. It is prevalent among men who have sex with men, male and female sex workers, transgender people and heterosexual women who engage in anal sex. These are considered the highest risk groups to acquire anorectal STI.

Types of anorectal infections and the causative organisms

Types of anorectal infections	Causative organisms
Anal infection: infections of the anus and perianal area.	HPV, HSV and syphilis.
Proctitis: infections from the dentate line to the rectosigmoid junction.	Gonococcal and chlamydial infections and HSV.
Proctocolitis: infections of the rectum and colon.	*Shigella, Campylobacter, Salmonella,* cytomegalovirus and amoebiasis.

Clinical presentation

- May be asymptomatic
- Anorectal pain
- Perianal itching
- Discharge, bleeding, sensation of rectal fullness
- Tenesmus, stool incontinence
- Constipation and mucus streaking of stools

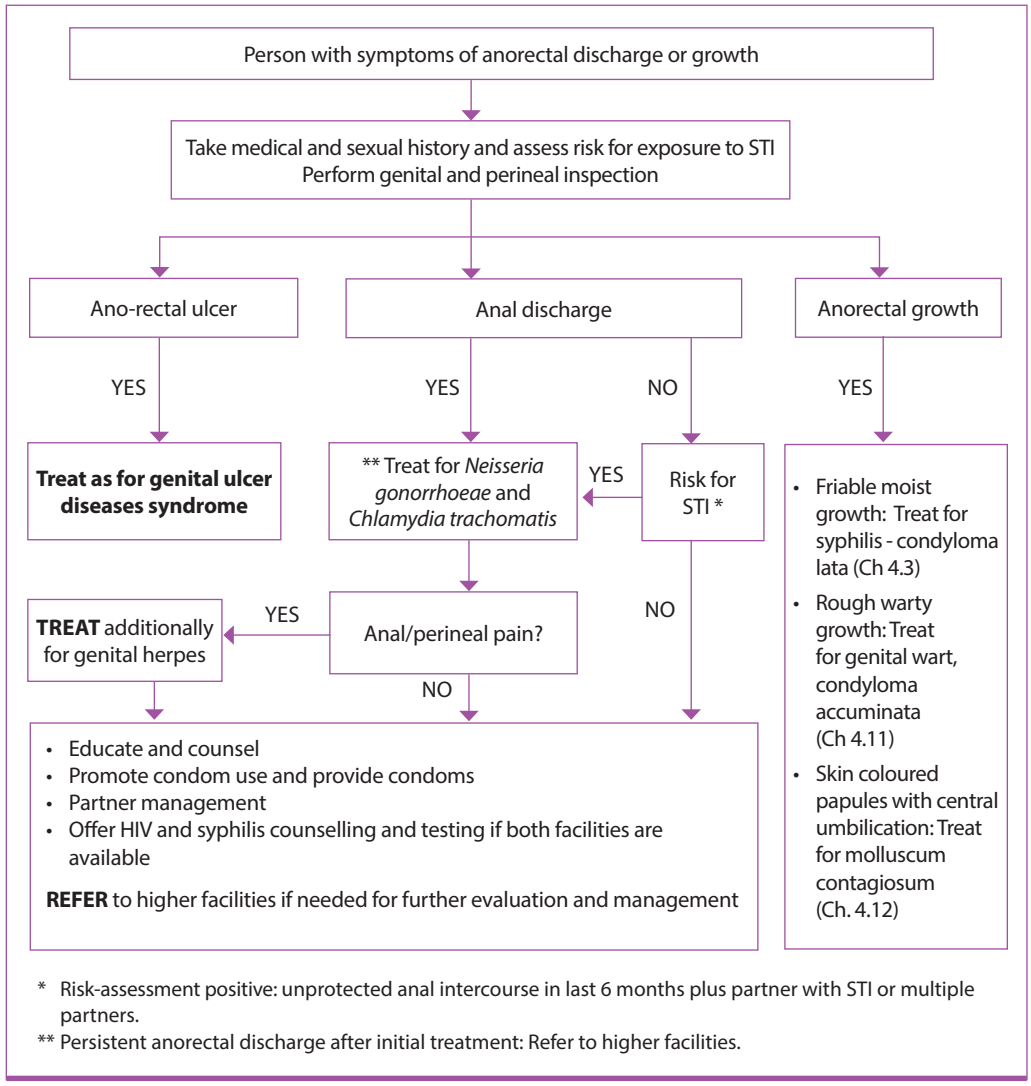
Examination findings

External examination of the anus:

- Anorectal discharge
- Ulcers
- External warts

Clinical management of anorectal discharge syndrome is shown in Flow chart 6 and Table 7

Flow chart 6: Management of anorectal discharge syndrome



* Risk-assessment positive: unprotected anal intercourse in last 6 months plus partner with STI or multiple partners.

** Persistent anorectal discharge after initial treatment: Refer to higher facilities.

Table 7: Treatment option for people with anorectal discharge

Infections covered	First-line options	Effective substitutes
N. gonorrhoeae	**Cefixime 400 mg,** orally, single dose *plus* **Azithromycin 1 gram,** orally, single dose	**Ceftriaxone 250 mg**, intramuscularly, single dose plus **Azithromycin 1 gram,** orally, single dose
C. trachomatis	**Doxycycline 100 mg,** orally, twice daily, for 7 days *or* **Azithromycin 1 gram,** orally, single dose, *or* **Doxycycline 100 mg,** orally, twice daily, for 21 days (to cover rectal lymphogranuloma venereum) (to be given only if dual therapy did not include azithromycin)	**Erythromycin 500 mg,** orally, 4 times a day for 14 days (to be given only if dual therapy did not include azithromycin)
Syphilis (if ulcer present)	**Benzathine penicillin 2.4 million units** intramuscularly, single dose Mode of administration- 1.2 IU deep IM in each buttock People with a positive syphilis test and no ulcer: administer the same dose at weekly intervals for a total of three doses	**Doxycycline 100 mg,** orally, twice daily for 14 days **Erythromycin 500 mg,** 4 times a day, orally, for 14 days **Extend treatment to 30 days** if syphilis serology is positive
Genital herpes	**Primary genital herpes:** **Acyclovir 400 mg,** orally, 3 times a day for 10 days or **Acyclovir 200 mg,** orally, 5 times a day for 10 days	**Primary genital herpes:** **Valaciclovir 500 mg,** orally, twice daily for 10 days
	Recurrent infection: **Acyclovir 400 mg,** orally, 3 times a day for 5 days or **Acyclovir 800 mg,** orally, 3 times a day for 2 days or **Acyclovir 800 mg,** orally, 2 times a day for 5 days	**Recurrent infection:** **Valaciclovir 500 mg,** orally, twice daily for 3 days
	Suppressive therapy for recurrent herpes **Acyclovir 400 mg,** orally, twice daily *or* **Valaciclovir 500 mg,** orally, once daily Duration: 6 months (For details, see the genital ulcer disease section)	**Suppressive therapy for recurrences** **Famciclovir 250 mg,** orally, twice daily **(Famciclovir 500 mg,** orally, twice daily for people living with HIV or immunocompromised) Duration: 6 months

CHAPTER 4

ETIOLOGIC MANAGEMENT OF COMMON SEXUALLY TRANSMITTED INFECTIONS

Common Sexually Transmitted Infections

STI can be classified as bacterial, viral, protozoal, fungal or parasitic. STI may be asymptomatic, but may also cause a variety of symptoms and produce significant complications. STI are curable diseases with prompt diagnosis, proper management and counselling of the patient.

Causative agents of STI

Bacteria	Gonorrhea Chlamydial infection Syphilis Chancroid Lymphogranuloma venereum Granuloma inguinale Bacterial vaginosis
Virus	Genital herpes Anogenital warts Molluscum contagiosum
Protozoa	Trichomoniasis
Fungal	Vulvovaginal candidiasis
Parasites	Scabies (if primary lesion is on the genitalia) Pediculosis pubis

4.1 Gonorrhea

It is a bacterial infection caused by *Neisseria gonorrhoeae* which causes purulent inflammation of the genital mucous membranes. It is most frequently transmitted sexually but vertical transmission during childbirth from an infected mother to the newborn causing ocular infection in neonates is also possible.

It results in a number of clinical syndromes including urethritis, cervicitis, epididymitis, pelvic inflammatory syndrome, pharyngitis, ophthalmia neonatorum in neonates and rarely disseminated gonococcal infection.

Causative organism

Gram negative, aerobic, intracellular diplococcus, *Neisseria gonorrhoeae* which primarily affects the host epithelium.

Incubation period: 1-5 days

Clinical presentation

Infection in males:
More than 80% of male with gonococcal infections present with acute urethritis and discharge. It is characterized by

- Rapid onset of burning micturition or dysuria

Infection in females:
More than 80% of female with gonococcal infections with early genital infections are asymptomatic. Symptomatic females present with

- Excessive vaginal discharge
- Dysuria, frequency or urgency of micturition, deep dyspareunia
- Postcoital and intermenstrual bleeding

Examination findings

Males:

- Clear to purulent or scanty to profuse discharge from urethra
- Painful scrotal swelling with redness and edema of urethral meatus

Females:

- Cervicitis with cervical discharge, erythema and mucosal bleeding

Special conditions

Gonococcal proctitis	Gonococcal pharyngitis	Gonococcal conjunctivitis
• Mostly asymptomatic • Rectal pain, discharge, tenesmus	• Usually asymptomatic • Exudative lesions • Cervical lymphadenopathy	• Seen in newborn babies • Occurs in the first 24 hours after birth, also known as **ophthalmia neonatorum**

Lab diagnosis

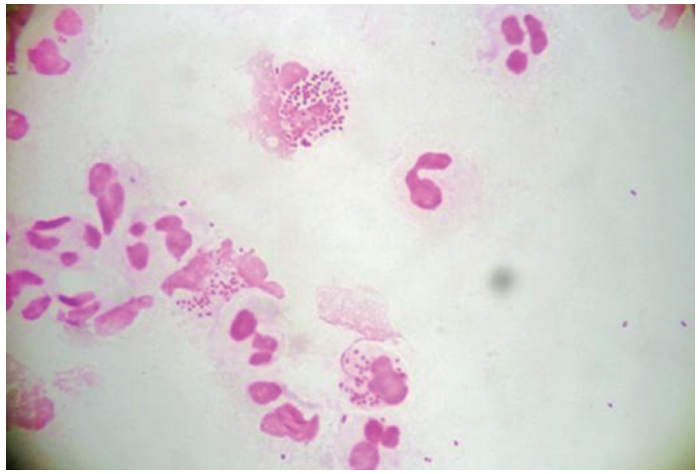
1. Microscopy

Identification of gram negative intracellular diplococci within the polymorphonuclear leucocytes (PMNL) or pus cells in stained smears lead to a rapid presumptive diagnosis

Males: Gram staining of urethral swabs

Females: Gram staining of endocervical swabs

Fig. 3. Gram stain of a urethral discharge smear showing *Neisseria gonorrhoeae*



2. Culture methods:

Not routinely preformed in resource limited settings and requires a special culture medium and skilled personnel.

3. Molecular detection:

NAAT (Nucleic acid amplification test) from the urethral swab, a first catch urine or from pharyngeal and anorectal samples.

Treatment

For uncomplicated *Neisseria gonorrhoeae* infection

Dual therapy with a regimen that is also effective against *C. trachomatis* is recommended regardless of Chlamydia results.

First line options	Effective substitutes
Cefixime 400mg, orally, single dose, plus **Azithromycin 1gm,** orally, single dose (ideally administered under direct observation of HCW at facility)	**Ceftriaxone 250mg,** IM, single dose, plus **Azithromycin 1gm,** orally, single dose

For complicated infections*

Gonococcal epididymitis/ Pharyngitis/ Pelvic inflammatory disease	**Ceftriaxone 500mg,** IM, single dose,
Gonococcal related arthritis and dermatitis disseminated infection	**Ceftriaxone for 1 week
Gonococcal meningitis	**Ceftriaxone for 2 weeks
Gonococcal endocarditis	**Ceftriaxone for 4 weeks
Ophthalmia neonatorum	Ceftriaxone 50mg/kg IM, single dose (maximum 125mg)

* If chlamydial infection has not been excluded, health care providers should treat for chlamydia with doxycycline 100 mg orally 2 times/day for 7 days.
** Dose depends on severity.

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

4.2 Chlamydia

Genital chlamydia infection is a commonly reported STI all over the world. It coexists with other STI especially *Neisseria gonorrhoeae*. It is caused by *Chlamydia trachomatis* which is a human obligate, intracellular bacterial pathogen. It causes a number of clinical syndromes including urethritis, cervicitis, epididymo-orchitis, pelvic inflammatory syndrome, seronegative reactive arthritis and ophthalmia neonatorum.

Causative organism:

Chlamydia trachomatis serovar A-C causes ocular trachoma. Serovar D-K causes urethritis and are considered the world's most common sexually transmitted bacterial pathogens. Serovar L1-3 causes Lymphogranuloma venereum (LGV).

Incubation Period: 1-5 weeks

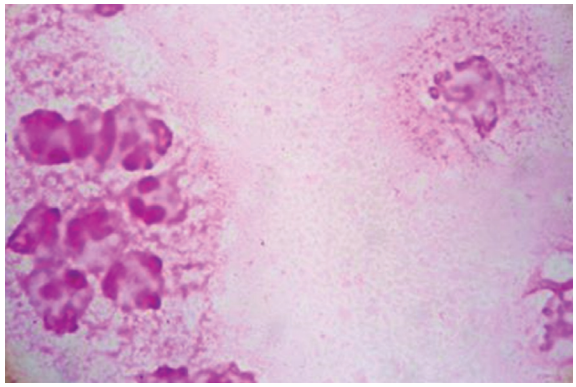
Clinical presentation
Males: • Asymptomatic (50%) • Dysuria **Females:** • Asymptomatic (90%) • Pain lower abdomen • Postcoital or intermenstrual bleeding • Dysuria • Dyspareunia
Examination findings
Males: • Mucopurulent urethral discharge **Females:** • Cervicitis • Vaginal discharge

Lab diagnosis

Microscopy

Urethral or endo-cervical smear showing polymorphonuclear leucocytes (PMNL) or pus cells >5 and >20 respectively in the presence or absence of gram negative intracellular diplococci (GNID), should be presumptively diagnosed and treated for *Chlamydia trachomatis*.

Fig. 4. *Chlamydia trachomatis* microscopy



Molecular detection

NAAT (Nucleic acid amplification test) from the urethral swab, a first catch urine or from pharyngeal and anorectal samples.

Rapid Antigen Test

This test is a rapid chromatographic immunoassay for detection of *Chlamydia trachomatis* in female cervical swab, male urethral swab and male urine specimens which aids in the detection of Chlamydia infection. WHO recommends a quality assured rapid test with a minimum sensitivity of 80% and specificity of 90%.

Treatment

First line options	Effective substitutes
Doxycycline 100 mg, orally, twice daily for seven days (to be given only if gonorrhoea therapy did not include azithromycin)	**Azithromycin 1 gram,** orally, single dose *or* **Ofloxacin 200–400 mg,** orally, twice a day for 7 days.
Chlamydia in pregnant women: **Azithromycin 1gram,** orally, single dose OR **Erythromycin 500 mg,** orally, four times a day for seven days **Note:** *Only Erythromycin base or Erythromycin stearate should be given, Erythromycin estiolate is contraindicated in pregnancy.* **Neonatal Conjunctivitis** Erythromycin base syrup 50 mg/kg /day orally four times a day for two weeks	

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

4.3 Syphilis

Syphilis is a sexually transmitted infection (STI) caused by spirochete *Treponema pallidum*. It results in substantial morbidity and mortality. WHO estimates that 7.1 million people were newly infected with syphilis in 2020.

Syphilis is transmitted through sexual contact with infectious lesions of the mucous membranes or abraded skin, via blood transfusion, or transplacentally from a pregnant woman to her fetus.

Causative agent

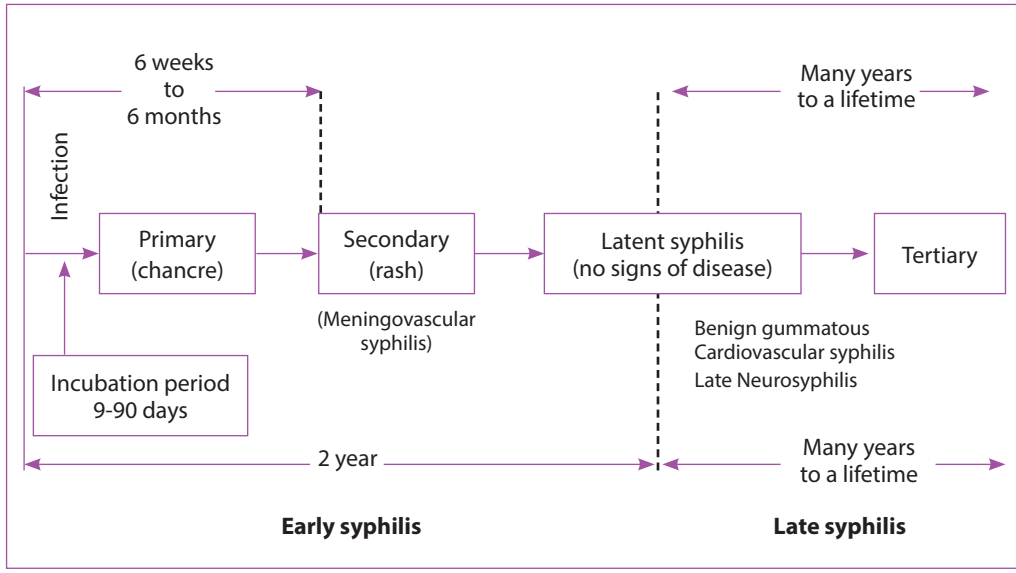
Treponema pallidum, a corkscrew shaped motile spirochete ranging in size from 5-16 micrometer in length and 0.2-0.3 micrometer in diameter. Humans are their only natural hosts.

Clinical presentation

The disease lasts many years and is divided into two stages:

- Early syphilis consists of primary syphilis, secondary syphilis and early latent syphilis (less than two years from acquisition of infection).
- Late syphilis consists of late latent syphilis and tertiary syphilis (more than two years from acquisition of infection).

Schematic representation of the course of untreated syphilis



Source: Laboratory diagnosis of sexually transmitted infections, including human immunodeficiency virus, WHO, 2013

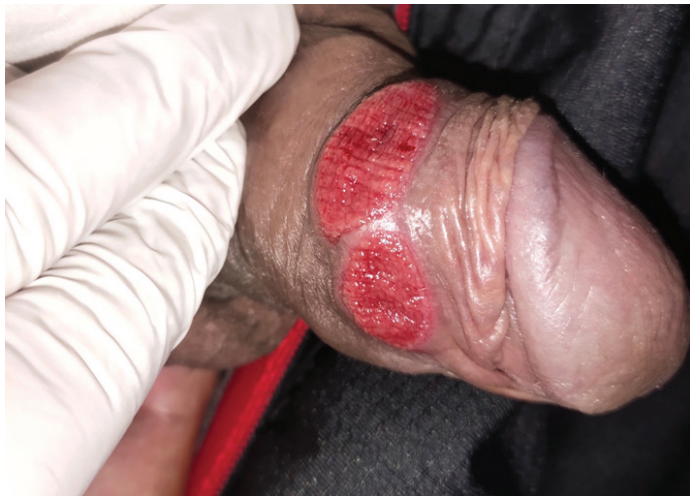
Primary Syphilis

Primary syphilis is characterized by an ulcer (syphilitic chancre) at the site of infection that develops after an incubation period of about three weeks from sexual contact but can range from 9 - 90 days. The ulcers are usually single lesions and painless. The person with syphilis may miss them if they occur on concealed areas, such as the rectum, the cervix or the pharynx. If not treated, the ulcer will heal without scarring after some 2–10 weeks and the infection may then progress to the secondary stage.

Examination findings

- Syphilitic chancre: one or more round, non-tender ulcers with slightly elevated, well demarcated and indurated edges with a clean base.
- Unilateral or sometimes bilateral, non-tender inguinal lymph nodes (within 1-2 weeks after the chancre).
- The ulcers heal without scarring after 2–10 weeks even without treatment and may progress to the secondary stage.

Fig.5. Syphilitic chancre of primary syphilis on the shaft of penis



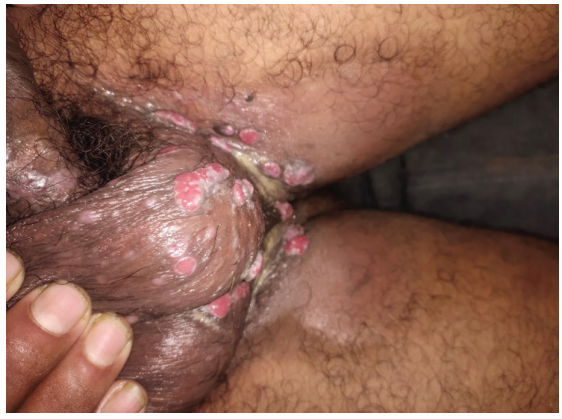
Secondary Syphilis

Secondary syphilis sets in about six weeks to six months after infection. In some instances of secondary syphilis, especially among immunosuppressed individuals, the chancre may still be visible at the time of secondary manifestation of syphilis. At this stage, the spirochaetes enter the blood stream and may cause systemic symptoms of fever, malaise, arthralgia and anorexia. If not treated at this stage, syphilis enters latency which might be followed by the tertiary syphilis.

Examination findings

- Generalized maculo-papular rash on the palms and plantar surfaces of feet.
- Patchy alopecia (moth eaten alopecia).
- Generalized lymphadenopathy.
- Condyloma lata – highly contagious hypertrophic lesions resembling flat warts in the moist areas, such as the labia, perineum, the folds of the foreskin and around the anus.
- Mucous patches- painless shallow ulcers of the oral or genital mucous membranes that are highly contagious.

Fig 6. Condyloma lata in secondary syphilis



Early latent Syphilis

Early latent syphilis is infection of less than two years in duration. At this stage, the lesions of primary or secondary syphilis resolve spontaneously and the infection goes into latency.

During the first two years (primary, secondary and early latent) of syphilis infection, the individual is infectious to the sex partner. A high risk of transmission is involved to the fetus during pregnancy.

Late latent Syphilis

It refers to an infection of more than two years in duration without clinical evidence of treponemal infection. As the latency progresses, the individual with untreated syphilis is less likely to transmit the infection to a sex partner and to the fetus during pregnancy.

Non-treponemal and treponemal tests are mostly reactive (positive) in early latent and late latent syphilis, but the VDRL, a non-treponemal test, may become negative in late latent syphilis. A negative treponemal test at this stage of infection can be taken as sufficient to rule out the diagnosis of syphilis. The specific treponemal tests remain reactive for the person's lifetime, therefore, these tests cannot be used for monitoring the response to treatment.

Tertiary Syphilis

Late syphilis with the following manifestations in the different organ systems.

- Gummatous syphilis.
- Cardiovascular syphilis.
  - Uncomplicated aortitis, aortic insufficiency, aneurysm, coronary stenosis.
- Neurosyphilis.

Lab diagnosis

The available laboratory tests for diagnosis of syphilis include direct detection methods (dark- field microscopy, direct fluorescent antibody test and nucleic acid amplification test), serology (treponemal and non-treponemal tests), and examination of cerebrospinal fluids.

Serology

There are two types of serological tests 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 serologic tests.

i) Non-treponemal test: The most widely available non-treponemal tests are the microscopic Venereal Diseases Research Laboratory (VDRL) and the macroscopic rapid plasma reagin (RPR) tests. Since these antibodies can also be produced in other diseases, non-treponemal tests are not highly specific for syphilis and can give false-positive results.

ii) Treponemal test: Treponemal tests include the Treponema pallidum hemagglutination assay (TPHA), the Treponema pallidum particle agglutination assay (TPPA) and the fluorescent treponemal antibody absorption (FTA- ABS) tests. These tests are highly specific because they detect antibodies against treponemal-specific antigens.

Rapid syphilis tests (RST)

RSTs provide treponemal antibody results in 10–15 minutes and can be performed on-site in any setting since they do not require refrigerated storage or laboratory equipment.

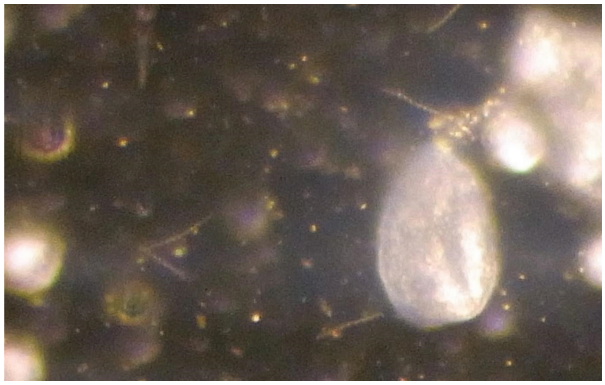
Molecular detection

T. pallidum can be detected by molecular methods (PCR) from lesions.

Dark-field microscopy

Syphilitic treponemes from lesions of secondary syphilis, such as condylomata lata and mucous patches.

Fig.7. *Treponema pallidum* as seen in darkfield microscopy

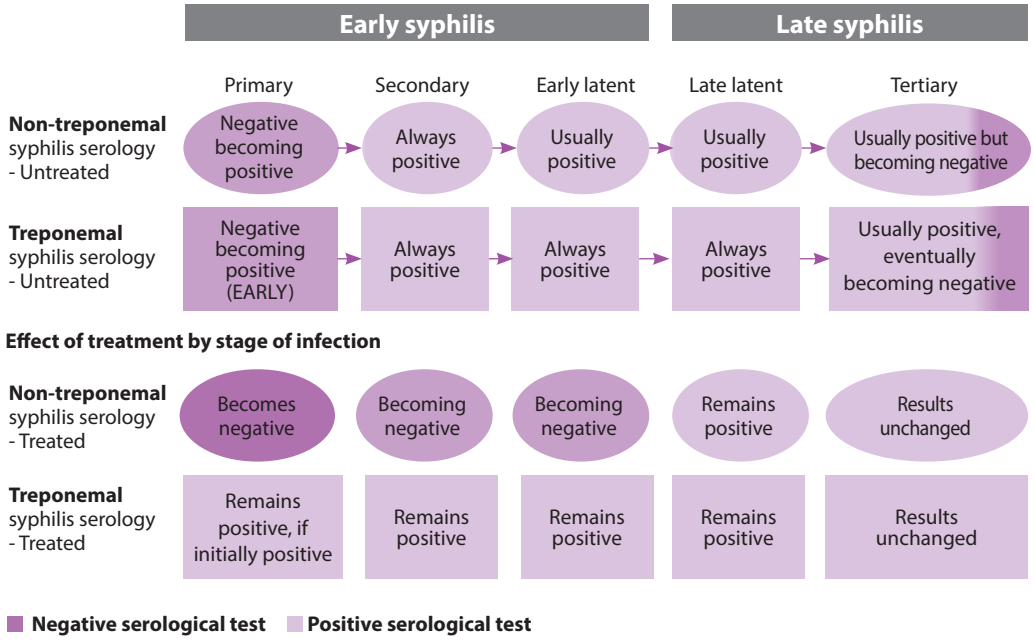


Reactivity of serological tests by stage of syphilis and effect of treatment

An overview of the reactivity of non-treponemal and treponemal serological tests for syphilis and the effect of successful treatment is shown in the Flow chart 7.

- Serological tests for syphilis give only a presumptive diagnosis of syphilis and must be interpreted together with a good medical and sexual history, a physical examination and history of any recent treatments with antibiotics for syphilis.
- Non-treponemal tests may be negative in primary syphilis for 1–4 weeks after the appearance of the chancre (4–6 weeks after infection). The tests are reactive in secondary syphilis. As the duration of the early and late latent stages of syphilis increases, the antibody titre decreases and may eventually give a negative result in late syphilis (late latent and tertiary stages), even without treatment. Syphilis serology tests may revert to negative with treatment, depending on the stage of syphilis when treatment is started. This is seen mostly in individuals treated during the primary or secondary stage of syphilis. If early syphilis is treated, the non-treponemal test titres will decline and become negative and may thus be used to monitor response to treatment. If the disease is diagnosed at the late syphilis stage, low titres of non-treponemal tests may remain positive for life.

Flow chart 7: Reactivity of serological tests by stage of syphilis and effect of treatment



Source: Unemo M, Ballard R, Ison C, Lewis D, Ndowa F, Peeling R, editors. Laboratory diagnosis of sexually transmitted infections including human immunodeficiency virus. Geneva: World Health Organization; 2016

The specific treponemal tests TPHA, TPPA and fluorescent treponemal antibody absorption, may become positive earlier than the non-treponemal tests. Almost 85% of individuals testing positive on a treponemal test will remain positive on subsequent treponemal tests even after successfully being treated.

The recent rapid syphilis tests like immunochromatographic strips with treponemal antigens are equivalent to specific treponemal tests, such as the TPHA and TPPA, and the results produced by such tests should be interpreted as equivalent. A positive rapid syphilis test measures lifetime exposure to treponemal infection and not an active disease requiring treatment. If an RPR-equivalent test is available, it should be performed following a positive rapid syphilis test to determine whether there may be active syphilis infection or not.

Syphilis screening and treatment during pregnancy

Mother-to-child transmission of syphilis (congenital syphilis) is usually devastating to the fetus. All pregnant women should be screened for syphilis during the first antenatal care visits. Depending on the availability of syphilis serology test at the health facilities, any of the options below can be followed:

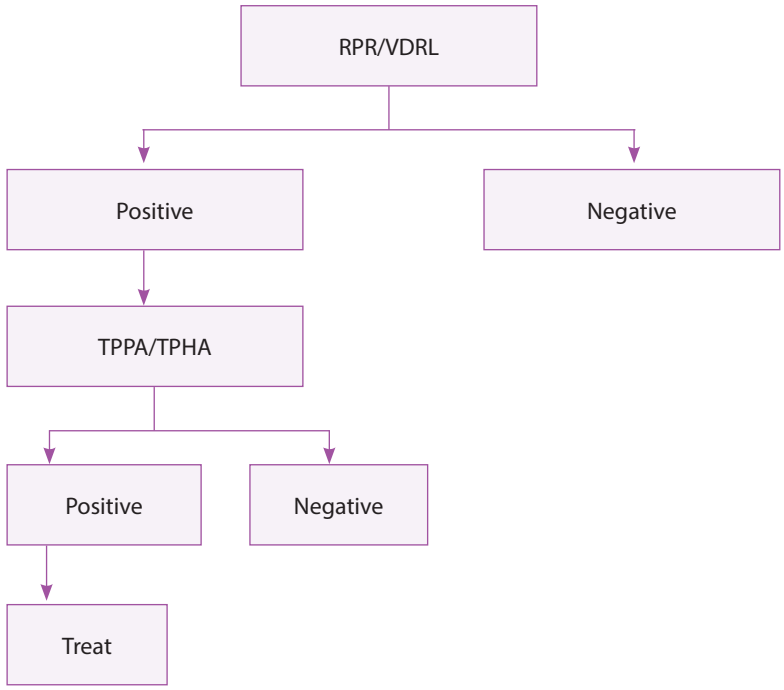
Option 1: RPR or VDRL followed (if positive) by TPPA or TPHA test (Flow chart 8)

RPR or VDRL test is a standard screening strategy, followed (if positive) by confirmation testing using TPHA or TPPA with the same blood sample. Women with early syphilis will be detectable by RPR test approximately a month after the onset of the primary chancre.

It takes 2–3 days for the confirmation of syphilis, so the pregnant woman is required to make two visits to the clinic: first to provide the blood sample for testing, and second to receive the final test results and appropriate treatment.

After confirmation with TPPA/TPHA test for syphilis a full course of treatment is provided based on the stages of syphilis.

Flow chart 8: RPR or VDRL followed (if positive) by TPPA or TPHA test



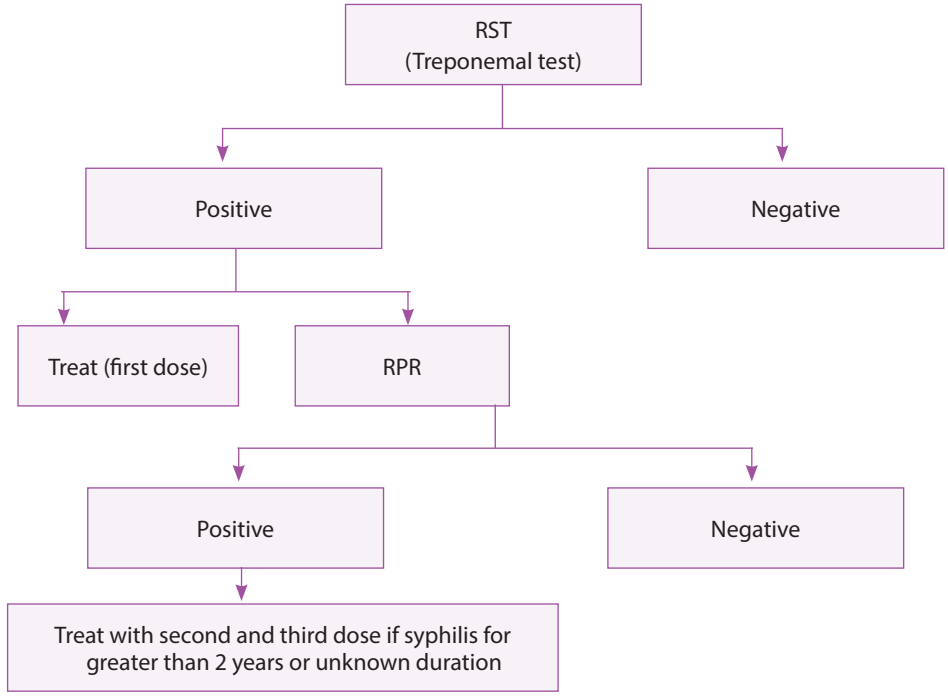
Option 2: RST followed (if positive) by first dose and RPR test (Flow chart 9)

RST is provided to the pregnant women. A seronegative result can be interpreted as no syphilis and no treatment. If RST is positive, immediate treatment with a single dose of benzathine penicillin will be sufficient to prevent adverse outcomes of pregnancy.

The woman can then further test with an RPR test (which may be conducted depending on available resources), and if positive then she should be treated appropriately for syphilis.

If the RPR is negative, testing can be repeated after approximately one month to obtain a correct diagnosis for persons with early syphilis.

Flow chart 9: RST followed (if positive) by first dose and RPR test



Treatment for syphilis

The recommended treatment for syphilis is benzathine penicillin (Table 8). Syphilis treatment is dependent on the clinical manifestations and stage of disease. ***If the duration of the disease is unknown or not certain the syphilis infection should be managed as late syphilis.*** Informed consent should be taken from the patient prior to administration of the penicillin (Annex-1).

Table 8: Treatment for syphilis

Infections covered	First-line options	Effective substitutes	For pregnant and breastfeeding women and people younger than 16 years
Syphilis			
Syphilis (early) (treatment for primary, secondary and early latent [less than two years since infection] syphilis)	**Benzathine penicillin 2.4 million units,** intramuscularly in a single dose	**Doxycycline 100 mg,** orally, twice a day for 14 days *or* **Erythromycin 500 mg,** orally, 4 times a day for 14 days	**Benzathine penicillin 2.4 million units,** intramuscularly in a single dose *or* **Erythromycin 500 mg,** orally, 4 times a day for 14 days
Syphilis (late) (treatment for late latent and tertiary syphilis)	**Benzathine penicillin 2.4 million units** by intramuscular injection, once weekly for 3 consecutive weeks*	**Procaine penicillin 1.2 million units** by intramuscular injection, once daily for 20 consecutive days, *or* **Doxycycline 100 mg**, orally, twice daily for 30 days	**Erythromycin 500mg,** orally, 4 times a day for 30 days

* *The interval between consecutive doses of benzathine penicillin should not exceed 14 days.*

Congenital Syphilis

Syphilis is transmitted from the mother to the child in utero or at the time of delivery. Congenital syphilis is preventable, however, elimination of mother-to-child transmission of syphilis can be achieved through implementation of effective early screening and treatment strategies for syphilis in pregnant women. The fetus can be easily cured with treatment, and the risk of adverse outcomes to the fetus is minimal if the mother receives adequate treatment during early pregnancy – ideally before the second trimester.

Types of Congenital Syphilis

- Early syphilis: Less than two years duration
- Late syphilis: More than two years duration

Manifestations of congenital syphilis

- Low birth weight and anemia
- Cutaneous lesions: bullous lesions, fissuring of lips, angles of mouth, and nasolabial folds
- Mucosal lesions: Syphilitic rhinitis: (snuffles)
- Musculoskeletal system: Epiphysitis, periostitis, dactylitis
- Hepatosplenomegaly
- Generalized lymphadenopathy
- Syphilitic pseudoparalysis
- Ocular involvement
- Eight cranial nerve involvement, Hutchinson's teeth, saddle nose, clutton's joints, sabers shin, etc. which are late congenital syphilis presentation

Management of congenital syphilis

Penicillin is the drug of choice for the management of congenital syphilis.

Table 9: Treatment for congenital syphilis

Early Congenital Syphilis: (< two years of age)	
With clinical CNS involvement or with abnormal CSF	**With normal CSF**
Aqueous procaine penicillin, 50,000 IU/kg body weight, single daily dose IM for 10 days.	**Benzathine penicillin,** 50,000 IU/ kg, body weight by IM stat
Late Congenital Syphilis: (> two years of age)	
Aqueous crystalline penicillin, 300,000 IU/kg, daily IM, in divided doses, for10 days – not to exceed 1.2 million units daily.	
For penicillin allergic children after the first month of life **Erythromycin,** 10 mg/kg, orally, four times daily for 30 days.	

Follow-up serological screening

Early syphilis and congenital syphilis: Quantitative non-treponemal tests done at 3, 6, and 12 month intervals after the treatment.

4.4 Chancroid

It is one of the most common STI that present with ulcerative lesions.

Causative agent

Haemophilus ducreyi, a gram negative bacillus

Incubation period: 4-7 days

Clinical presentation

- Fever and other constitutional symptoms.
- Lesions of chancroid begin as an erythematous papule within hours to days of sexual exposure. Over the following 1–2 days, the papule evolves into a pustule that breaks down into a purulent painful ulcer.

Among males:

- Penile ulcers (foreskin, shaft and on the glans), and as many as 50% develop unilateral or bilateral painful inguinal lymph nodes (50% cases).
- Large, painful, fluctuant lymph nodes (buboes), if not treated, may suppurate and form fistulae or ulcers.

Among females:

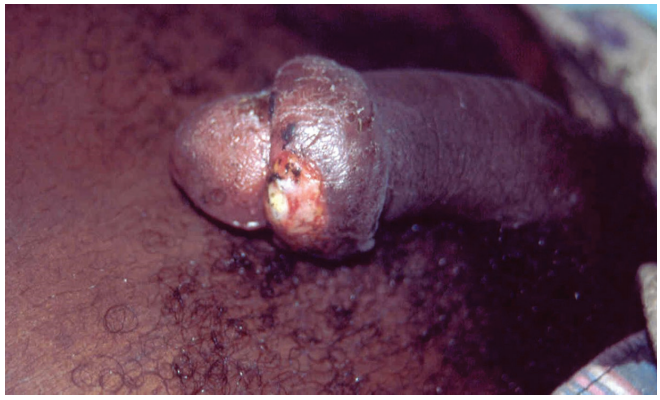
- Painful vulval ulcers and anal ulcers. Internal ulcers may be asymptomatic.
- Inguinal adenopathy (rare).

Examination findings

- Soft sore: multiple, superficial, tender, non-indurated ulcer.
- Undermined, friable ragged edge with an erythematous halo with the floor covered by a purulent exudate which on removal reveals a bleeding surface.

Chancroid ulcers may have atypical clinical appearances and dispel suspicion of chancroid. Small ulcers can mimick infected genital herpes. In HIV infection, less purulent ulcers resembling syphilitic chancres can be seen. Immunosuppressive patients may have aggressive and erosive ulcers of chancroid thus destroying the genital organs.

Fig.8. Chancroid



Lab diagnosis

Microscopy: Gram staining of smears may reveal Gram-negative bacilli in a school of fish formation (or rail track appearance), not very sensitive.

Culture methods: Fastidious nature of organism so difficult to culture.

Multiplex PCR (M-PCR): Available in research settings and reference centres.

*High index of suspicion in case of an unusually painful, suppurative ulcer with inguinal lymph nodes among men or women.

Treatment

Recommended treatment regimens for chancroid:

Maintain local hygiene.

Needle aspiration of infected fluctuant bubo should be done through a non-dependent area.

Infections covered	First-line options	Effective substitutes
H. ducreyi	**Azithromycin 1 gram,** orally, single dose *or* **Ceftriaxone 250 mg,** intramuscularly, single dose	**Ciprofloxacin,** 500 mg, orally, twice daily for three days or **Erythromycin base,** 500 mg, orally, four times daily for seven days

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

4.5 Lymphogranuloma Venereum (LGV)

It is a sexually transmitted infection caused by *Chlamydia trachomatis* serovars L1, L2, and L3 and manifests as genital ulceration with suppurative regional lymphadenopathy.

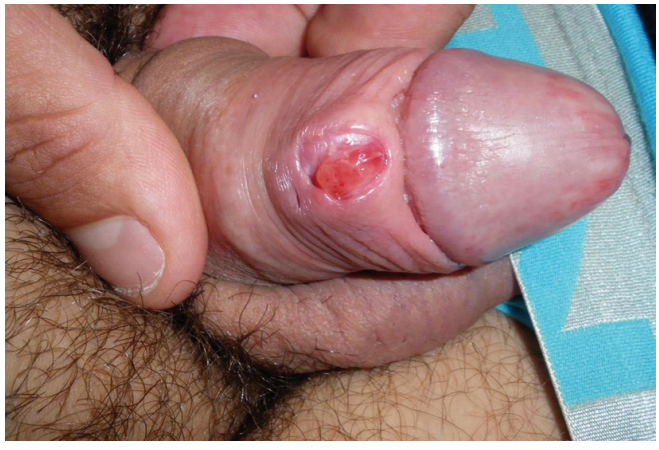
Causative agent

Chlamydia trachomatis serovars L1, L2, and L3, an obligate intracellular bacterium.

Incubation period: 3 – 30 days

Clinical presentation
• Painless genital ulceration. Usually, the lesions have often disappeared by the time persons seek care. • Inguinal swelling. • Mucoid or hemorrhagic rectal discharge, anal pain, constipation fever and anal pain. (mostly in MSM and women with rectal exposure).
Examination findings
• Tender inguinal and/or femoral lymphadenopathy (commonly unilateral) in heterosexual men. • LGV-associated lymphadenopathy can be severe, with bubo formation from fluctuant or suppurative inguinal or femoral lymphadenopathy. • Hemorrhagic proctocolitis is common finding in women and MSM.

Fig.9. Ulcer of Lymphogranuloma Venereum on the penis



Lab Diagnosis

A definitive LGV diagnosis can be made only with nucleic acid amplification tests (NAAT) and confirmation with real-time PCR. However, they are not routinely available.

Genital or oral lesions, rectal specimens, and lymph node specimens (i.e., lesion swab or bubo aspirate) can be tested for *C. trachomatis* by NAAT or culture. NAAT is the preferred approach for testing because it can detect both LGV strains and non–LGV C. trachomatis strains.

A rectal Gram stain with >10 white blood cells (WBCs) has also been associated with rectal LGV.

Chlamydia serology should not be used routinely as a diagnostic tool for LGV because the utility of these serologic methods has not been established.

For clinical management the diagnosis is based on clinical suspicion, epidemiologic information, and a *C. trachomatis* NAAT along with exclusion of other etiologies for proctocolitis, inguinal lymphadenopathy, or genital, oral, or rectal ulcers.

Treatment

First line options	Effective substitutes
Doxycycline 100 mg, orally, 2 times/day for 21 days.	**Azithromycin 1 g,** orally, once weekly for 3 weeks.* or **Erythromycin base 500 mg,** orally, 4 times/day for 21 days. *considered as an alternative regimen since there are no controlled clinical trials supporting the efficacy of this drug for the treatment of LGV.

- Follow up until the patient's signs and symptoms resolve.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partners.
- Offer HIV and syphilis counselling and testing.

4.6 Granuloma Inguinale (Donovanosis)

Granuloma inguinale, also known as Donovanosis, is a genital ulcerative condition found sporadically in India, South Africa and South America. It is caused by the bacteria Klebsiella granulomatis.

Causative agent

Intracellular gram-negative bacterium Klebsiella granulomatis (formerly known as Calymmatobacterium granulomatis).

Clinical presentation

- Painless, slowly progressive ulcerative lesions on the genitals or perineum without regional lymphadenopathy.
- Subcutaneous granulomas (pseudo buboes) may also occur.
- Highly vascular lesions with beefy red exuberant granulation tissues on the floor and can easily bleed on manipulation.
- Extragenital infection can occur with infection extension to the pelvis, or it can disseminate to intra-abdominal organs, bones, or the mouth.

Fig. 10 (a) Ulcer of granuloma inguinale on the penis

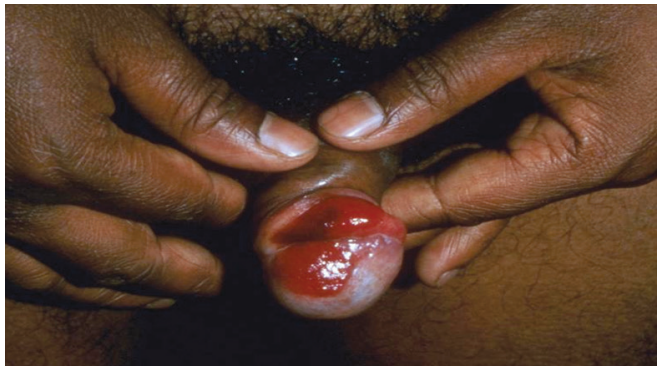
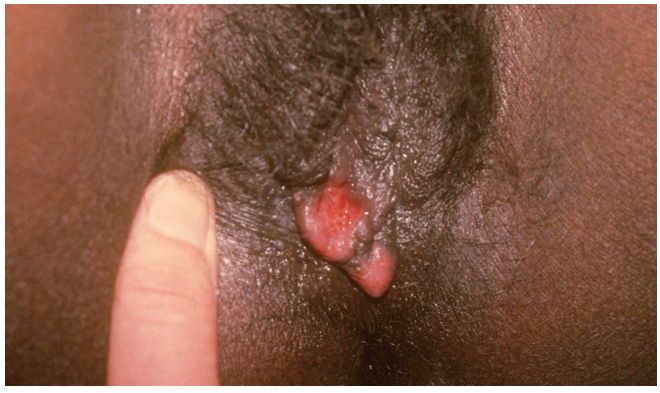


Fig. 10 (b) Ulcer of granuloma inguinale on the vulva



Lab diagnosis

Diagnosis is mostly done on clinical grounds.

The causative organism is difficult to culture, and diagnosis requires visualization of dark-staining Donovan bodies on tissue crush preparation or biopsy. Molecular assays might be useful for identifying the causative agent.

Treatment

Prolonged therapy is usually required to permit granulation and reepithelialization of the ulcers. Relapse can occur 6–18 months after apparently effective therapy. The addition of another antibiotic to these regimens can be considered if improvement is not evident within the first few days of therapy.

First line options	Effective substitutes
Azithromycin 1 gm orally once/week or 500mg daily for at least 3 weeks and until all lesions have completely healed.	**Doxycycline** 100 mg orally 2 times/day for at least 3 weeks and until all lesions have completely healed. or **Erythromycin** base 500 mg orally 4 times/day for at least 3 weeks and until all lesions have completely healed. or **Trimethoprim-sulfamethoxazole** one double-strength (160 mg/800 mg) tablet orally 2 times/day for at least 3 weeks and until all lesions have completely healed.

- Follow up until the patient's signs and symptoms resolve.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partners.
- Offer HIV and syphilis counselling and testing.

4.7 Trichomoniasis

It is a sexually transmitted infection caused by *T. vaginalis* that specifically infects women's vagina, urethra and paraurethral glands. Most women are asymptomatic, however, more than 50% of women with *T. vaginalis* infection have vaginal discharge described as yellow and may appear purulent.

Clinical presentation

- Abnormal vaginal discharge, yellow green, purulent, malodorous.
- Vulval itching (in 50% of symptomatic women).
- Dyspareunia.
- Dysuria.

Examination findings

- Vulval erythema and oedema.
- On speculum examination:
  - A discharge of variable colour per vagina: classically yellow or greenish and may be frothy.
  - Erythematous vaginal walls.
  - Punctate haemorrhages in the cervix, known as "strawberry cervix". This finding is uncommon but is highly indicative of trichomoniasis.

Lab diagnosis

Microscopy

Wet mount microscopy:

- Used for the identification of motile trichomonads.
- It is quick, inexpensive and easy to perform. To have a good chance of successfully identifying the motile trichomonads, the slide should be read within 10 minutes of collection since trichomonads quickly lose their motility.

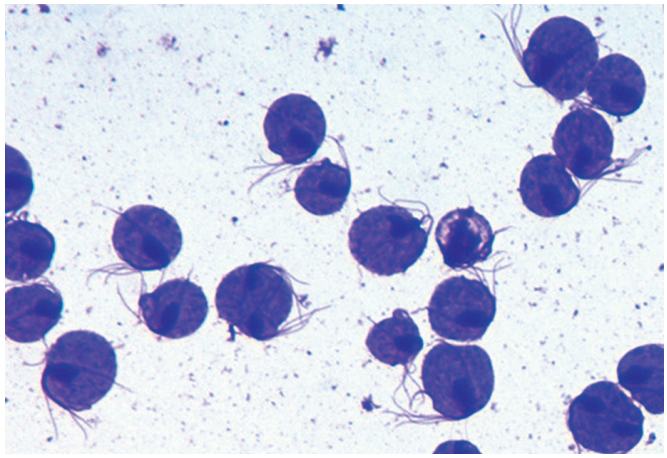
Culture methods

Routine culture methods detecting *T. vaginalis* are no longer widely performed since seven days incubation is needed to rule out infection although cultures from women with trichomoniasis are usually positive in the first three days of inoculation.

Molecular testing

NAAT has the highest sensitivity of all diagnostic methods to detect *T. vaginalis.* Vaginal swabs are the samples of choice, but endocervical samples and urine can also be used. Residual genital samples used for diagnosing chlamydia and gonorrhoea using NAAT are also good for detecting *T. vaginalis* nucleic acids. Not currently widely available as rapid point-of-care tests.

Fig. 11. *Trichomonas vaginalis* microscopy



Treatment

First-line options	Effective substitutes
Metronidazole 2 grams, orally, in a single dose, (five 400mg tablets). or **Metronidazole 400 mg,** orally, twice daily for 7 days. **Note:** In pregnancy, metronidazole should, ideally, be avoided in the first trimester.	**Tinidazole 2 grams** orally, single dose. or **Tinidazole 500 mg** orally, twice daily for 5 days.

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

4.8 Bacterial vaginosis

Bacterial vaginosis is the most common cause of vaginal discharge among women of childbearing age. It is a polymicrobial disorder of the vaginal microbiome. It is characterized by low concentrations or an absence of lactobacilli and a florid presence of anaerobic flora.

Bacterial vaginosis is not a sexually transmitted condition, but it has been linked to several adverse outcomes of pregnancy and an increased risk of STI, including HIV, pelvic inflammatory disease and tubal factor infertility.

Causative organisms

Gardnerella vaginalis
Mycoplasma hominis
Ureaplasma urealyticum
Mobiluncus spp.

Clinical presentation

- White vaginal discharge in about 90% of symptomatic women
- An abnormal vaginal odour/ fishy odour

Examination findings

- Thin, white, homogenous discharge may be observed externally on the posterior fourchette of the vulva or the labia.
- pH of vaginal fluid more than 4.5
- A fishy odor of vaginal discharge before or after addition of 10% KOH (whiff test)

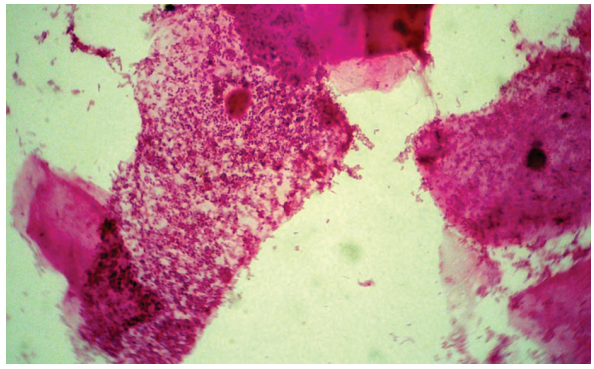
Speculum examination:
Homogeneous discharge may be observed adherent to the vaginal wall, the cervix is usually normal in appearance.

Lab diagnosis

Microscopy

- Wet-mount microscopic test for clue cells.
  - Clue cells are vaginal epithelial squamous cells coated with coccobacilli with absence of rods of lactobacilli. When visualized, clue cells predict bacterial vaginosis. Identifying clue cells requires adequate training and good skills and good knowledge of the microscope.
- Smear for gram's stain
  - Gram-stained vaginal smear collected with a swab from the vagina reveals large numbers of gram-positive and gram-negative cocci with reduced or absent lactobacilli (gram-positive bacilli).

Fig. 12. Bacterial vaginosis showing characteristic clue cells



Treatment

First-line options	Effective substitutes
Metronidazole 400 mg, orally, twice daily for 7 days. **Note:** *In pregnancy, metronidazole should, ideally, be avoided in the first trimester* *Avoid alcohol while taking metronidazole.*	**Clindamycin 300 mg** orally, twice daily for 7 days. *or* **Metronidazole 2 grams,** orally, in a single dose (Five 400mg tablets).

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

4.9 Vulvovaginal candidiasis

Vulvovaginal candidiasis is caused by *C. albicans* in the women of reproductive age group. *Candida* yeasts may be detected in 20–30% of asymptomatic non-pregnant women of childbearing age and does not necessarily require treatment.

Although men can be colonized with *Candida* species and the male sex partners of women with candidiasis are transiently colonized, candida balanitis and balanoposthitis among men are not recognized as STI.

Causative organisms

C. albicans – 90% of cases

The non-albicans species cause the rest of vulvovaginal candidiasis: *C. glabrata, C. tropicalis, C. krusei* and *C. parapsilosis.*

Clinical presentation
• Pruritus (itching). • Discharge, characteristically curdy, white or creamy and thick but can vary from watery to homogeneously thick. • Burning sensation of the vulva and vaginal soreness. • Pain during sexual intercourse (dyspareunia) and splash dysuria.
Examination findings
• Erythematous and excoriated vulva. • Swollen vulva and the labia. • Papulopustular lesion around vulva. • Speculum examination: - Adherent white curdy discharge on the erythematous vaginal wall. - The cervix looks normal.

Lab Diagnosis

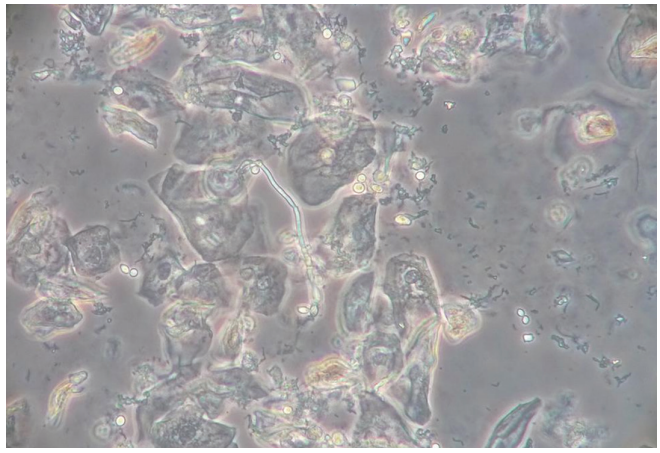
Microscopy

A Gram stain of vaginal secretions from the walls of the vagina demonstrates gram-positive *Candida* species. A 10% potassium hydroxide preparation is also useful in identifying germinated yeasts.

Culture methods

Candida culture on solid media (sabouraud dextrose agar) is the most sensitive diagnostic test for candidiasis but does not offer same-day treatment. The results may take up to three days to confirm the growth of fungal colonies.

Fig. 13. Budding yeast cells of *Candida albicans*



Treatment

First-line options	Effective substitutes
Fluconazole 150 mg (or 200mg), orally, single dose. *or* **Clotrimazole vaginal tablet, 100 mg,** inserted at night for 7 nights.	**Miconazole vaginal pessaries, 200 mg** inserted at night for 3 nights. or **Nystatin, 200,000-unit vaginal tablet,** inserted at night for 7 nights.

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Vulvovaginal candidiasis is not usually acquired through sexual inter-course and partner treatment is not required.

4.10 Genital herpes

It is one of the most common STI and is caused by HSV -1 and HSV -2. The individual infected may be asymptomatic or may have only mild symptoms, however able to shed the virus intermittently in the genital tract and facilitate transmission of the infection to another person.

Causative agent

Herpes simplex virus HSV-1 and HSV-2.

Primary genital herpes

First-episode genital herpes infection. The incubation period is within 5–14 days of sexual contact. There is no previous history of genital herpes.

Clinical presentation

- **Local manifestations:** water filled grouped blisters, burning pain, itching, and painful inguinal swelling.
- **Constitutional manifestations:** fever, headache, malaise and myalgia, usually in the first 3–4 days.

Examination findings

- Grouped vesicles or shallow ulcerative lesions starting as papules or vesicles spreading rapidly over the external genitalia and followed by crusting and healing.
- Common sites: penis, urethral meatus, scrotum, pubic area and vulva or on the anal and perianal areas (anus and buttocks).
- Tender inguinal lymphadenopathy.

Recurrent genital herpes

Recurrent genital herpes is the second or subsequent episodes of genital herpes. A presumptive diagnosis of genital herpes can be made in case the person gives a history of recurrent ulcers with a typical appearance of a crop of vesicles.

Clinical presentation

- Localized symptoms: grouped blisters, burning pain, itching, recurrent ulcers.
- Duration of the episode averages between four and five days or up to 12–15 days.

Examination findings

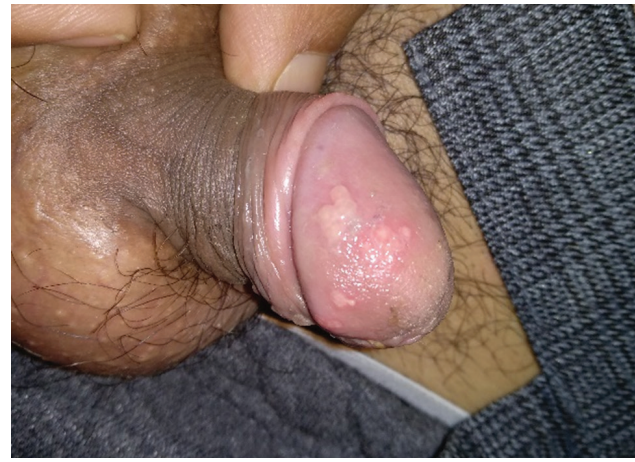
- A cluster of vesicopustular or ulcerative lesions on the external genitalia (penis, urethral meatus, scrotum, pubic area and vulva) or on the anal and perianal areas (anus and buttocks).
- Rapidly spreading papules or vesicles, multiple small lesions coalescing into large ulcers.

Lab diagnosis

Serology

Type-specific antibody tests can distinguish between HSV-1 and HSV-2. Immunoglobulin G (IgG)-based type-specific testing for HSV-1 and HSV-2 antibodies has limited value in diagnosis. The usefulness of testing is only by demonstrating seroconversion from a negative result at the time of the lesions to a positive result 6–12 weeks later. Although IgM detection can be used in diagnosing a new herpes infection, as many as 35% of the people with recurrent herpes episodes have IgM responses. IgM is therefore a poor marker of new infection and has limited diagnostic value.

Fig.14. Genital herpes on a penis



Cultures

It enables replication of the virus for determining resistance to antiviral therapy and for confirming diagnosis, but results take about 2–4 days, and culture requires appropriate viral transport medium and special expertise to be a viable procedure.

Molecular diagnostics

Molecular detection by PCR of HSV DNA from swabs of genital lesions is the most sensitive and specific test.

Treatment for genital herpes

Treatment can be expected to reduce the formation of new lesions, durations of ulcers, time required for healing and viral shedding. However, it does not appear to influence the frequency and severity of recurrences. Topical therapy with acyclovir produces only minimal shortening of the duration of symptomatic episodes and is not recommended.

For people living with HIV and immunosuppressed individuals, dose adjustments are recommended for valaciclovir and famciclovir but not for acyclovir.

- For recurrent episodes, valaciclovir 500 mg is recommended for five days instead of three days, and famciclovir is recommended at a dose of 500 mg twice daily for five days instead of 250 mg
- For suppressive therapy, valaciclovir is recommended at 500 mg twice daily instead of once daily and famciclovir at 500 mg twice daily instead of 250 mg twice daily.

Treatment

Infections covered	First-line options	Effective substitutes
Primary infection	**Acyclovir 400 mg,** orally, 3 times a day for 10 days *or* **Acyclovir 200 mg,** orally, 5 times a day for 10 days	**Valaciclovir 500 mg,** orally, twice a day for 10 days *or* **Famciclovir 250 mg,** orally, 3 times a day for 10 days
Recurrent infection-episodic therapy	**Acyclovir 400 mg,** orally, 3 times a day for 5 days *or* **Acyclovir 800 mg,** orally, twice daily for 5 days *or* **Acyclovir 800 mg,** orally, 3 times a day for 2 days	**Valaciclovir 500 mg,** orally, twice daily for 3 days *or* **Famciclovir 250 mg,** orally, twice daily for 5 days
Suppressive therapy for recurrent herpes (4–6 or more recurrent episodes per year with severe symptoms)	**Acyclovir 400 mg,** orally, twice daily for 6 months *or* **Valaciclovir 500 mg,** orally, once daily for 6 months	**Famciclovir 250 mg,** orally, twice daily for 6 months

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

4.11 Anogenital warts

Anogenital wart is a common STI that mostly affects the skin and mucus membrane around the anogenital region. The disease can be transmitted sexually through close skin-to-skin contact so the presence of erosion or an ulcer facilitates and increases the chances of infectivity. Vertical transmission from mother to child during delivery is also possible.

Causative agent

Human papilloma virus (HPV).

HPV genotypes 6 and 11: ano-genital warts (Condyloma acuminatum).

HPV genotypes 16, 18, 31 and 33: high risk of oncogenicity.

Incubation period: 3 months to 2 years

Clinical presentation
• Asymptomatic. • Lesions-warty growth: - shaft of penis, perineum, anus or urethral meatus in males. - vulva, vaginal walls, cervix, perineum or anus in females.
Examination findings
• Soft, pinkish red or skin coloured fleshy growth over mucosa of anogenital region. • Firm and keratinized warts may be seen on dry skin. • May have a verrucous, pedunculated or cauliflower-like growth.

Lab diagnosis

Diagnosis is done clinically.

Fig. 15. Anogenital warts in the perianal region (Condyloma acuminatum)

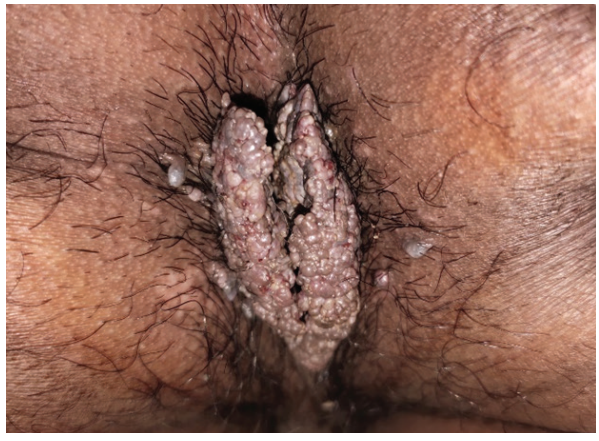
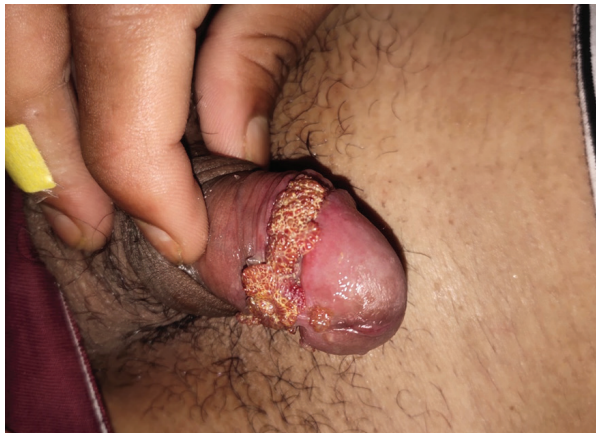


Fig. 16. Anogenital warts in penis (Condyloma acuminatum)



Treatment

Chemical cautery

Podophylline - 25 percent in compound tincture of benzoin weekly (maximum of 0.5ml per session).

Topical preparations

Trichloracetic acid (TCA - 80 to 90 percent) applied to the warts and repeated at weekly intervals. Safe in pregnancy.

Imiquimod 5% cream applied with a cotton swab at bedtime three times a week (for 16 weeeks).

Podophylline, and Imiquimod are contraindicated during pregnancy and lactation.

Physical methods (at higher facilities)

1. Cryotherapy with liquid nitrogen, solid CO2 (dry ice).
2. Electro-cautery.
3. Surgical excision.
4. Laser therapy.

Screening for cervical cancer

- Effective in diagnosing early cervical dysplasias thus reducing morbidity and mortality from cervical cancer.
- Papanicolaou (Pap) smear, an effective, low cost screening test is currently recommended as a screening tool for cervical cancer.
- Visual inspection with acetic acid (VIA) is another screening method if pap smear facilities are not available.

Vaccines

Vaccines can be administered to girls aged 11-12 years, and it is best if given before sexual activity. Vaccines against HPV are available and offer protection against HPV 16 and 18, which are responsible for 70% of cervical cancer.

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

4.12 Molluscum contagiosum

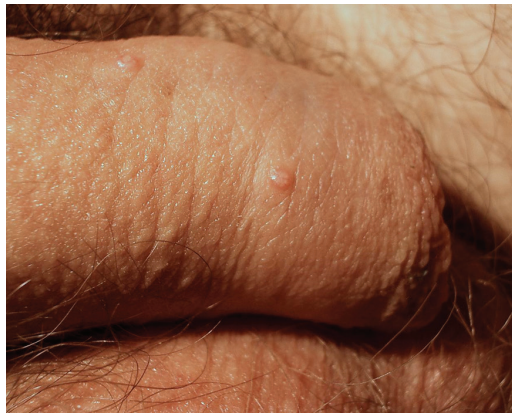
Molluscum contagiosum is a viral infection caused by the molluscum contagiosum virus. It is common in childhood through direct skin-to-skin transmission, however, it is often sexually transmitted in adults and may present with lesions on the anogenital areas. Widespread multiple lesions may also be seen in immunocompromised patients due to defective cell-mediated immunity.

Causative agent

Molluscum contagiosum virus (pox virus).

Clinical presentation
• Mostly asymptomatic. • May present with itchy lesions in the form of multiple papules over the anogenital region.
Examination findings
• Pearly white or skin coloured dome-shaped papules with central umbilication.

Fig. 17. Skin coloured papules with central umbilication in Molluscum Contagiosum



Lab diagnosis

Diagnosis is done clinically.

Treatment

It has a self-limiting course and the lesions clear in about a year spontaneously without scarring in most of the cases. The following measures can also be taken.

- Deroofing of lesions with a sterile needle and disinfection of the wound with agents like povidone iodine.
- Chemical cauterization.
- Local application of 50% TCA or 5% KOH every alternate night till it disappears.
- Cryotherapy with liquid nitrogen.

- Follow up patient after 7 days.
- Educate and counsel on risk reduction.
- Promote condom use and provide condoms.
- Manage and treat partner.
- Offer HIV and syphilis counselling and testing.

CHAPTER 5

HEALTH EDUCATION, COUNSELLING AND PARTNER MANAGEMENT

Key messages to be provided for the STI patient: the 4 Cs

C =	Compliance
C =	Counselling
C =	Condoms
C =	Contact Management

Compliance

- All the STI patients must be encouraged to comply to their prescribed treatment.
- Give instructions for the patient to complete the full course of treatment as prescribed even after the disappearance of symptoms or even if the patient feels better during treatment.
- Advise the patient to seek help by returning to the Health Care Worker (HCW) immediately in case of any undesirable side effects.
- For persistent symptoms, re-evaluate for possible non-compliance or re-infection. If not, refer the patient to centers with good lab facilities.
- Avoid sexual contact during the treatment and until partner has been treated.
- Ensure a follow-up visit.

Counselling and education

Every patient suffering from STI must be provided information and educative message on:

- Mode of transmission and diagnosis of STI.
- Available treatment and complications that may arise if case treatment is delayed.
- Infection prevention, safer sex practices and condom use.
- STI increasing the risk of HIV.
- Available STI services like lab testing, treatment, counselling and referral.

Condom use

- Use of condoms to minimize the further transmission of STI including HIV.
- Patients should be well-informed about the advantages of using condoms, the places where condoms are available and demonstrated to use it properly.
- Promotion of the use of condoms and easy accessibility of condoms in all the health facilities is important for the control of STI and HIV.

Contact tracing/ partner management

All the patients must understand the importance of testing and treatment of their sexual partner for following reasons:

- Encouraging partners to visit the clinic for treatment.
- Providing treatment regimens for the partner.
- Risk of re-infection from asymptomatic partner.
- Risk of complications for his/her partner.

Partner notification and management

Partner notification is one of the principal aspects of STI case management. It helps to break the cycle of transmission and prevent the development of potential STI complications. It provides an opportunity to identify and treat people who otherwise would not receive treatment. It also helps to provide the required education on STI to high risk individuals.

Partners may not receive treatment for many reasons such as:

- The patient may feel uncomfortable to inform their sexual partner/s about an STI.
- Sexual partner/s may not be willing to visit the health facility for treatment.
- Difficulty in tracing sexual partner eg, unable to identify sexual partner in case of commercial sex workers.

Several approaches can be performed to notify partners:

Patient referral partner notification

The patient is asked to invite the sexual partner/s to attend the health centre for an assessment and appropriate treatment for STI.

Provider referral partner notification

The health care provider may try to obtain contact details from the index patient and then attempt to contact the sex partners.

Expedited partner therapy

The index case is given a prescription or medicines for their sex partners without medical examination from the health care provider. This is also known as the patient delivered partner therapy (PDPT).

Contractual partner referral

There is agreement between the health care provider and the index patient that the latter will reach the sex partner/s within an agreed time frame. Health care provider will then try to contact the sex partner if the agreement period has elapsed without the sex partner/s presenting for examination and treatment.

All partners should be brought to treatment by

- Asking the patient to contact their sexual partners and encouraging them to come to health facility for treatment.
- Providing STI drugs to the patient to treat their partners -patient delivered partner therapy (PDPT), a form of expedited partner therapy where partners of infected persons are treated without medical evaluation or prevention counseling.
- Tracing the partners through the outreach educators.

Principles of partner notification and management

- Preserve confidentiality.
- The process should be voluntary and non-coercive.
- Show respect and a non-judgmental attitude.
- Maintain the dignity of the patient.
- Management of sexual partners is based on knowledge of the index patient's diagnosis.

Minimise lost to follow up of cases

Health care provider should ensure the following:

- Effective counselling of the patient and their partner/s.
- Referral to tertiary care facilities with specialized STI clinics and adequate diagnostic and treatment facilities.
- Communicate without being judged.
- Guard the confidentiality of the patient.
- Adhere to the guidelines.
- Track the referred patients.
- Monitor and conduct periodic review of the STI data.

CHAPTER 6

TREATMENT FAILURE AND REFERRAL OF STI

Suspected case of treatment failure

Treatment failure should be suspected if there are no signs of clinical improvement or continuation of disease progression following initiation of an effective treatment regimen for a standard duration.

A suspected case of treatment failure should be inquired by the health worker and history of prescribed drug intake should be taken in detail in order to ascertain any causes for treatment failure. If available, the prescription should be reviewed for verification whether the prescribed medications were in accordance with the current national guidelines or not.

Inquire about the following:

- Place from where the medication was prescribed.
- Number of tablets that were taken.
- Whether the medication was stopped due to any specific reasons.
- Whether the medications were shared with anyone by the patient.

Management of treatment failure

- All cases of treatment failures should be referred to the health facility where a concerned specialist is available.
- The specialist should review the case records and try to find out any errors in diagnosis and management.
- Laboratory tests can then be advised as necessary.

Criteria for treatment failure

Primary and Secondary Syphilis

- Patients who have signs or symptoms that persist or recur or who have a sustained four-fold increase in non-treponemal test titre (i.e. compared with the maximum or baseline titre at the time of treatment) probably failed treatment or were re-infected. These patients should be retreated and re-evaluated for infection.
- For re-treatment, weekly injections of benzathine penicillin G 2.4 million units IM for 3 weeks are recommended.

Gonorrhoea

- Symptoms remain for more than 7 days after initial antibiotic treatment (Cefixime 400 mg + Azithromycin 1 gm)
- The patient remains positive for one of the following tests for *N. gonorrhoeae:*
  - Presence of intracellular Gram-negative diplococci on microscopy taken at least 72 hours after completion of treatment; or
  - Isolation of *N. gonorrhoeae* by culture taken at least 72 hours after completion of treatment; and
- Patients with suspected treatment failures should be treated with effective substitute regimen. Consider adding doxycycline if chlamydia infection exists. Antimicrobial susceptibility testing should be done if available.

Persistent urethritis

- Persistent urethral discharge, dysuria, and/or pyuria.
- Persistent pharyngitis or odynophagia.
- Persistent rectal discharge, pain, bleeding, pruritis, tenesmus, or painful defecation.
- Persistent vaginal discharge, dysuria, or post-coital spotting.

Patient Referral Services

Referral system plays a vital role in the management of cases with STI. The following points should be taken into consideration.

- Patients should be advised to return to the health facility in case the symptoms worsen or persist after the prescribed duration of the medication.
- Assess the response to therapy with PID by reviewing the patient in 2-3 days after the initiation of treatment. Assess the response to therapy in patients with severe genital ulcers by reviewing after three days of initiation of therapy for review. In case of non-healed ulcers in seven days, extension of therapy or referral to a higher facility should be considered.

Annex-1: Administration of Benzathine Penicillin

Drug	Benzathine penicillin
Dose	2.4 million units
Route	Intramuscular
Availability	Available as an injectable suspension in 600,000 units/1 mL, 1.2 million units/2 mL, or 2.4 million units/4 mL syringes.
Site of injection	Upper outer quadrant of the buttock
Indication in STI	Syphilis: Primary, secondary, and early latent, late latent, or tertiary syphilis
Contraindication	Hypersensitivity to penicillin
Cautions	Allergies to any drugs, renal insufficiency, impaired liver function
Preparation	• Informed written consent should be obtained for penicillin administration. • Take a detailed history of drug allergy or anaphylaxis in past. • Basic set-up for responding to severe anaphylaxis should be available at the health facility (oxygen, adrenaline) **NOTE:** • Skin test for penicillin allergy can be done if possible. • However, skin test for penicillin allergy is not performed regularly in STI clinics. Even a single test dose can cause anaphylaxis.
Side effects	• Pain at the injection site. • Nausea, vomiting, diarrhoea. • Jarisch Herxheimer Reaction: is an acute febrile reaction frequently accompanied by headache, myalgia, and fever that can occur within the first 24 hours after the initiation of any syphilis therapy. It is a reaction to treatment and not an allergic reaction to penicillin. This is not an allergic response and usually ends in 24 hours. The Jarisch-Herxheimer reaction occurs most frequently among persons who have early syphilis, presumably because bacterial loads are higher during these stages. **Advise:** Tab Paracetamol 500mg PO stat to relieve symptoms.
Counselling	Ask the patient to wait for 15 minutes after the injection and watch for any pain, rashes, itching or breathing difficulties. In case any of these effects persist or worsen, advise to contact the healthcare provider immediately and seek emergency care.

Written informed consent

पेनिसिलिन सुई लगाउने मन्जुरीनामा

स्वास्थ्य संस्थाको नाम: _____

महा/उप/नगर/गाउँपालिकाको नाम: _____

जिल्ला: _____

मिति: _____

यस संस्थामा गरिएको प्रयोगशाला परीक्षण अनुसार मलाई सिफिलिसको निदान भएकाले मलाई उपचारको लागि पेनिसिलिन भन्ने औषधी सुईबाट (तल सुई मात्र उल्लेख गरिएको) ..... पटकसम्म लगाउनु पर्छ भन्ने थाहा भयो। मलाई यहाँका स्वास्थ्य कार्यकताले सुईको फाइदा, यसबाट हुन सक्ने सम्भाव्य असर-एलर्जीको बारेमा र एलर्जी भएमा गरिने उपचारका बारेमा पनि जानकारी दिई सक्नु भएको छ। सुईको प्रयोगले खराब असर भएमा ज्यान पनि जोखिममा पर्न सक्छ भन्ने कुरा पनि मलाई थाहा भयो।

यी सबै जानकारीहरु पाइसके पछि तल उल्लेखित कर्मचारी तथा मेरा नाता वा साथीलाई साक्षी राखी मैले विना कुनै दवाव सुई लिनको लागि राजी खुशी यो मन्जुरी दिएको छु। यो सुईको कारणले कुनै भवितव्य भएमा, म सुई लगाउने कर्मचारी र यस संस्थालाई कुनै दोष दिने छैन तथा क्षतिपुर्ति माग्ने छैन।

सुई लिने व्यक्तिको विवरण:

पुरा नाम: _____

ठेगाना: _____

सुई लिने व्यक्तिको हस्ताक्षर: _____

सुई लिने व्यक्तिको औठाको छाप

दायाँ बायाँ

औषधिको विवरण:

औषधिको नाम: _____

बनाउने कम्पनिको नाम: _____

ब्याच/लट नं: _____

बनाएको मिति: _____

एक्सपाइरी मिति: _____

साक्षीको विवरण:

साक्षी रहेका सुई लिने व्यक्तिका साथी/नातेदार

नाम: _____

ठेगाना: _____

हस्ताक्षर : _____

सुई दिने व्यक्तिको विवरण:

सुई दिने व्यक्तिको नाम: _____

सुई दिने व्यक्तिको पद: _____

सुई दिने व्यक्तिको हस्ताक्षर: _____

Annex-2: Anaphylaxis

It is an acute generalized immunologically mediated event that occurs within minutes following exposure to any foreign substances in previously sensitized persons and manifests with respiratory distress and vascular collapse. It is a serious, life threatening generalized or systemic hypersensitivity reaction.

Causes of anaphylaxis:

1. Drugs, chemical: Penicillin, cephalosporin, sulphonamides, muscle relaxants, vaccines, monoclonal antibodies, antivenoms, NSAIDS, opiates, NAC, ACEI
2. Foods: Peanuts, fish, shellfish, milk, eggs, flour
3. Insect sting, saliva: Bees, wasps, hornets, ticks, scorpions, jellyfish
4. Environmental: Pollen, horse dander
5. Physical: Exercise, heat, cold
6. Idiopathic

Investigations: The diagnosis of anaphylaxis is clinical.

Management: Refer to flowchart on management of anaphylaxis.

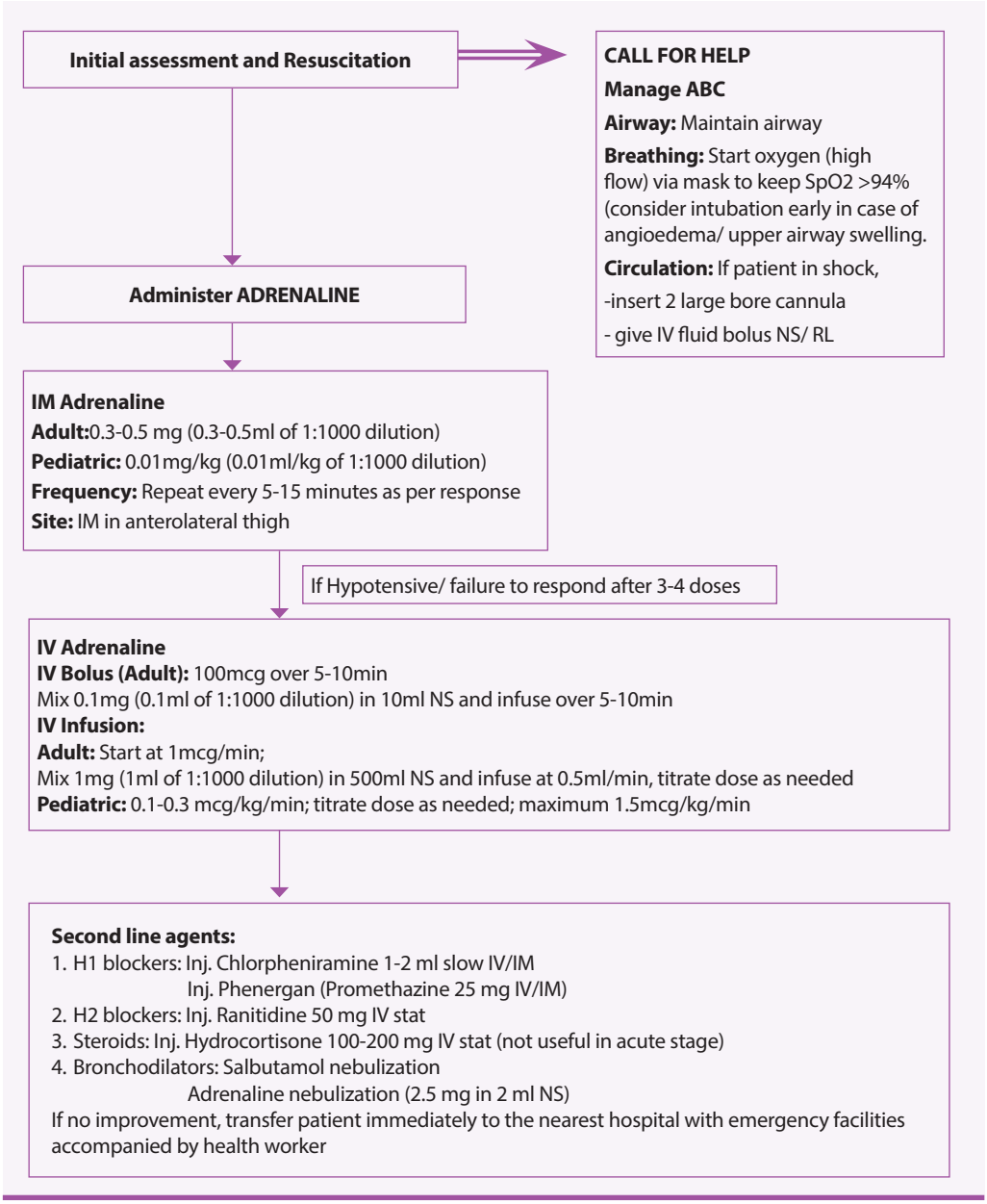
Severe Life threatening reaction:

- Follow treatment algorithm for management of anaphylaxis
- Admit and closely monitor
- Discharge after patient is stable for at least 24 hours

Signs and symptoms of mild to moderate allergic reactions

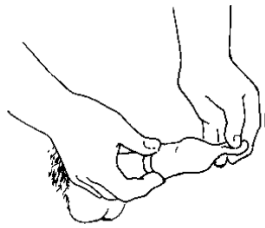
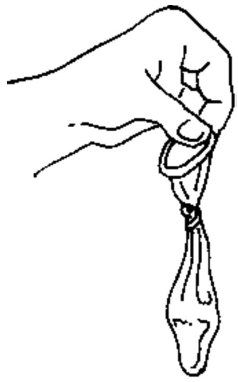
If life-threatening respiratory and cardiovascular features of anaphylaxis are not present, but there are features of a systemic allergic reaction (e.g. skin changes, abdominal pain or vomiting), the patient should be closely observed for deterioration and given symptomatic treatment such as oral antihistaminics and if clinically indicated, oral steroids.

Management of Severe Anaphylaxis

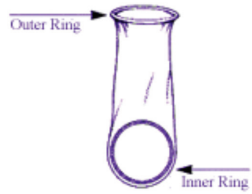
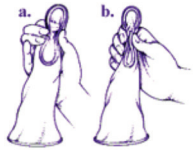
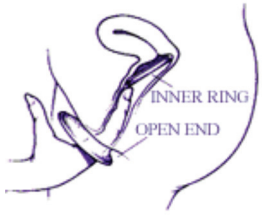


Annex 3: Procedures

1. How to use male condoms

	Step 1: Open Package • Use a new condom each time you have sex. • Check that it has not expired and that the packaging has no holes by pressing the pack between your fingers. • Push condom to one side of package to allow room to tear open other side. • Remove condom carefully. • DO NOT use finger nails, teeth or sharp objects to open package or remove condom
	**Step 2: Put it on** • Squeeze closed top end of condom to make sure no air is inside (can make it break). • Place condom over top of erect penis. • With other hand, unroll condom gently down the full length of the penis (one hand still squeezing top end).
	**Step 3: During sex** • Make sure condom stays in place. • If it comes off, withdraw the penis and put on a new condom before intercourse continues. • Once sperm has been released into the condom (ejaculation), withdraw the erect penis and HOLD the condom in place on penis.
	**Step 4: Dispose off condom** • Remove condom ONLY when penis is fully withdrawn. • Keep both penis and condom clear from contact with your partner's body. • Knot the end of the used condom. • Place in tissue or bag before throwing it in dustbin • DO NOT flush condoms down the toilet. It will block the system.

2. How to use female condoms

	**Before Intercourse Step 1: Open Package** • Remove the female condom from the package, and rub it between two fingers to be sure the lubricant is evenly spread inside the sheath. • If you need more lubrication, squeeze two drops of the extra lubricant included in the package into the condom sheath.
	**Step 2: Put it in** • The closed end of the female condom will go inside your vagina. Squeeze the inner ring between your thumb and middle finger.
	**Step 3: Assure right position** • Insert the ring into your vagina. Using your index finger, push the sheath all the way into your vagina as far as it will go. It is in the right place when you cannot feel it. Do not worry, it can't go too far. **Note:** The lubrication on the female condom will make it slippery, so take your time to insert it.
	**Step 4: During sex** • The ring at the open end of the female condom should stay outside your vagina and rest against your labia (the outer lip of the vagina). Be sure the condom is not twisted. • Once you begin to engage in intercourse, you may have to guide the penis into the female condom. If you do not, be aware that the penis could enter the vagina outside of the condom's sheath. If this happens, you will not be protected.
	**After Intercourse Step 5: Disposal of condom** • You can safely remove the female condom at any time after intercourse. If you are lying down, remove the condom before you stand to avoid spillage. • Place in tissue or bag before throwing it in dustbin. DO NOT flush condoms down the toilet. It will block the system. Do not reuse it.

3. Milking of urethra:

- Male urethra is milked from behind the scrotum gently along the ventral aspect of the penis towards the meatus.
- Finger pressure is applied forward across scrotum into base of penis
- The penis is squeezed between finger pulling forward toward tip of penis.
- Prostatic urethra can be milked by physician during trans-rectal palpation of prostate gland.

4. Per Speculum examination

Introduction:

Before a speculum examination, the patient should be informed about the device and what the health-care provider is going to do. Informed consent should be taken from the patient and a chaperone should be requested.

The patient is reassured that the procedure should not be painful but if the patient is uncomfortable or experiences pain, the procedure will be discontinued.

Explain that the patient needs to remove the underwear and lie on the examination couch in dorsal position, covering herself with the sheet provided. The patient must be provided with privacy to undress.

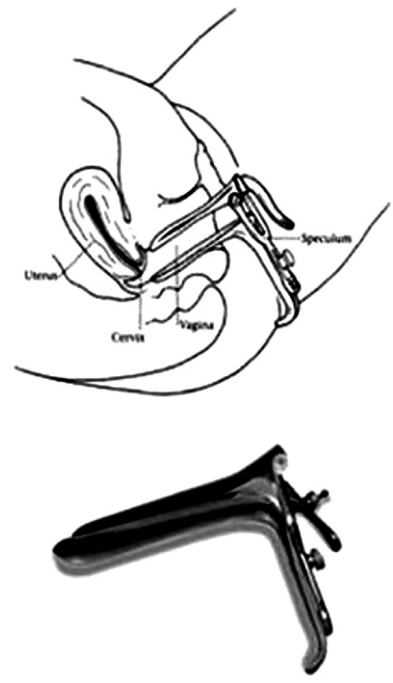
Preparation:

- The patient should have an empty bladder to make the examination more comfortable
- A Cusco's speculum of appropriate size should be used. It should be properly sterilized before use.
- All the secondary equipment needed should be laid out ready on a trolley, such as warm water, gloves, swabs and a waste disposal bin. The light source should be prepared and tested before beginning the procedure, the privacy screen, curtain or door should be closed for the examination.

Procedure:

- Wet the speculum with clean warm water before inserting it;
- The labia are separated with one hand and then the speculum is inserted slowly while asking the woman to relax her muscles;
- With the other hand, the speculum is held with the speculum blades together between

Fig 18. Speculum examination



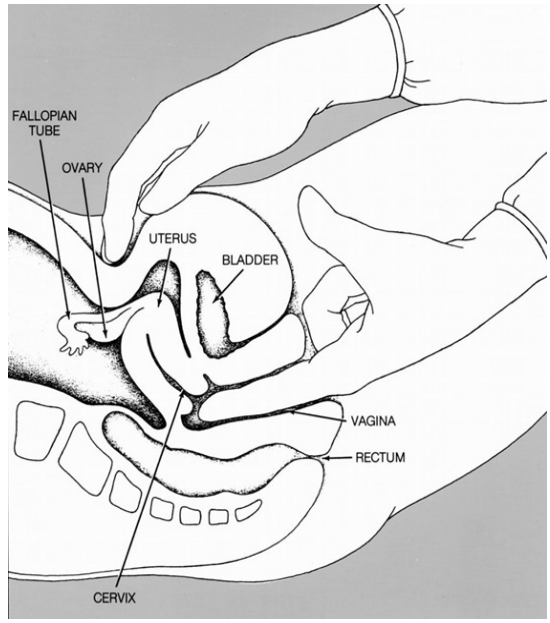
the index and middle fingers and turned sideways as the speculum is slipped into the vagina, while taking care not to press on the urethra or clitoris because these areas are very sensitive.

- When the speculum is halfway in, it is turned so the handle is facing downward. The blades of the speculum are then gently opened a little while searching for the cervix.
- The speculum is then moved around slowly and gently until the cervix can be seen between the blades – at this point the screw (or otherwise lock on the speculum) can be tightened so it will stay in place.
- Now the cervix can be examined, in good light, and it should look pink, round and smooth.
- Look for abnormal discharge, erosions, ulcerations, growth, inflammation, bleeding, polyps or ectropion. signs of cervical infection by checking for yellowish discharge or easy bleeding when the cervix is touched with a swab and any abnormal growths or sores.
- At this stage, perform endocervical swabs, swabs from the posterior fourchette of the vagina – as well as biopsy, if applicable.
- To remove the speculum, it should first be gently pulled out until the blades are clear of the cervix. Then the blades are brought together but not completely closed to avoid pinching the vaginal wall and gently pulled out, turning the speculum gently to look at the walls of the vagina.
- The patient can then be thanked and informed that the procedure has been completed and to get dressed while the patient's privacy is observed. After that, the patient can wash her hands and be asked to sit down to receive feedback on the findings of the examination.
- The health-care provider should remove the gloves before touching anything, wash hands and sit with the patient to give feedback on the examination findings.

5. Bimanual pelvic examination

- Introduce the middle and index fingers of your gloved and lubricated hand into the vagina. Identify the cervix, noting its position, shape, consistency, regularity, mobility and tenderness
- Place the other hand midway between the umbilicus and the symphysis pubis and press downward toward the pelvic hand. Using the palmar surface of your fingers, palpate for the uterine fundus while gently pushing the cervix anteriorly with the pelvic hand. Feel the uterus and note the
  - Size
  - Position
  - Consistency
  - Mobility
  - Tenderness
- Gently slide the vaginal fingers into the lateral vaginal fornix while pushing inferiorly with the abdominal hand and palpate the adnexa and note any mass or tenderness

Fig 19. Bimanual pelvic examination



Annex 4: Sexually transmitted infection treatment register (HMIS form 7.2)

MONTH: ----------------------------- **YEAR:** --------------------------------

SN	Registration					Demographic Information																		STI Diagnosis		Risk Group***	Treatment				Condom Use	Referral
	Date			MR No	SR No	Client's Name and Caste			Age			Educational Status‡	Education Level§	Employment statusΦ	Average Monthly Income (NPR)	Contact Number	Marital Status*	Address					Client Code*	Type of Case	Type of STI Diagnosis**		Syndromic	Etiological	Presumptive Treatment	Partner (Asymptomatic)		
	DD	MM	YY			First Name (Optional)	Last Name (Compulsory)	Caste Code	Sex									District	Municipality	Ward Number	Tole	Others										In = 1
									F	M	TG																					Out = 2
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
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‡ **Column 13:** Educational Status: 1=Illiterate, 2=Literate;

§ **Column 14:** Education level: 1=Primary, 2=Secondary, 3=Higher secondary, 4=Bachelor or above;

Φ **Column 15:** Employment status: 1=Unemployed, 2=Employed;

* **Column 18:** Marital Status: (U=Unmarried, M=Married, D=Divorce, W=Widow/Widower, LT=Living Together, SP= Seperated and NA=Not Applicable).

* **Column 24:** Client code= Last name (First 2 characters)+ Date of birth (last 2 digits -YY) + sex (1= F, 2= M, 3 = TG) + Service registration number.

* **Column 25:** Type of Case : (1=Syndromic, 2= Asymptomatic)

** **Column26:** STI Diagnosis: (1= Urethral Discharge Syndrome (UDS), 2=Scrotal Swelling Syndrome (SSS), 3= Vaginal Discharge Syndrome (VDS), 4= Lower Abdominal Pain Syndrome (LAPS), 5= Genital Ulcer Disease Syndrome (GUDS), 6= Inguinal Bubo Syndrome (IBS), 7= Neonatal Conjunctivitis Syndrome, 8= Cericitis, 9= Vaginitis, 10= Herpes Genitalis, 11= Other)

*** **Column 27:** Risk Group (1 = Female Sex Worker; 2= People who inject drugs(PWID), 3=MSM ; 4 = Blood or Organ Recipient, 5=Clients of Sex Workers; 6 = Migrants; 7 = Spouse/Partner of Migrants; 8=Male Sex Worker (MSW); 9=Transgender (TG); 10=Pregnant Woman; 11=Vertical Transmission; 12=Prison Inmates; 13=HIV Infected; 14=Other (not specified in above category)

* **Column 32:** Condom Use: (1= Yes, 2=No, 3= Don't Know, 4= Not Applicable)

Annex 5: Acknowledgement

List of contributors

S.N	Name	Designation	Organization
1	Dr Sudha Devkota	Director	National Center for AIDS and STD Control
2	Dr Runa Jha	Director	National Public Health Laboratory
3	Dr Yadu Chandra Ghimire	Director	National Health Training Center
4	Dr Pawan Jung Rayamajhi	Director	Curative Service Division
5	Dr Pawan Kumar Sah	Section Chief	National Center for AIDS and STD Control
6	Mr. Kedar Prasad Parajuli	Section Chief	National Center for AIDS and STD Control
7	Mr. Lok Raj Pandey	Sr. HEO	National Center for AIDS and STD Control
8	Mr. Bir Rawal	Stat. Officer	National Center for AIDS and STD Control
9	Mr. Kunj Prasad Joshi	Sr. HEA	National Health Training Center
10	Dr Prakash Budhathoki	Chief consultant	Curative Service Division
11	Ms. Jyoti Acharya	Chief MLT	National Public Health Laboratory
12	Ms. Lilee Shrestha	Chief MLT	National Public Health Laboratory
13	Mr. Gokarna Raj Ghimire	Dy. Chief MLT	National Public Health Laboratory
14	Dr Punya Paudel	Sr. Consultant	Family Welfare Division
15	Dr Praveen Mandal	MO	Family Welfare Division
16	Ms. Nisha Joshi	Sr. PHO	Family Welfare Division
17	Ms. Laxmi Pandey	Sr. CNO	Family Welfare Division
18	Dr Hemant Chandra Ojha	Section Chief	Epidemiology and Diseases Control Division
19	Ms. Samikshya Thapa	Pharmacy Officer	Management Division
20	Ms. Alina Shrestha	Pharmacy Officer	Management Division
21	Prof. Dr Anupama Karki	Deputy Director	NAMS, Bir Hospital
22	Dr Alka Shrestha	Consultant	Paropakar Maternity Hospital
23	Dr Dwarika P Shrestha	Professor/ HOD	IOM, TUTH
24	Dr Anil Kumar Das	Assoc. Professor	IOM, TUTH
25	Dr Shivendra Jha	Consultant	Sukraraj Tropical and Infectious Diseases Hospital
26	Dr Abha Shrestha	Professor	KUMS, Dhulikhel
27	Dr Aditi Mishra	Lecturer	KUMS, Dhulikhel
28	Dr Amit Amatya	Assoc. Professor	PAHS
29	Dr Binita Pradhan	Assoc. Professor	PAHS
30	Dr Bilani Shrestha	Assoc. Professor	NMCTH
31	Dr Meena Thapa	Professor	KMCTH
32	Dr Indira Upadhyaya	Sr. Consultant	
33	Dr Unnat Shrestha	Medical Advisor	AHF Nepal
34	Dr Durga Prasad Bhandari	Dy. Project Director	Epic Nepal/FHI 360
35	Dr Rajya S Kunwar	Sr Program Manager	NCASC/GF
36	Dr Sheela Sapkota	Program Coordinator	NCASC/GF
37	Dr Keshav Deuba	Sr SI Specialist	NCASC/GF
38	Mr. Dinesh Rupakheti	TA/CDS	WHO
39	Dr Mukesh Poudel	TA/CDS	WHO
40	Dr Olita Shilpakar	Consultant	WHO
41	Dr Subhash Lakhe	NPO-CDS	WHO
42	Dr Khin PaPa Naing	TL-CDS	WHO

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Fig. No.	
Fig. 1	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 2	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 3	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 4	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 5	Dr. Shivendra Jha, Consultant Dermatologist
Fig. 6	Dr. Shivendra Jha, Consultant Dermatologist
Fig. 7	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 8	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 9	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 10 (a) Fig.10 (b)	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 11	https://biosci.sierracollege.edu/resources/mslides-2016/mslides-bio4-pages2016/trichomonas_vaginalis.html
Fig. 12	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 13	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 14	Dr. Shivendra Jha, Consultant Dermatologist
Fig. 15	Dr. Shivendra Jha, Consultant Dermatologist
Fig. 16	Dr. Shivendra Jha, Consultant Dermatologist
Fig. 17	Melbourne Sexual Health Centre, https://stiatlas.org/SearchAtlas.aspx
Fig. 18	https://teachmeobgyn.com/history-taking-examinations/examinations/
Fig. 19	https://teachmeobgyn.com/history-taking-examinations/examinations/

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NOTE