National Guidelines on

Case Management of Sexually Transmitted Infections

2014

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

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Preface

Sexually transmitted infections (STIs) are among the most common causes of illnesses in the world and have far reaching health, social and economic consequences. It is estimated that after maternal causes, STIs are responsible for the greatest number of healthy life years lost among women in developing countries.According to WHO estimates of 2008, there were about 498.9 million new cases of the major STI (chlamydia, gonorrhea, syphilis and trichomoniasis) in the world.In Nepal, the burden of STI is seen among the Key Affected Populations(KAPs) at risk of HIV and woman visiting Antenatal Care (ANC). Therefore, theNational HIV/AIDS Strategy (2011-2016) considers STI case management as one of the important HIV prevention strategies and emphasizes on strengthening management and control of STI.

This guideline aims to assist health workers to improve their skills in diagnosis and treatment of STI cases focusing on four principal outcomes of STI therapy for each individual case: treatment of infection based on microbial eradication; alleviation of sign and symptoms; prevention of sequeland preventing transmission and reducing the risk of HIV infection.

This revised version of National Guideline on Case Management of STIs2014, has been developed by the National Center for AIDS and STD Control (NCASC), Ministry of Health and Population after consultation with the participants of the workshop organized to revise this guidelines in March 2014. The objective of revising this guideline was to provide an updated STI management guideline toenable health professionals (medical doctors, nurses, and paramedical staff) to manage STI cases on the first visit of client at the service delivery site making use of the best available resources to make the STI prevention and control program successful.

I am fully confident that the present guideline will be able to guide and facilitate all the service providers to deliver quality STI services from their respective working facilities and thus it will broadly help nation to achieve its goal to control STIs.

On behalf of NCASC, I would like to express my sincere thanks to all who worked hard to revise and update this National Guideline. My special thanks also goes to USAID funded Saath-Saath Project for its continuous technical and financial support to revise the present STI guideline.

Dr. Dipendra Raman Singh

Director

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinic
BCC	Behavior Change Communication
BV	Bacterial Vaginosis
CB-PMTCT	Community Based Prevention from Mother to Child Transmission
COGS	Clinical Operating Guideline Standards
STI	Sexually Transmitted Infection
CDC	Center for Disease Control
CPR	Cardiopulmonary Resuscitation
DDA	Department of Drug Administration
ELISA	Enzyme Linked Immunosorbent Assay
EQA	External Quality Assessment
FP	Family Planning
FSW	Female Sex Worker
GC	Genital Candidiasis
GNID	Gram-Negative Intracellular Diplococci
GUDS	Genital Ulcer Disease Syndrome
HBV	Hepatitis B Virus
HBsAg	Hepatitis B surface antigen
HCP	Health Care Providers
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency virus
HMIS	Health Management Information System
HSV	Herpes Simplex Virus
HTC	HIV Testing and Counseling
IBS	Inguinal Bubo Syndrome
IUCD	Intra Uterine Contraceptive Device
IU	International Unit
IM	Intramuscular
INGO	International Non-Government Organization
IQC	Internal Quality Control
IV	Intravenous
KAP	Key Affected Population
KOH	Potassium Hydroxide
LAPS	Lower Abdominal Pain Syndrome
LGV	LymphogranulomaVenerum
MCH	Maternal and Child Heath
MLM	Male Labor Migrant
MSM	Men who have Sex with Men
MSW	Male Sex Worker
NGO	Non- Government Organisation
NCASC	National Centre for AIDS and STD Control
NPHL	National Public Health Laboratory
OCPs	Oral Contraceptive Pills
ORE	Outreach Educator
PDPT	Patient Delivered Partner Treatment
PE	Peer Educator
PID	Pelvic Inflammatory Disease
PWID	People with Injecting Drug
QC	Quality Control
RPR	Rapid Plasma Reagin
SGS	Second Generation Surveillance
SSS	Scrotal Swelling Syndrome
TCA	Trichloracetic Acid
TG	Thirdgender
TPPA	Treponema Pallidum Particle Agglutination Assay
TPHA	Treponemapallidum Hemaglutination Assay
TV	Trichomonalis Vaginalis
UDS	Urethral Discharge Syndrome
USAID	United States Agency International Development
VDS	Vaginal Discharge Syndrome
VDRL	Venereal Disease Research Laboratory
WHO	World Health Organization

Executive Summary

The National Guideline on Cases Management of Sexually Transmitted Infections (STIs), is intended for use in any setting in Nepal by health care providers (HCPs), who may be consulted by patients with symptoms suggesting STIs or who are at risk of getting STI. This guideline has been developed with the objective to enable health care workers to provide effective treatment and obtain cure; treat asymptomatic patients and/or subclinical infections; prevent or reduce future risk-taking behavior; and to ensure that the sexual partners are appropriately traced and treated. The guidelines include 12 chapters.

Introduction describes significance of STI in public health, global STI situation, national HIV situation, global and national strategies,and importance of STI prevention.

STI case management process describes the process of STI case management which include the approaches for interaction with the patient, steps of STI diagnosis including history taking, physical examination, laboratory diagnosis, principles of treatment, client education and counseling, partner notification and instructions to use STI management flow charts.

STI syndromes and management /Enhanced syndromic approach includes the introduction of enhanced syndromic approach, recommendations for presumptive cervicitis treatment for Female Sex Workers (FSWs) and syndromic management of different STI syndromes. For the syndromic case management following seven STI syndromes are covered: Urethral Discharge Syndrome (UDS), Scrotal Swelling Syndrome (SSS), Vaginal Discharge Syndrome (VDS), Lower Abdominal Pain Syndrome (LAPS), Neonatal Conjunctivitis Syndrome, Genital Ulcer Disease Syndrome (GUDS) and Inguinal Bubo Syndrome (IBS). Each syndrome is described with the common signs and symptoms, possible causative organisms, treatment recommendations, difficult situation for treatment, follow up and management of partners. Management of each STI syndrome is further explained with a flow chart recommended by World Health Organization (WHO).

Common STIs explain individual bacterial, parasitic, protozaoal, viral STIs. Individual STIs discussed in the chapter are Gonorrhea, Chlamydia, Chancroid, Lymphogranuloma Venerum, Granuloma Inguinale, Syphilis, Trichomoniasis, Vulvo-vaginal Candidiasis, Bacterial Vaginosis, Viral Hepatitis, Genital Herpes, Ano-genital Warts, Scabies and Pediculosis. In this chapter major clinical features, diagnosis, and treatment recommendations and other important aspects of management are covered.

STI in specific groups covers approaches of STI in presence of HIV, pregnancy and family planning methods. Management of STI among Men who have Sex with Men (MSM), FSWs, Male Sex Worker (MSW) and Transgender (TG), STI in young adults and STI in other rare situations are also covered in the chapter.

Venereophobia, its symptoms, diagnosis and management is explained in the sixth chapter.

Safer sexual behavior chapter, covers approaches for the prevention and control of STI among people who are at high risk STI.

Condom promotion chapter explains the advantages of condom, sources of condoms, care of condom, instruction on correct use of both male and female condoms.

Infection control covers universal precautions, its importance and ways to follow universal precautions.

Quality assurance of laboratory investigations deals with quality assurance, phases of quality assurance cycle and external and internal quality assessment.

Disposal of contaminated waste covers proper handling of contaminated waste from health care facilities.

Recording, reporting and surveillance explains recording and reporting of STI cases through HMIS and STI surveillance.

Introduction

Sexually transmitted infections (STI) are among the most common causes of illnesses in the world and have far reaching health, social and economic consequences. It is estimated that after maternal causes, STI are responsible for the greatest number of healthy life years lost among women in developing countries.[1]

In addition, STI have been found to increase the risk of sexual transmission and acquisition of HIV infection. The rise in incidence of ano-rectal infections among MSM and the increasing lack of response of causative organisms to third generation cephalosporins are other areas of concern as these drugs are the last remaining options for effective treatment of Neisseria gonorrhea.[1]

Although STI are primarily transmitted through sexual intercourse, they can also be transmitted from mother to child during pregnancy and childbirth, and also occasionally through blood and blood products. Because of the rooted stigma and discrimination associated with STI, failure to diagnose and treat STI in time may result in serious complications and sequelae including infertility, fetal wastage, neonatal infections, ectopic pregnancy, cervical cancer and even death. Moreover, STIs also account for massive expenditures and thus have enormous socio-economic impact.[2]

These guidelines aim to assist health workers to improve their skills in the diagnosis and treatment of STI patients in a very cost-effective manner. These guidelines focus on four principal outcomes of STI therapy for each individual case:

1. Treatment of infection based on microbial eradication
2. Alleviation of sign and symptoms
3. Prevention of sequel
4. Prevention of transmission and reducing the risk of HIV infection

Single dose therapy and directly observed therapy, if applicable, are other advantages. However, it is important to note that syndrome based management does not address asymptomatic and/or subclinical infection. Therefore, wherever the diagnostic facilities are available, etiological diagnosis should also be used and syndrome based approach should be enhanced by simple laboratory tests to identify asymptomatic STI like syphilis and cervicitis.

The use of appropriate standardized protocol was strongly recommended to ensure adequate treatment of STI patients at all level of health services. Such standardized treatment protocol facilitates the training and supervision of health workers, and reduces complications/sequel as well as antimicrobial resistance. National Center for AIDS and STD Control (NCASC) had developed the first national guidelines on STI management in 1995, which was successively revised in the years 1997, 2001, 2004, 2006 and 2009 depending on the country's requirement.

The present document (2014) is the updated version of National Guidelines on STI Case Management (2009) by NCASC for the treatment of persons who have STI or are at risk of getting STI. These guideline give new information regarding:

1. Global, South East Asian, and national data of STI
2. STI prevention methods
3. Common Sexually Transmitted Infections
4. Management of STI in pregnancy
5. STI and Family Planning
6. Screening of cervical cancer
7. Prophylaxis vaccinations
8. Female condom
9. Role of microplasma and trichomoniasis in urethritis/cervicitis
10. Episodic therapy for recurrent herpes genitalis
11. New treatment recommendations for managing genital wart
12. Monitoring & Evaluation
13. Research to be conducted on STI
14. Management of anaphylaxis

Objectives of the STI Case Management Guidelines

The objectives of guidelines are to:

1. Provide comprehensive guidance on the management of STI;
2. Make recommendations on the best drugs to use in STI;
3. Describe requirements for record keeping and surveillance in STI Case Management; and

4. Provide guidance on supporting activities such as clinic equipment, infection control, etc.

These guidelines are intended for use in any setting in Nepal by health care providers (HCPs), who may be consulted by patients with symptoms suggesting STI or who are at risk of getting STI. Since syndromic approach does not reach a large number of asymptomatic STI patients and thus are left untreated, NCASC has adopted a policy to provide modified syndromic approach called 'Enhanced Syndromic approach' reaching those at high risk but also the asymptomatic population through risk assessment and screening by history, examination and basic lab tests where the facility exists.

Methodology Applied to Revise the Guidelines

Based on the national and international recommendations, NCASC took initiative to revise the guidelines with updated information on STI management. It is prepared with the consultation and support of the National STI Technical Working Group (STI TWG) comprising of professionals in the field of STI. The TWG systematically reviewed the evidence and publications on other similar guidelines, recent journal articles, and study reports about major STI.

The information gathered was summarized in a draft document, which was further assessed by the members of STI TWG, and finally disseminated to the group of policy makers and the major service providers. After incorporating their logical suggestions/ recommendations, the final version of the guidelines was prepared.

The Significance of STI

STI remain one of the major causes of acute illness and morbidity with severe and far reaching health, social and economic consequences for millions of men, women and children all over the world. It is estimated that after maternal causes, STI are responsible for the greatest number of healthy life years lost among women in developing countries. Although STI are primarily transmitted through sexual intercourse, they can also be transmitted from mother to child during pregnancy and childbirth, and also occasionally through blood and blood products. Because of the rooted stigma and discrimination associated with STI, failure to diagnose and treat STI in time may result in serious complications and sequelae including infertility, fetal wastage, neonatal infections, ectopic pregnancy, cervical cancer and even death. Moreover, STIs also account for massive expenditures and thus have enormous socio-economic impact (WHO) [2].

Global STI Situation

STI are the major global cause of acute illness, infertility, long-term disability and death with serious medical and psychological consequences for millions of men, women and infants. These are also major cause of economic burden and loss of productivity.[1] According to one study, the average productivity losses per case were: $262 for chlamydia, $197 for gonorrhea, $419 for syphilis and $289 for trichomoniasis. There were about 498.9 million new cases of the major STIs (chlamydia, gonorrhea and syphilis and trichomoniasis) according to WHO estimates of 2008. [3]

The total cases of four different STI included
1. 105.7 million cases of C. trachomatis
2. 106.1 million cases of N. gonorrhoeae
3. 10.6 million cases of Treponema pallidum
4. 276.4 million cases of T. vaginalis.

Males accounted for 266.1 million or 53% of the new cases. The number of adults with one or more infection, however, is less than the sum of the four infections, as some individuals will have had multiple infections. Quantifying the incidence and burden of these infections is important for planning appropriate interventions and advocating for resources, as necessary.[3]

In South East Asia Region of WHO, it was estimated that the annual incidence of selected curable STI was about 78.5 million: 7.2 million cases of C. trachomatis, 25.4 million cases of N. gonorrhea, 3.0 million cases of syphilis and 42.9 million cases of T. vaginalis. The incidence and prevalence of four STI were as follows (Table 1)[4]:

Table 1: **Incidence and prevalence of four major STI in South East Asia**

STI	Incidence per 1000		Prevalence percent	
	Female	Male	Female	Male
Chlamydia	9.2	6.2	1.1	0.6
Syphilis	3.2	3.1	1.3	1.3
Gonorrhea	16.2	37	0.8	1.2
Trichomonasis	40.3	50.1	5.6%	0.6%

In the United States, according to CDC's estimates[4], there were about 20 million new infections each year, costing the American healthcare system nearly $16 billion in direct medical costs alone. The data suggest that there are more than 110 million total STI among men and women across the nation. Out of them, 50 % were young people (ages 15-24), although they represent only 25% of the sexually experienced population. Along with the curable STI, incurable STI (viral) share reasonable burden of STI in the world. Herpex Simplex Virus type 2 is one of the major incurable STI. In 2003, the estimated number of people (age 15-49) living with HSV-2 was 536 million, and estimated number of newly infected was 23.6 million.[2] HIV with sexual contact as predominant mode of transmission is considered another most prevalent viral STI, which is discussed below.

STI are often concentrated among the people who are at risk of HIV. In one of the recently published studies

from Peru on FSWs, prevalence of infection with HSV-2 was 60·6%; C. trachomatis 16·4%; T. vaginalis 7·9%; Syphilis 0·8%; and N. gonorrhea was 1·6%[5].

There are very few national data available on epidemiology of STI in Nepal. A hospital based study on 108 STIs cases done in Dhulikhel Hospital, Kavrepalanchowk from April 2010 to April 2011 showed that Genital Viral infection (41.7%) was the most common diagnosis followed by Genital discharge syndrome (25%), and Genital ulcer disease syndrome (15.7%).[6]

According to Integrated Bio Behavior Surveillance (IBBS) study, out of the 593 FSW within Kathmandu valley, 10 of them (1.7%) were infected with HIV. The prevalence was only seen in street-based FSWs. Syphilis history (RPR+ve with RPR titre < 1:8) was 2.5 percent (10/238 of the street-based FSWs and 5/355 of the establishment-based FSWs) and active syphilis (RPR+ve with RPR titre ≥ 1:8) was 0.7 percent (4/238) among street based FSWs. Active syphilis was not detected among any of the establishment based FSWs (IBBS 2011).Out of 610 FSWs of 22 Terai Highway, 400 were recruited from 16 districts domain and remaining 210 were recruited from 6 districts domain. The prevalence of HIV among FSWs is 1%. Similarly, 0.7% FSWs had laboratory test suggestive of syphilis history and 0.3% FSWs had active syphilis (IBBS 2012). Four out of the 345 FSWs (1.2%) were infected with HIV, 3.2 percent (11/345) had a syphilis history (RPR +ve with RPR titre <1:8), while active syphilis (RPR + ve with RPR titre >1:8) was detected among 0.6 percent of the respondents (2/345) in IBBS study done at Pokhara on 2011. Only 11% of MLM in 11 highway districts reported of having at least one symptoms of STI in the last year (IBBS, 2012). Among MSM in Kathmandu valley the overall prevalence of rectal gonorrhea was 2.8% and chlamydia was three percentage. Overall 10.8% of MSM were tested positive for at least one STI but was as high as 18.5% among MSW. IBBS 2012 revealed that the prevalence of Active Syphilis is 1% in Western Highway District and 1.7% in Eastern Highway District. Similarly 4.3% and 8.1% of PWIDs reported of having STI symptoms in Western and Eastern Highway District respectively.

Among all the clients attending clinics managed under United States Agency International Development (USAID)-funded Saath-Saath Project (SSP) from 2009-2012, 14.0% had Bacterial Vaginosis, 9.5% Cervicitis, 5% Candidiasis, 2.8% Trichomoniasis, 1.9% Syphilis, 1.5% Genital Warts and 0.3% Herpes Genitalis. Bacterial Vaginosis, Cervicitis, Candidiasis, Trichomoniasis were diagnosed exclusively among female clients. Clients are provided service not only on the basis of symptoms but on the basis of their risk related to STI. Out of the total FSWs presenting in clinic without any symptoms, 51% were diagnosed with new episodes of STI. FSW presenting with or without symptoms had same level of syphilis diagnosed (1.7%), whereas cervicitis was detected little higher in group presenting in clinic without symptom. Among the KAPs, 1.7 % of FSW, 2.3% of clients of FSW, 2.5% of migrants and 0.8% of spouse of migrants visiting the STI clinics had syphilis. A total of 71% of cases of syphilis were seen in age group of 25-49, years making the prevalence of 2.5% in that age group. Among the cases diagnosed with cervicitis, 82% were FSW. FSW were provided presumptive treatment of cervicitis. As per the available data it was seen that incidence of cervicitis was comparatively low among those clients who had presumptive treatment of cervicitis. Only 0.1% of FSW receiving the presumptive treatment had cervicitis, whereas among those not receiving the treatment, 47.2% were diagnosed with cervicitis.[7]

National HIV Situation

At present, the HIV epidemic in Nepal is characterized as a concentrated epidemic. According to NCASC, HIV prevalence in the adult population (15-45) is equal to 0.23 %.[8] It is estimated that about 40,723 people are living with HIV in Nepal as of 2013. As of July 15, 2014 total cumulative HIV infections reported are 25,222 out of which 15,837 are males, 9,344 are females and 26 are transgender. The majority of infections occur among adult (15-49) male (58%) and women (28%) of reproductive age group populations, while 9% of infections occur among children under 15 years of age. The key affected populations at higher risk—people who inject drugs PWID, FSW, MSM, MLM and clients of FSW-shared 51% of all adult HIV infections. More than 80% of HIV infections spread through heterosexual transmission. PWID, FSW, and MSM are the KAPs at higher risk of getting HIV. MLMs (particularly to HIV prevalence areas in India, where labor migrants often visit FSWs and clients of female sex workers in Nepal are acting as bridging populations that transmit infections from higher risk groups to lower risk general population.

Recent results of reduced new HIV infections are attributed to effective prevention interventions, particularly among key high risk population groups such as PWID, FSW and their clients. However, the rate of new infections has increased among MSM/TG in Nepal. Overall, the adult (15-49) HIV prevalence has started declining slowly, while the prevalence has been declining more rapidly among young populations (15-24). This demands a continued effective prevention effort to be sustained among KAPs at higher risk, especially young and new entrants into the risk behaviors. There were significant achievements in the last 5 years. The HIV prevalence is moving in a downward trend, from 0.39% in 2010 to 0.23% in 2014.

Global STI Strategy 2006 – 2015

World Health Assembly endorsed the global strategy for the prevention and control of STI in May 2006. The strategy urges all countries to control the transmission of STI by implementing a number of interventions, including the following:

1. Prevention by promoting safer sexual behaviors;
2. General access to quality condoms at affordable prices;
3. Promotion of early recourse to health services by people suffering from STI and by their partners;
4. Inclusion of STI treatment in basic health services;
5. Specific services for populations with frequent or unplanned high-risk sexual behaviors - such as sex workers, adolescents, long-distance truck-drivers, militar personnel, substance users and prisoners;
6. Proper treatment of STI, i.e. use of correct and effective medicines, treatment of sexual partners, education and advice;
7. Screening of clinically asymptomatic patients, where feasible; (e.g. syphilis, chlamydia);
8. Provision for counseling and voluntary testing for HIV infection;
9. Prevention and care of congenital syphilis and neonatal conjunctivitis; and
10. Involvement of all relevant stakeholders, including the private sector and the community, in prevention and care of STI.

National HIV/AIDS Strategy 2011-2016

The current National HIV/AIDS Strategy considers STI case management to be one of the HIV prevention strategies and emphasizes strengthening management and control. STI surveillance is one of the cross cutting strategies to ensure the achievements of program outcomes. Focus areas related to STI highlighted by National HIV/AIDS strategy are as follows:

1. Syndromic approach will be standardized with referral for etiological treatment when needed and etiological diagnosis will be prioritized, where possible.
2. Special focus will be made for the elimination of congenital syphilis for which priority will be given for making available elements of screening and diagnosing syphilis (RPR, TPHA/TPPA, rapid diagnostics or dual test) among pregnant women.
3. Presumptive treatment for sex workers will be made available from government and non-governmental organizational outlets.
4. The STI services will be established as per the national standard guidelines and protocols.

Key actions outlined by the strategy are:

1. Develop STI diagnosis and treatment strategy.
2. Provide standardized and quality etiological diagnosis for some common STI (TV, GC and syphilis) at the service sites including sites that provide HIV Testing and Counseling, where laboratory services are available, including at FP and MCH clinics.
3. STI services will be part of the comprehensive package to FSW, MSM, PWID and Migrant population, either by integrated services, or by establishing linkages between public and private services.
4. Strengthen documented linkages (referral of Follow up mechanisms) of community BCC services to quality HIV testing and counseling, including strengthening of linkage between HTC and STI services.
5. Build capacity of the health and other staff involved in detection and management of STI.

The National Response on STI Case Management

The National STI Control Programme in Nepal was initiated in 1994. With support from the European Commission, and technical backing from the University of Heidelberg (Germany), the program strengthened national capacity in STI case management as one of its principal activities. Program outputs included the publication of the National Guidelines for STI Case Management; upgrading of the laboratory diagnostic capacity in Government and private clinics; and widespread training of health workers in peripheral settings to enable them to use the WHO syndromic algorithms.

Training is another component to strengthen STI response of the country. First National Training Manual on STI Case Management was developed by NCASC in 2006, which was revised in June 2011 with the technical and financial support of USAID and FHI 360. Since then a reasonable number of healthcare workers are being trained using this training manual. A refresher training curriculum has also been developed in 2008.

National STI service review was conducted in November 2006, which was the first national review that came out with the recommendations specific to STI services in the country, one of which was regular update and revision of national guidelines. A system of STI drug supply to STI service facilities has been established by NCASC through the National HIV/AIDS logistic system. To further strengthen and facilitate the STI services, NCASC has also developed the Clinic operational guidelines standards (COGS).

Public Health Significance of STI

Sexually transmitted infection (STI) remains a public health problem of major significance in most parts of the world and, if not diagnosed and treated early, may result in complications. With increased importance of HIV in the public health, STI began to receive importance and attention. The global HIV epidemic has focused more attention on STI prevention and control due to the evidence of strong correlation between the spread of STI and HIV transmission. Epidemiological studies have shown that if people are HIV-negative, having one or more of a number of other common STI considerably increases their risk of becoming infected with HIV. The same is true in reverse of HIV-positive people: being co-infected with one or more other STI considerably increases their chances of transmitting HIV, in some cases even if they are on fully suppressive antiretroviral therapy.[1,3]

Prevention of STI

As STI increase the risk of HIV transmission, effective treatment of STI is also one of the strategies for HIV prevention.

STI prevention and control program are based on following five major strategies:

1. Identification and screening of the people at risk of STI. Education and counseling of persons at risk on ways to avoid STI through changes in sexual behaviors and use of condoms as a mean of prevention;
2. Identification of asymptomatically infected persons and of symptomatic persons unlikely to seek diagnostic and treatment services;
3. Effective diagnosis, treatment and counseling of infected persons;
4. Evaluation, treatment and counseling of infected sex partner of persons who are infected with STI; and
5. Pre-exposure vaccinations of persons at risk for vaccine preventable diseases.

These strategies require primary prevention, directed at reducing the incidence of disease, and secondary prevention, directed at reducing prevalence by shortening the duration of disease and as a result preventing further spread and reducing the probability of complications or sequel.

Primary prevention activities include:

- Promoting abstinence or delayed having sexual contact until both partners are mature
- Promoting having single faithful sexual partner
- Promoting reducing number of sexual partners
- Promoting consistent and correct use of condom during each sexual contact

Secondary prevention activities are:

- Promotion of health care seeking behavior, particularly in key affected populations, who are at increased risk of acquiring STI including HIV infection.
- The provision of accessible, effective and acceptable services which offer diagnosis and effective treatment for both symptomatic and asymptomatic patients with STI and their partners.

STI in Nepal is concentrated among key affected population at risk of HIV: sex workers (male and female) and their clients, migrant workers and their spouses, MSM and transgender people. Preventive and curative activities should also be focused in those groups where STI is concentrated. This approach minimizes the cost of the national program as well as results in effective outcome.

Preventive Methods

1. Pre exposure vaccination

It is the most effective method for preventing transmission of STI. Currently, two HPV vaccines are available to prevent precervical and cervical cancers in females aged between 9-26 years. Bivalent HPV (Cervirax) and Quadrivalent HPV (Gardasil) routine vaccination of females 11-12 years is recommended. Hepatitis B vaccine is recommended to all unvaccinated, vaccines against Hepatitis A and B to all MSM and PWID.

2. Condom promotion and use

Correct and consistent use of condom is highly effective. Condom is one of the most effective methods of preventing HIV and STI. Failure of condom to protect against STI transmission results from inconsistent and/or incorrect use. Female condom is also effective mechanical barrier for transmitting STI and HIV.

3. Partner management

Patient delivered partner therapy is a form of expedited partner therapy where partners of infected persons are treated without medical evaluation and preventive counseling is done by providing STI drugs through partner.

Effective and complete treatment of STI:

Effective and full treatment of STI cures most of the STI prevalent in Nepal. Directly observed treatment with single dose therapy ('S' DOTS is the best option of the effective treatment

STI Case Management Process

Accessible, effective, affordable and acceptable STI Case Management is the basis of STI control. STI Case Management is the overall package of effective, affordable and acceptable care that should be accessible to any individual who thinks that he or she may have a sexually transmitted infection or is at risk of getting it.

The objectives of STI case management are to:

- Provide effective treatment and obtain cure;
- Asymptomatic patients and/or subclinical infections should also be targeted to get treatment and reduce infectivity;
- Prevent or at least reduce future risk-taking behavior; and
- Make sure sexual partners are appropriately traced and treated.

To achieve the objectives of appropriate STI case management the patient must receive:

- Correct diagnosis with laboratory support and early and effective treatment;
- Education and counseling for reducing/preventing future risk for STI;
- Promotion and provision of condoms as it is the most efficient method available to reduce the transmission of pathogens, including HIV;
- Offering/referring for other STI screening and HIV counseling and testing;
- Encouragement to notify sexual partner(s) of their need for treatment
- Clinical follow-up and referral where necessary

2.1 Interaction between Patient and Health Care Provider

The interaction between patients and Health Care Providers (HCPs) is particularly important in the STI consultation. Unless a mutually respectful and trusting relationship is established, the information needed to make an accurate diagnosis will not be obtained; the essential education will fail; sexual partners will not be encouraged for treatment; and the patients' compliance with treatment will be poor.

The setting

The setting should be clean, pleasant and comfortable, and privacy should be maintained. Appropriate examination table is required with good lighting for male and female clients.

The approach

It is very important to offer user-friendly behavior and services. If the service provider is seen unapproachable, superior and judgmental, the history taken from the patient may be incomplete and misleading. The uncomfortable patient, who is reluctant to cooperate in the examination, is less likely to follow the advices.

Maintaining confidentiality

Profession of some of the KAPs, especially of FSW, is related to the risk of acquiring STI. Other KAPs are equally at risk of STI. People from these groups are also at risk of potential discrimination due to the stigma related to their behavior. So, maintaining confidentiality of their status, their groups, name and other details is equally important to gain their trust to the service. STI patients are usually very worried that other people will know their status. HCP should inform from the beginning that anything the patient may say will be kept entirely confidential. Give an assurance at an early stage that no one else will be told - not even the spouse or sexual partner; nor an employer; or the authorities.

Avoid giving the impression of being in a hurry: HCPs are often very busy and a few clients might be uncooperative, but sufficient time must be given to all clients.

Be tolerant

The HCP may or may not like the patient's actions or behavior. The HCP's values may be quite different from those of the patient. However, this should not influence their attitude towards the patient or the service provided in any way. Always remember that the role of a HCP is to provide care with comfort, not to judge or punish.

Avoid giving the impression of embarrassment

The HCP must be professional in approach, able to talk easily and in an unembarrassing manner about sexual matters and behavior. It is usually easier to talk with a person of the same sex and patients will often choose their health care worker with this in mind. Consider referring the patients to someone of their own sex if this seems important and possible.

Communicate with patients

HCP should share information with patients clearly and being respectful and non- judgmental in a language that they can easily understand. Although the time available for establishing a good rapport may be limited, effective communication helps clients to talk more comfortably and this actually saves time.

Box 1: **Communicating with STI clients (patients): WELL**

Welcome your patient. Greet patients warmly, offer a seat, and sit near enough to talk comfortably and privately. Have a welcoming tone of voice - speak to the patient as you would to a friend

Encourage your patient to talk. Look at the patient as you talk, ask questions, nod as they speak, say 'mmm hmmm' or 'tell me more about that.' These 'encouragers' shows you are listening and are interested.

Look at your patient. Looking at patients helps them to talk more comfortably. Have a warm and friendly facial expression.

Listen to your patient. Listen carefully to what your patient has to say. Use the 'encouragers' to show you are interested in their story.

2.2 Steps of Diagnosis

It is necessary to take a history and examine all patients to make an accurate diagnosis.

2.2.1 History taking

History taking is the first step in getting information on the presenting complaints. It is important to remember that the HCP responsible for taking history and clinical examination should be knowledgeable and skilled. HCP should make the patient comfortable and make sure that any information revealed will be kept confidential. He should always talk to the patient in private where the communication cannot be heard by others. Some patients may not be comfortable talking about their sexual history, sex partners, or sexual practices. Try to make patients at ease and let them know that taking a sexual history is an important part of a regular medical checkup. Some of the areas which are the part of sexual history taking are given below.

Present complaints

Start the history taking with the present complaints, if any. Ask if the client is having any specific complains or discomfort or problem, especially in genital area or related to genital organs. Problems may be discharge from urethra or vagina, presence of ulcer or pain or any other symptoms experienced by the client. Ask the duration of the complaint and any previous treatment done for it. It is good to get the prescription from previous treatment also.

Partners

To assess the risk of contracting an STI, it is important to determine the number and gender of your patient's sex partners. Remember: Never make assumptions about the patient's sexual orientation. If only one sex partner is noted over the last three months, be certain to inquire about the length of the relationship. Ask about the partner's risk factors, such as current or past sex partners or drug use. If more than one partner is noted in the last three months, be certain to explore for more specific risk factors, such as condom use (or non-use) and partner risk factors. If a patient has been sexually active in the past, but is not currently active, it is still important to take a sexual history. To be specific, following information should be asked

- Relationship with the partner/s (spouse, regular non-spouse or casual)
- Use of condom with each sexual act and type of partner
- Number of sexual contacts/type of partner in the last three months. History or presence of same symptoms experience by the partner

Practices

If a patient has had more than one sex partner in the past three months or has had sex with a partner who has other sex partners, you may want to explore further his or her sexual practices and condom use. Asking about other sex practices will guide the assessment of patient risk, risk-reduction strategies, the determination of necessary testing, and the identification of anatomical sites from which to collect specimens for STI testing.

- Type of sexual exposure (oral, vaginal, anal)
- Date of last sexual intercourse
- History of sexual contact with spouse/partner after exposure
- History of injecting drug use/blood transfusion
- History of sexual assault
- History of occupation, travel

Protection from STI

To learn more about the patient's sexual practices, use open-ended questions. Based on the answers, you may discern which direction to take the dialogue. You will need to determine the appropriate level of risk-reduction counseling for each patient. If a patient is in a monogamous relationship that has lasted for more than 12 months, risk-reduction counseling may not be needed. However, in other situations, you may need to explore the subjects of abstinence, monogamy, condom use, the patient's perception of his or her own risk and his or her partner's risk, and the issue of testing for STI.

Prior history of STI

This may place your patient at greater risk now.

- Past history of similar symptoms or diagnosed STI with dates and treatment
- Recent antibiotics/drug allergy
- Any other medical problems (non STI) in the past/ present

Prevention of pregnancy

Based on partner information from the prior section, you may determine that the patient is at risk of becoming pregnant or of fathering a child. If so, first determine if a pregnancy is desired. Questions should be gender appropriate.

"RISK ASSESSMENT" should be done with the any clients to decide the probability of that client being infected with certain STI (for example STI in female causing cervicitis).

2.2.2. Examination

Examination should be done at a private room and under good lighting. It is the duty of HCP to inform the patient about the procedure of general examination, including genital examination. It is mandatory to obtain the patient's permission before doing the physical examination. The patient or client has right to deny the examination. Ensure privacy during the whole process of examination. Always have a female attendant when examining a female patient particularly if the HCP is a male. All clients giving history of anal sex should undergo anal examination, preferably using an anoscope. In addition to ano-genital examination, general examination of body, examination for skin rashes, lymphadenopathy, is recommemnded. Examination of oral cavity and throat for discharge, ulcer, and growth is recommended to all clients. If laboratory support is available, vaginal and/ or cervical specimens should be obtained from female clients. The principles for examination of men and women are shown in Box 2 and Box 3.

Box 2: **Examination of male patient**

- Explain the procedure of examination
- Get the patient to take off trousers and underwear
- Look at the penis with the foreskin forward and pulled back
- Retract the prepuce and see if any discharge from the urethra if not ask the patient to do 'milking' of urethra note the color, amount and consistency of the discharge
- Look for the ulcer, any growth
- Look in the oral cavity/anus for any ulcer, discharge, growth
- Look at the groin, pubic hair region, the perineum, the peri-anal region and the anus for warts, ulcers, scabies, pubic lice and nits
- Palpate the groin and testicles for swelling or tenderness
- Look for rashes over the body and genital area, including palms and soles
- Look for lymphadenopathies in relevant areas

(If there is no discharge seen even after milking, ask the patient to hold the urine for four hours and again report for re-examination to see if there is any urethral discharge)

Box 3: **Examination of female patient**

- Explain the procedure of examination
- Get the patient to remove her underclothes and ask her to remain draped and expose the necessary parts during examination.
- Examine the patient on a couch or table on her back with the knees flexed and legs apart.
- Look for skin rashes in the body including palms and soles
- Look in the oral cavity for any discharge/ulcer/ growth
- Look at the external genitalia, perineum, peri-anal, anal region for warts, ulcers, scabies, pubic lice and nits
- Palpate the groins and other relevant areas for any swellings or lymph nodes
- With a gloved hand, separate the labia majora. Look at the labia minora, separate them and look at the introitus.
- Look for vaginal discharge and note the amount, color, consistency and smell

If you have a sterile bivalve ('duck billed') self-retaining speculum, then proceed as follows:

- With the other hand, insert the lubricated (with water based) speculum and open it. Locate the cervix between the blades
- Look at the cervix and its opening (cervical os) for any abnormalities (growth/ inflammation/ ulcer/discharge)
- Note the character of the discharge from the cervix - is it clear or mucoid, mucopus or frank pus? Does it contain blood?

Look at the vaginal vault, while slowly removing the speculum, look at the walls of the vagina for warts, sores and ulcers

Look for vaginal discharge note the amount, colour, consistency and smell

Then do bimanual examination

- Insert two fingers high up into the vagina
- Press the supra pubic region of the abdomen gently with the other hand so as
- to feel, as far as possible, the uterus, cervix, fornices for any mass or tenderness

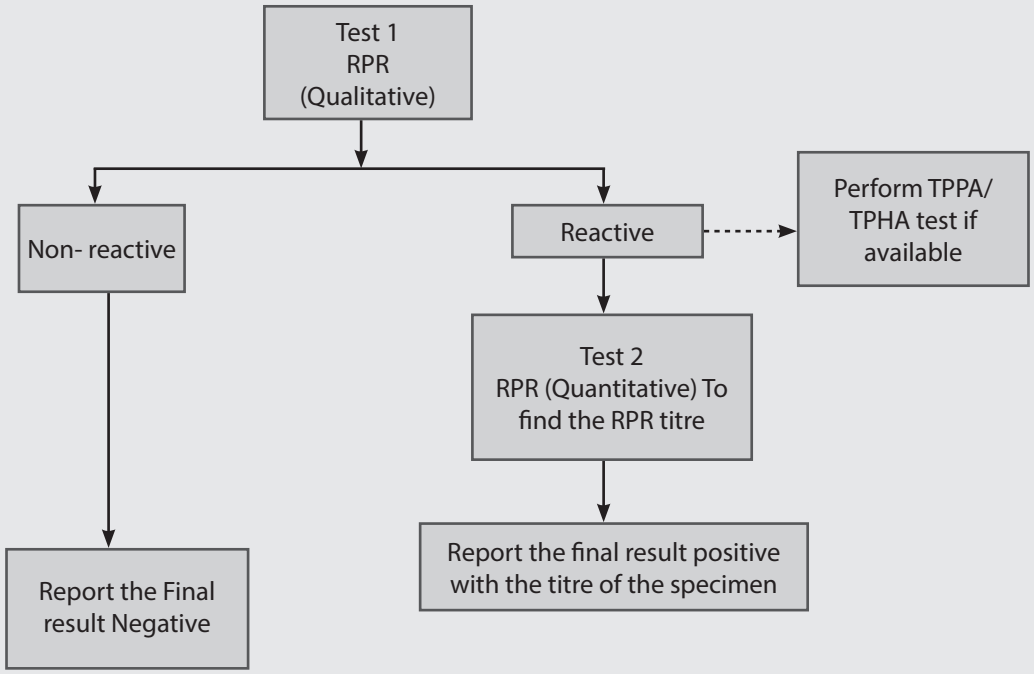
Any tenderness of the organ, swelling or mass or pain on moving the cervix (cervical excitation) with fingers is considered as the clinical evidence of pelvic inflammatory diseases (PID)

2.2.3 Laboratory investigations

If laboratory facilities are available use appropriate tests which are available, in particular VDRL, RPR, TPHA/TPPA, Gram stain and wet/KOH mount, microscopy of vaginal cervical smears to confirm/support a diagnosis.

Syphilis screening is recommended for all from KAPs at risk visiting STI clinics. Whenever syphilis testing is available, a venous blood specimen should be taken.

Fig 1: **Syphilis Testing Algorithm for Initial Visit of a Client to a STI clinic**



For follow-up visits of clients who have already received treatment for syphilis, only quantitative RPR testing will be performed and RPR titre will be recorded and reported. **Four fold decrease in RPR titer after treatment indicates the cure and same level increase in titer indicates reinfection with syphilis and requires treatment.**

Note: VDRL or RPR test can remain reactive for a few months to some years after the required treatment, whereas TPHA or TPPA test result may remain positive lifelong even after infection with syphilis is treated or not.

Diagnosis of Syphilis:

A diagnosis can be made from serological tests for syphilis both for symptomatic and asymptomatic individuals.

Two types of Serological tests are available:

- Non treponemal tests –VDRL (Microscopic)/RPR (Macroscopic)
- Treponemal tests – TPHA, TPPA, FTA- ABS

1. Non- treponemal tests (VDRL, RPR): These qualitative/ quantitative tests are used to detect immunoglobulin IgG/IgM antibodies to lipoidal material released from damaged host cells or cardiolipin like material from trepanomes. These antibodies can also be produced in some acute or chronic diseases (febrile viral infections, autoimmune diseases etc) in which tissue damage occurs. So they are not specific for treponomal infections. Non treponemal tests may be negative upto four weeks after the chancre of primary syphilis first appears. **Tests should be repeated at one and three months with suspicious lesions who is initially negative.** A negative non - treponomal test at three months of onset of primary chancre virtually excludes the diagnosis of syphilis.

Interpretation of positive rapid plasma reagin test (VDRL/RPR)

Non treponemal tests can be used to monitor the response to treatment by performing quantitative testing. Titre will decrease following effective treatment or increase in untreated active infection. If the patient is adequately treated for primary and secondary syphilis, the titer of the non - treponemal test gradually falls and often becomes negative within a year. It should decline by four-fold (1:16 to 1:4) over a period of time. If treated later (late latent and tertiary syphilis) the lower titre may remain positive for years. **After treatment, the person should be followed on three, six and on every 12 months till the titre becomes negative.** If it increases four- fold, (1:8-1:32) it indicates continued active infection, may be due to re-infection or treatment failure. It should be treated

(Rapid Diagnostic Tests – they are Treponema pallidum specific tests that use T. pallidum antigens to detect Trepanoma specific antibodies, developed recently, result within 10-15 mins, can be performed in any setting, does not require refrigerator, rotator and centrifuge. Sensitivity is from 85% to 98% and specificity from 93% to 98%. Not available in Nepal.)

accordingly. **In some patients, however, fixed lower titre may remain positive (called sero-fast) and does not generally need further treatment.** This can cause problems for contract workers going to countries that demand negative tests for syphilis. Test results are considered significant if same testing method is used preferably in the same laboratory. In patients with latent syphilis the test may remain positive for life long. Please refer to page 66 for reactivity of serological tests by stage of syphilis and effect of treatment.

1. Treponemal tests – TPHA, TPPA, FTA- ABS
These tests detect antibodies formed specifically to the antigenic determinants of the treponemes. They are the confirmatory tests after non – treponemal tests. They remain positive for the patient's lifetime regardless of the outcome of treatment. A positive treponemal test does not distinguish between active infection and previously treated infection.

All Clients at risk of STI are equally at risk of HIV and Hepatitis B. So, HCP should encourage all the clients for HIV counseling and testing. **At the same time, screening for Hepatitis B, Hepatitis C, and cervical cancer screening for female can also be recommended.**

Box 4 and Box 5 describe the method of taking specimens from the men and women for the laboratory investigations.

Box 4: **Taking specimens from male patients with Urethral discharge for laboratory investigations**

Patient should withheld urine for at least 4 hours before specimen collection from urethra

- Ask the patient to retract the foreskin and milk the urethra to obtain discharge.
- Obtain a specimen by applying a glass slide to the discharge or by using cotton tipped swab or a loop.
- If frank pus is not present, obtain a urethral specimen using a platinum loop or a fine swab by inserting 2 mm into the urethra and rotating gently.
- Smear the material thinly onto a clean glass slide and perform Gram staining for microscopic examination.

Interpretations of Gram stain of urethral secretions:
Non-specific urethritis:
≥ 5 Polymorphonuclear leukocytes per oil immersion field.
Gonococcal urethritis: presence of Gram-negative intracellular (polymorphonuclear leukocytes) diplococci

Note: A slide should be examined for at least 2 minutes before concluding that it does not contain any Gram-negative intracellular diplococci.

Box 5: **Taking specimens from females for laboratory investigations**

Cervical specimen
Insert a bi-valve vaginal speculum and visualize the cervix. Mop the cervical os with cotton swab. Then take two swabs: one from posterior fornix of vagina and the other from cervical os.

Vaginal specimen

Wet Mount
Mix the vaginal specimen collected with the swab into one or two drops of normal saline on a glass slide and cover with a cover slip. Immediately examine the slide under low and high power of microscope. Identification of motile Trichomonas vaginalis suggests trichomoniasis. Identification of clue cells suggests Bacterial vaginosis.

(Clue cells: In bacterial vaginosis, Lactobacillus species (Gram-positive slender rods) are replaced by a mixed flora of anaerobic bacterial morphotypes and Gardnerella vaginalis. Clue cells are squamous epithelial cells covered with many small cocco-bacillary organisms (Gram-variable on Gram stain), giving a stippled, granular appearance, the edges of these epithelial cells are not clearly defined, because of the large number of bacteria present. In most patients with bacterial vaginosis, a mixture of exfoliated vaginal epithelial cells and 20% or more clue cells will be seen. The adhering bacteria on the cells are predominantly G. vaginalis, sometimes mixed with anaerobes)

Whiff test
Add 1-2 drops of 10% KOH to specimen taken from vagina. It gives a fishy or amine odour if bacterial vaginosis is present. This test is called whiff test.

KOH mount
A specimen of vaginal discharge is placed on a slide and 1-2 drops of 10% KOH (potassium hydroxide) are added, covered with cover slip and examined under low power of the microscope to detect candidal pseudohyphae, mycelial tangles and spores.

Gram staining
A smear will be prepared on a glass slide from the vaginal specimen; the smear will be Gram-stained and observed under the microscope for detection of "clue cells". Cocco-bacillary organisms of clue cells will appear Gram-variable on Gram stain.

Box 6: **AMSEL'S DIAGNOSTIC CRITERIA FOR BACTERIAL VAGINOSIS***

1. Thin homogenous discharge*
2. Positive "Whiff" test*
3. Positive pH test*
4. "Clue cells" present on microscopy**

* If three of four criteria are met; it establishes accurate diagnosis of bacterial vaginosis in 90% of affected women

** Highly significant criterion

Take Endocervical specimen

- Clean the cervical os carefully with gauze piece using sponge holding forceps
- Insert a sterile cotton swab into the cervical os, rotate gently and collect the specimen

Gram stain

Make a thin smear of material from the cervical os on a glass slide; air dry it and stain with Gram stain.

Interpretations

Mucoprulent cervicitis (MPC)

Gram stain of cervical secretions demonstrating ≥ 20 PMNL/OIF
(Polymorphonuclear leukocytes per oil immersion field)

Gonococcal cervicitis

Gram stain of cervical smear demonstrating the presence of Gram negative diplococci within and outside the polymorphonuclear leucocytes.

Note: A slide should be examined for at least TWO minutes before concluding it does not contain any Gram-negative intracellular diplococci.

Gonococcal culture for selected referral hospital (This method currently may not be available in Nepal)

- Inoculate the material collected from cervical os on to a GC culture medium plate or into transport media depending on local laboratory condition.
- If a chlamydia test is available, collect a special specimen from within the cervical os according to the instructions in the particular test methods.

Note: During the sample collection, the use of antiseptics and analgesics should be avoided since these may inhibit culture of gonococci present on the cervix. The speculum may be moistened with warm water or water based lubricants Ph test is generally not done in the STI service facilities in Nepal.

2.2.4. Correct diagnosis

It is recommended that syndromic approach for STI diagnosis and treatment be used in all the health facilities where there is no laboratory, and etiological/ enhanced syndromic diagnosis is used in those having laboratory facility. Syndromic diagnosis depends on identifying consistent groups of sign and symptoms (syndromes) and providing effective treatment for all the organisms known to cause them. Truly syndromic diagnosis addresses only the symptomatic patients and hence does not address asymptomatic patients, who remain the source of infections in the community.

2.3. Principles of Treatment

Effective STI treatment

It is important that the treatment provided to STI patients is effective and should offer at least a 95% cure rate to prevent resistance of organism.

Selection of drugs

Recommended STI drugs selection criteria for Nepal are shown in Box 7.

Box 7 : **STI Drugs should have following criteria**

- DDA approved for use in Nepal
- High efficacy
- Low cost
- Acceptable safety and least interactive with other drugs
- Organism resistance is either unlikely to develop or will be delayed
- Preferably requiring single dose
- Can be administered preferably orally
- Not contraindicated for pregnant and lactating women

2.4 Client Education and Counseling

Education is a dialogue between patient and health care provider (HCP) to enable the patient to understand their diagnosis and how to maintain health and avoid risk of infection.

Counseling is the process by which the HCP enables the patient to cope with problems associated with health or avoiding risk.

Education is an integral part and is needed for the patient to understand his or her present problem, complications if not treated and how to avoid risk in the future STI patients' area group at increased risk of infection and may be particularly receptive to educational messages.

Box 8: **Educational messages for STI patients**

- Present infection - the cause and possible consequences
- Treatment and need to complete the full treatment course
- Need of avoiding sex until cured
- Need for partners to be treated
- Risk reduction - how to avoid future infection - 'safer sex'
- Promoting/providing condoms and demonstrating condom use for their correct and consistent use
- Need to get early treatment if any future problem
- Risk of HIV from sexual contact and how it can be prevented
- Follow up
- Referral (When and where?)

STI/HIV Prevention counseling

All HCP should routinely obtain a sexual history from the patient and encourage the client's risk reduction using various strategies like abstinence, condom use, limiting the number of sexual partners, modifying the sexual practices and prophylactic vaccination. Prevention counseling is most effective if provided in a non-judgmental and empathetic manner appropriate to the patient's culture, language, sex, sexual orientation, age and development level.

Emphasize on 4 C's whenever one is dealing with STI patient or who is at risk of getting STI (Box 9)

Box 9: **The 4C's**

1. **Compliance**: Completing all the treatment as prescribed, even if the patient feels better after a few doses. Advise the patient to come back if there are some side effects. Revaluate for possible noncompliance or re-infection. If not, refer the patient with lab support facilities.
2. **Counseling/Client education:** Providing information about diagnosis of the disease/ available treatment /complications/incurable STI/ how to prevent future infections. Share strategies for discussing and introducing condom use with the sexual partner**.** Educate the client about HIV/ AIDs/assess the patient's risk for HIV/assist the patient in making a decision to undergo HIV testing
3. **Contact tracing/partner treatment:** Making sure that all the partners are encouraged to get treatment.
4. **Condoms:** Promoting and providing condoms, and ensuring availability of condoms. Provide demonstrations on correct and consistent use of condoms.

2.5. Partner Notification

Remember partner notification whenever STI is diagnosed

Like other infectious diseases, simply treating those individuals who present with symptoms for treatment cannot control STI. Partner notification offers an important chance of finding infected persons - often asymptomatic women - who are unaware that they might be infected.

All partners should be brought to treatment by:

- Asking the patient to contact their sexual partners and encouraging them to come to an HCP for treatment
- Providing STI drugs to the patient to treat their partner(s)-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 PEs/OREs

If neither of these is possible and the condition is considered important, a public health care official or HCP can, with the permission and cooperation of the original patient, go and look for the partner and either bring them to a health care facility or take treatment to them. However, this method will often be challenging because of the shortage of resources and trained staff.

Box 10 **Principles of partner notification**

- Be voluntary and non-coercive
- Preserve confidentiality
- Observe human rights and the dignity of the patient

Prevention of unwanted pregnancy

KAPs at risk of HIV are also at risk of unwanted pregnancy. Screening for their Family Planning needs is therefore important to identify their unmet need. Consistent use of condoms has been recommended to reduce the risk of STI/HIV transmission and also prevent unwanted pregnancy. However, an effective Family Planning method (OCPS, injectable, IUCD, Implants, and Sterilization) to reduce the risk of should be advised for use for the prevention of unwanted pregnancy. Dual method use – when effective contraceptive method for pregnancy prevention is combined with a barrier method for STI and HIV transmission prevention – should be recommended in a "Condom PLUS" approach.

2.6. Clinical Follow up /Referral

Patients should be advised to return if symptoms get worse or persist after the prescribed period of therapy. Patients with PID are best reviewed in two-three days to assess their response to therapy. Patients with severe genital ulcers are encouraged to return after three days for review. If the ulcers have not healed in seven days, treatment may have to be extended or referred to higher facility. Depending on the facilities encourage

the patient to come for repeat syphilis and HIV testing and counseling.

2.7. Official Reporting of the Cases

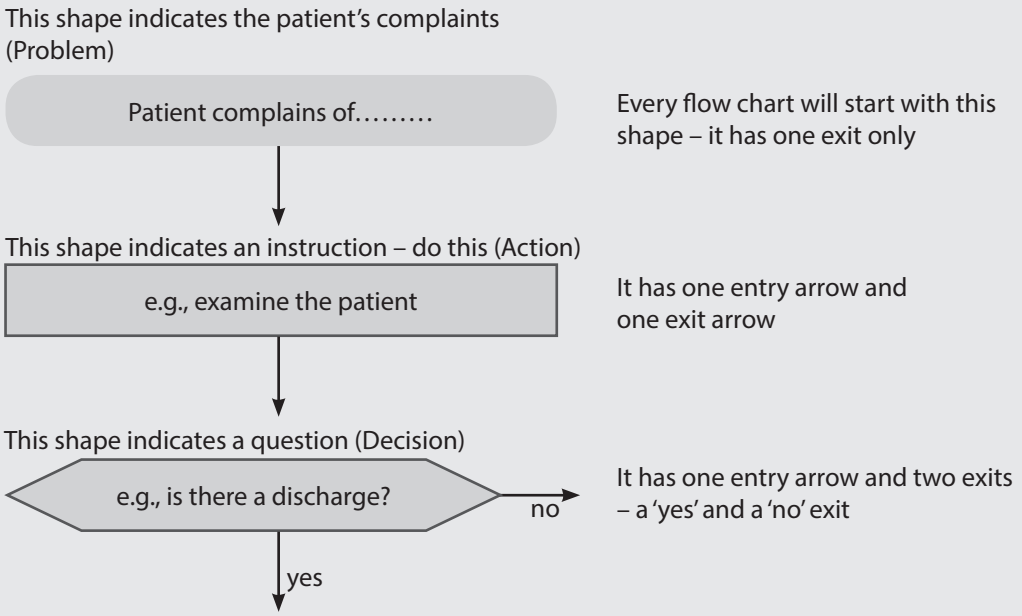
All STI cases should be recorded on the available official register and reported accordingly depending on the national requirements.

2.8. Use of Flow Charts

Many STI patients will seek care from health workers without specialized knowledge on STI. To make it easier for non-experts to effectively treat STI patients, it is recommended that HCPs be guided by 'flow charts'. Flow charts for the commonly occurring STIs in Nepal are included as part of these guidelines.

Each flow chart is a decision tree. By following the chart step by step, a logical decision can be reached. It helps how to diagnose and treat the condition with reminders on education, notification and follow up. To make it even easier, the flow chart is made up of different symbols. Each shape has a different meaning.

Shape and meaning of each box in a flow chart



Note: All flow charts used in this doucments are adopted from "Management of Sexually Transmitted Infections, Regional Guidelines, World Health Orginization, Regional Office of South East Asia, 2011".

STI Syndromes and Management/ Enhanced Syndromic Management

Syndromic case management of STI is based on the assumption that lab facilities are not always available. Do not delay or withhold treatment because lab investigations are incomplete or the test results are not available.

Enhanced Syndromic Management: Enhanced Syndromic Management of STI combines both clinical and public health approaches. It is offered to male, female and thirdgender of KAPs especially to sex workers who might have high prevalence and incidence of STI, but may remain asymptomatic. It requires some basic on-site laboratory support (serological testing for syphilis and Gram staining of cervical and vaginal specimens, wet mount KOH) based on STI Case Management Guideline.

Presumptive treatment for sex worker: Because of high prevalence of asymptomatic infections and high rate of reinfection, presumptive treatment for gonococcal and chlamydial infections is recommended to sex workers even when there is no sign of infection and is given if:

- the sex worker is visiting the clinic for the first time
- more than three months have passed since the same client has visited for STI screening

The rationales for presumptive treatment of STI in asymptomatic sex worker are as follows:

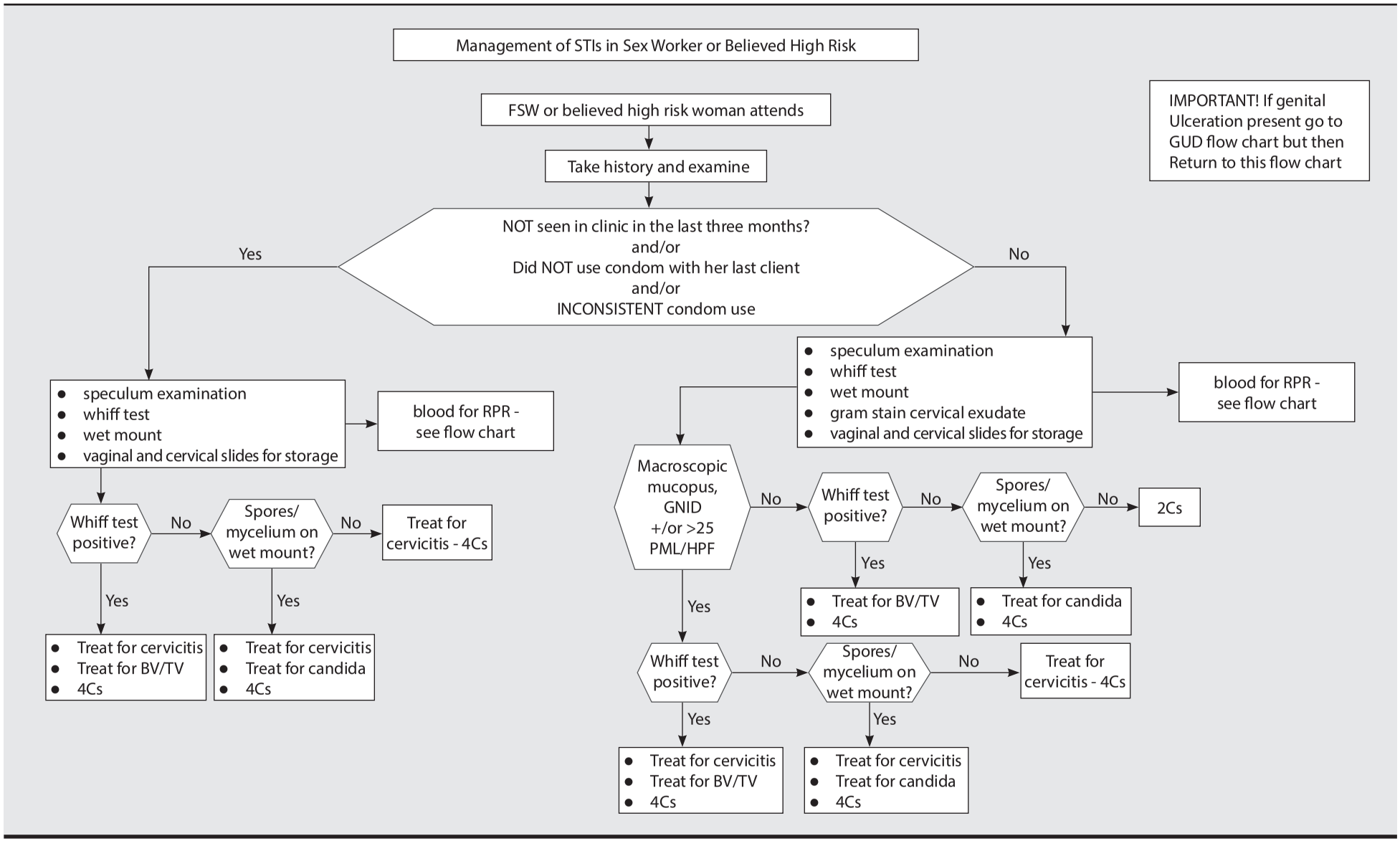
1. Sex workers are frequently exposed to STI
2. Condom use is not always consistent and correct
3. Cervicitis caused by gonococcal and chlamydia are oftem asymptomatic
   - Additional common factors to rationalize presumptive treatment include: High vulnerability to STI
   - Lack of health seeking behavior
   - Lack of access to health facilities
   - Lack of reliable, low-cost, rapid tests for Gonorrhea and Chlamydia
   - Poverty
   - Ignorance

After their first visit, sex workers should be encouraged to attend the clinic for monthly routine check-up and counseling should be promoted to all sex workers.

Frequent visits are encouraged if new STI symptoms appear or the previous symptoms worsen. Studies have shown that regular or periodic intervals of presumptive treatment administered to sex workers can assist in the reduction of morbidity and STI/HIV transmission to their partners.

Flow Chart- 1

Flow chart of management of STI in sex worker or believed high risk women



Syndrome based case management of STI

According to syndromic approach, there are the following seven syndromes:

- Urethral discharge syndrome
- Scrotal swelling syndrome
- Vaginal discharge syndrome
- Lower abdominal pain syndrome
- Neonatal conjunctivitis syndrome
- Genital ulcer disease syndrome
- Inguinal bubo syndrome

Etiological diagnosis with identification of the limited causative organism (or their antibodies) is possible in some government hospitals and NGO-run STI clinics in Nepal but is not available in the peripheral health facilities though it is the best method. About 50% of clinical diagnosis is not accurate, so syndromic case management is preferred.

3.1. Urethral Discharge Syndrome (UDS)

Urethral discharge syndrome is one of the most common presentations of STI in men. It is often associated with dysuria/ burning while passing urine and discharge from the urethra. Treatment should cover for both pathogens (N.gonorrhea/Chlamydia trachomatis) as dual infections with both organisms are common. Both may lead to complications as well as may facilitate HIV transmission and acquisition.

URETHRAL DISCHARGE SYNDROME

Symptoms:

- Urethral discharge may be thin to thick, clear to pus
- Dysuria and urethral irritation, mild to severe

Signs:

- Obvious urethral discharge or discharge within the preputial fold
- Urethral discharge, if not seen urethral milking to be done (urethra gently milked along the ventral aspect of penis towards the meatus)
- If discharge is not seen encourage the patient to come back the following day after holding the urine for four hours and re-evaluate.
- Erythema of the urethral meatus, the inner covering of the prepuce and/ or glans penis
- Painful scrotal swelling in later stage

Causative organisms

- Neisseria gonorrhea
- Chlamydia trachomatis (serovars D to K).
- Occasionally, it may also be caused by Trichomonas vaginalis/ Mycoplasma genitalium/Ureaplasma urealyticum/unknown causes- nonspecific urethritis

All male patients with the complaint of urethral discharge and/or dysuria should be examined for evidence of discharge. In the case where discharge is not seen, a gentle massage of urethra along the ventral aspect of the penis towards the meatus should be done. If discharge is present and microscopic examination is available, Gram- stained urethral smear done may show an increased number of polymorphonuclear lymphocytes (PML) and the presence of gonococci (Gram-negative diplococci). The indicative of urethritis in symptomatic males >5 PML per high power field (x1000). The presence of gonococci indicates gonococcal infection. Gonococcal and non- gonococcal urethritis (NGU) can co-exist.

If discharge is seen, treat syndromically, even if microscope is not available.

Recommended Treatment
To treat Gonococcal infection, use
Cefixime 400 mg orally, as a single dose
OR
Ceftriaxone, 250mg by intramuscular injection as a single dose
PLUS
To treat Chlamydial infection, use

Azithromycin, 1gm orally, as a single dose
OR
Doxycycline, 100mg orally twice daily for seven days

3.1.1 Persistent/Recurrent Urethral Discharge:

Persistent or recurrent symptoms of urethritis may result from poor compliance with prescribed medication, drug resistance, or re-infection. If there is history of unprotected sexual exposure even with regular but untreated sexual partners, re-treatment for both gonococcal and chlamydial infection is indicated. In some cases, there may be infection with Trichomonas vaginalis/ M.genitalium / U. urealyticum.

To treat Trichomonas vaginalis infection, use
Metronidazole 400 mg orally two times daily for seven days
OR
Tinidazole 500mg orally twice daily for five days
PLUS
To treat for M. genitalium infection, use
Azithromycin 500mg oral daily for six days

Advise the patient to abstain from sexual intercourse for seven days after single dose therapy or until completion of seven day regimen and till the symptoms have resolved and till the partners are treated.

When diagnosed, they should also receive testing for other infections including Syphilis and HIV.

Follow Up

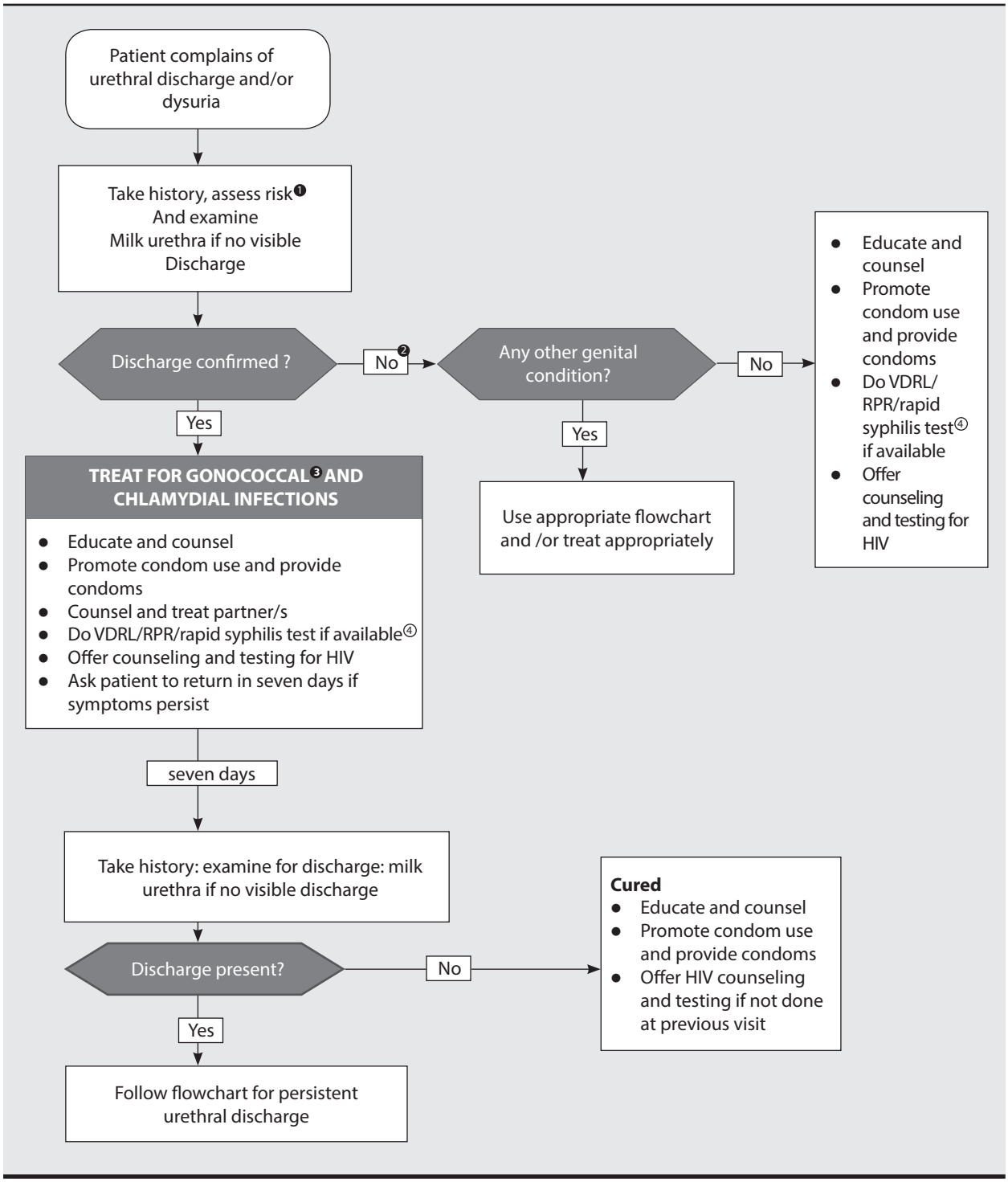
Follow up is advised if symptoms persists or recur after completion of therapy. Symptoms alone without signs or lab evidence are not a sufficient basis of retreatment. It could be due to chronic prostatitis/chronic persistent pelvic, perineal, penile pain/discomfort/irritative voiding symptoms. As men have high rate of reinfection within six months after treatment, repeat testing of all men diagnosed with chlamydia and gonorrhea is recommended three-six months after treatment regardless of whether partners are treated or not.

Management of partners

All sexual partners are recommended to get treatment.

Flow Chart- 2

Flow chart of Management of Urethral Discharge/Dysuria in Men

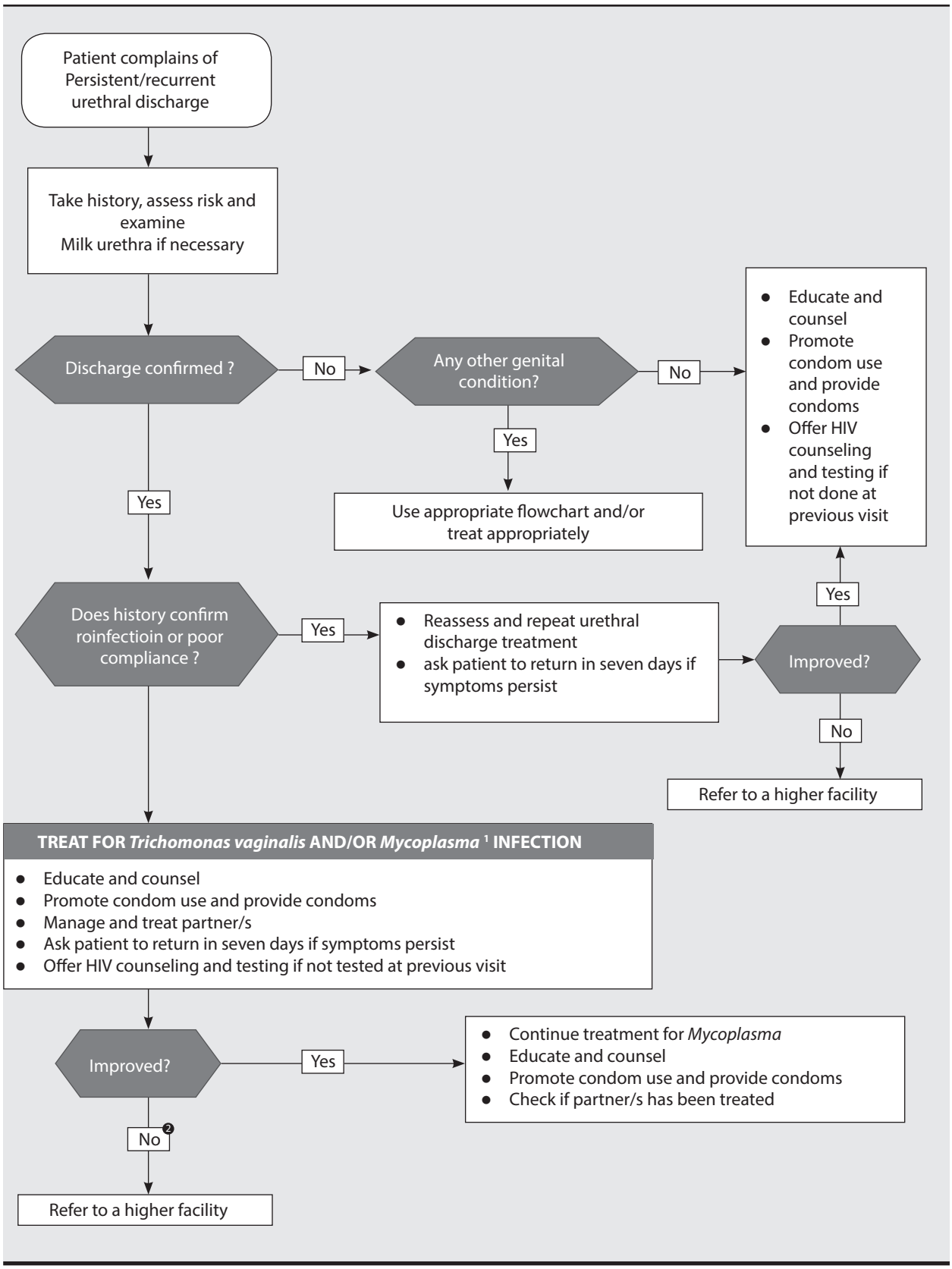


Note:

1. Assess risk for: unprotected sex , condom breakage or slippage, new partner
2. If feasible, encourage patient to return the following day after holding the urine for four hours and reassess for discharge
3. If microcopy is available, do Gram Stain on urethral smear. If Gram negative intracellular diplococcic are seen, treat for gonococcal and chlamydial infections. If no Gram negative intracellular diplococcic are seen, treatment for chlamydial infections only may be considered.
4. See flow chart for serological test of syphilis

Flow Chart- 3

Flow chart of Management of Persistent/recurrent Urethral Discharge in Men



Note:

1. Add treatment for Mycoplasma infection depending on the local situation
2. Consider infection with cephalosporin resistant Neisseria Gonorrhea

3.2. Scrotal Swelling Syndrome

Inflammation of testis (orchitis) and epididymis (epididymitis) or both (epididymo-orchitis) causes swelling and pain in testis and/or epididymis, which is mostly unilateral of acute onset, often with the tenderness of the epididymis and vas deferens. Occasionally, there could be erythema and edema of the overlying scrotal skin. The adjacent testis might also be inflamed. If not treated early and effectively, fibrous scarring and destruction of testicular tissue might lead to infertility.

SCORTAL SWELLING SYNDROME

Symptoms:
Painful swelling in the scrotal region usually unilateral
Sometimes associated with dysuria/discharge

Signs:
Swelling and tenderness of testis and epididymis
Occasionally urethral discharge

Causative organisms:
Neisseria gonorrhoeae
Chlamydia trachomatis

To treat Gonococcal infection, use

Ceftriaxone, 250 mg by intramuscular injection as a single dose

OR

Tab. Cefixim 400mg PO stat

PLUS

To treat for Chlamydia infection, use

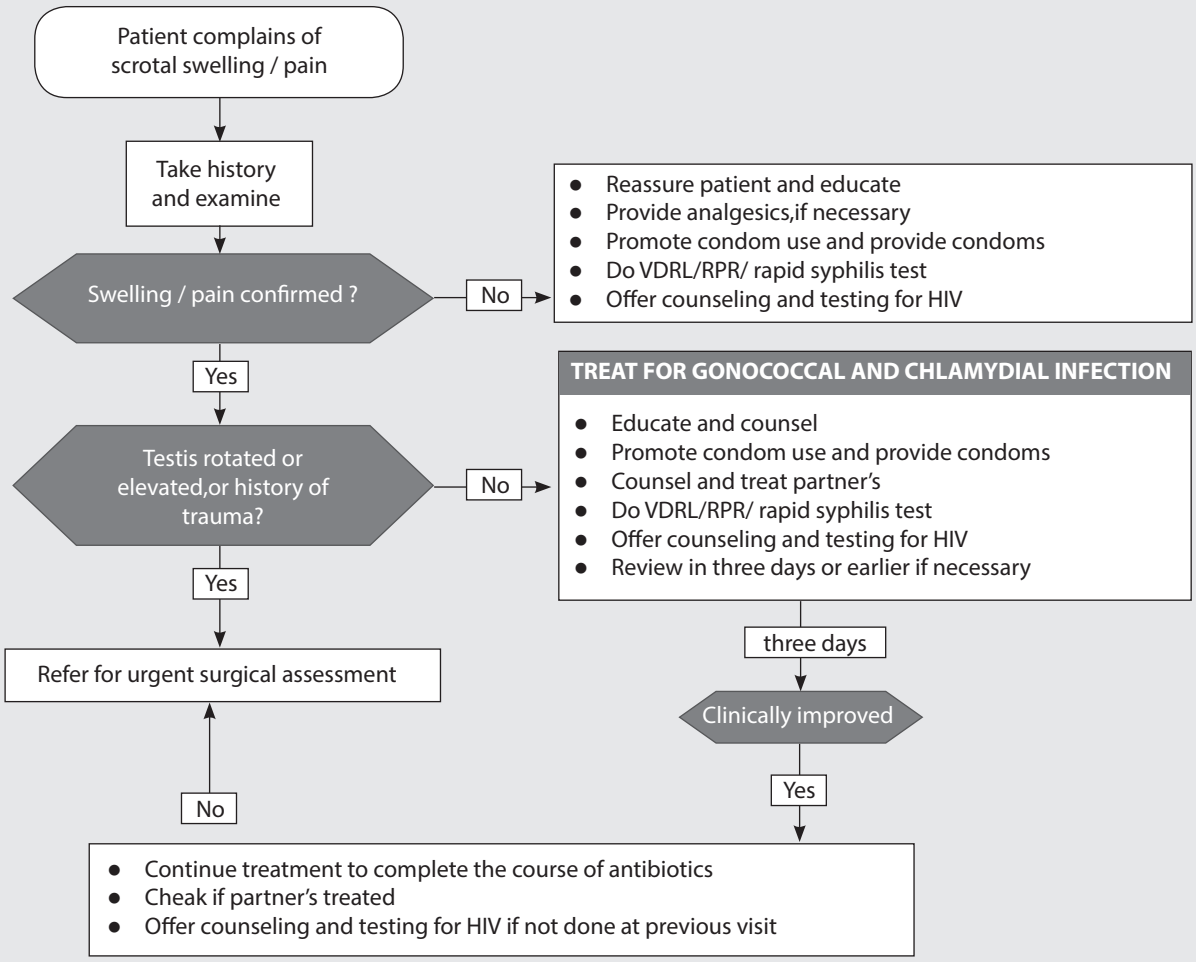
Doxycycline, 100 mg orally, twice daily for 10 days

Supportive therapy: bed rest, antipyretics and analgesics, and scrotal support until local inflammation and fever subside

Note: Surgical causes like trauma, torsion and other infections (*e.g.*, tuberculosis) should always be ruled out. Scrotal swelling can also be due to hydrocoele/ hernia/ varicocele/tumor

Flow Chart- 4

Flow chart of Management of Scrotal Swelling Syndrome



3.3. Vaginal Discharge Syndrome

Vaginal discharge is one of the most common complaints a woman presents with at any primary health care facility or gynecology outpatient department. It should be remembered that all vaginal discharge is not pathological. A healthy woman may have a variable amount of clear and white discharge from her vagina. The discharge usually increases before and after menstruation, and becomes more watery when a woman is in the middle of her menstrual cycle. It also increases during pregnancy, lactation, after sexual activity while taking oral contraceptive pills and when an intrauterine device is in place.

The abnormal or unusual vaginal discharge is due to infection of the vagina or cervix. Vaginal discharge can be only due to vaginal infection (trichomoniasis, candidiasis or bacterial vaginosis), but can also be due to cervical infection. Cervical infection is most often caused by gonorrhea and/or chlamydia. It is important to distinguish vaginitis from cervicitis, since cervicitis can lead to serious complications such as infertility, pelvic inflammatory disease and ectopic pregnancy. Additionally, the sexual partners of cervicitis patients must also be treated to avoid re-infection. The symptom of vaginal discharge is highly indicative of vaginal infection but poorly predictive of cervical infection. Syndromic management of vaginal discharge, especially among low risk women, is neither specific nor sensitive for cervical infections due to gonorrhea/chlamydia.

VAGINAL DISCHARGE SYNDROME

Symptoms:
- Discharge
- Itching
- Vaginal soreness
- Smelly discharge
- Burning while passing urine
- Pain during intercourse
- Occasionally inter menstrual vaginal bleeding

Signs:
- Discharge from the vaginal opening (discharge coming either from vagina or cervix)
- Discharge can be thin to thick/clear to pus-like/ scanty to profuse/Odorless to malodorous
- Cervical erosion/easily induced cervical bleeding

Causative organisms:
Vaginal infection is most often caused by:
- Trichomonas vaginalis
- Candida albicans
- Gardnerella vaginalis and Mobiluncus sp

Cervical infection is most often caused by:
- Neisseria gonorrhoeae (NG)
- Chlamydia trachomatis (CT)
- Occasionally by trichomoniasis and genital herpes-type 2.

To treat Cervicitis (due to NG and CT), use

Cefixime, 400mg orally, as a single dose

OR

Ceftriaxone, 250mg by intramuscular injection, as a single dose

PLUS

Doxycycline, 100mg orally, twice daily for seven days

OR

Azithromycin, 1gm orally, as a single dose

OR

Erythromycin, 500mg orally, four times daily for seven days

To treat Vaginitis (BV, TV), use

Metronidazole, 400mg orally twice daily for seven days

OR

Tinidazole, 500mg orally twice daily for five days

To treat for Candidiasis, use

Fluconazole, 150mg orally, as a single dose

OR

Miconazole or clotrimazole, 200mg vaginal pessaries intravaginally daily for three days

OR

Clotrimazole, 500mg vaginal pessaries intravaginally as a single dose

OR

Nystatin vaginal pessaries 100000IU intravaginally daily for 14 days

Note:
Doxycyclines are contraindicated in pregnancy.

Patient taking metronidazole should be cautioned to avoid alcohol for the duration of treatment and for at least 48 hours afterwards.

Although metronidazole has previously not been recommended for use in the first trimester of pregnancy, studies and meta-analyses have not demonstrated a consistent association between metronidazole use during pregnancy and teratogenic or mutagenic effect in newborns.

Risk assessment for vaginal discharge:

International workshop on STI case management in South Asia has recommended redefining the risk assessment. It is a method or tool to assess whether a woman with symptoms of vaginal discharge is likely to have cervical infection or not (Gonococcal/Chlamydial).

It is important to distinguish which women are having vaginitis or cervicitis or both and is to be treated accordingly. Vaginitis is more likely to produce symptoms whereas cervicitis is likely to produce more complications. If lab facilities are available, wet mount and gram stain has to be done. A finding of leucorrhoea >10 WBC per high power field on microscopic examination of vaginal fluid has been associated with gonococcal/chlamydial infection of the cervix in the absence of trichomoniasis. If not, she should be assessed by her risk factors for her probability of having sexually acquired cervicitis.

Risk assessment is positive if the woman has/had any one or more of the following:

- Symptomatic sexual partner
- More than one sexual partner in the last month
- Partner who has multiple sexual partner
- Personal knowledge of the woman and her environment keeping her at risk.

If the health worker comes from the same area he/she may know something about the woman's circumstances and whether she is likely to have the above-mentioned factors.

Management of vaginal discharge after risk assessment:

1. If risk assessment is negative and there is no clinical or lab evidence of cervicitis, treat the patient for vaginitis only.
2. If risk assessment is positive or there is no clinical or lab evidence of cervicitis, treat the patient for vaginitis and cervicitis
3. If risk assessment is negative but there is clinical and/or lab evidence of cervicitis, treat the patient for vaginitis and cervicitis.

For some unknown reason, cervicitis can persist despite several courses of antimicrobial therapy, not because of relapse or re-infection but due to persistent abnormality of vaginal flora, exposure to different types of chemicals, or idiopathic inflammation. As it might be the sign of upper genital tract infection, they should be assessed for signs of PID.

Follow up

If symptoms persist, clients are advised to return for re-evaluation because gonococcal and chlamydial infection have high rate of re-infection within six months of treatment. Therefore repeat testing of all women with chlamydia or gonococcal infection is recommended three-six months after treatment, regardless of whether partners were treated or not.

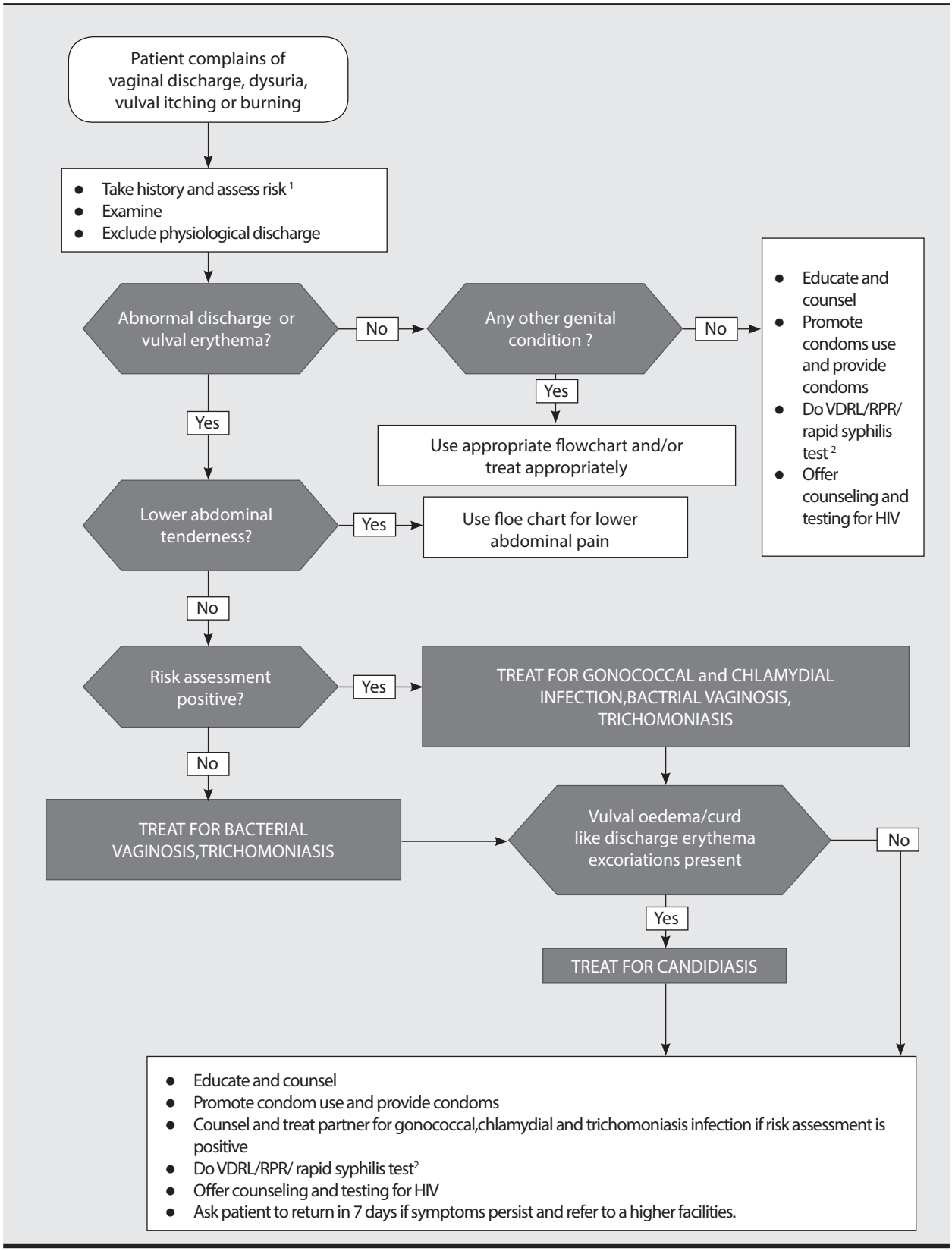
Management of partners

Partners should be notified and treated according to the type of STI for which the index patient received treatment. They are advised to abstain from sexual intercourse for seven days after single dose therapy or until completion of seven day regimen and till the symptoms have resolved, and to minimize the re-infection by abstaining from sexual intercourse till the partners are treated. Expedited partner treatment and patient referral are alternative approaches in treating male partners of women who have gonorrhea or chlamydia.

HIV positive client should get the same treatment as an HIV negative client. Treatment of cervicitis reduces the cervical HIV shedding from the cervix so it might reduce the HIV transmission to susceptible sex partners.

Flow Chart- 5

Flow chart of Vaginal Discharge Syndrome without speculum examination

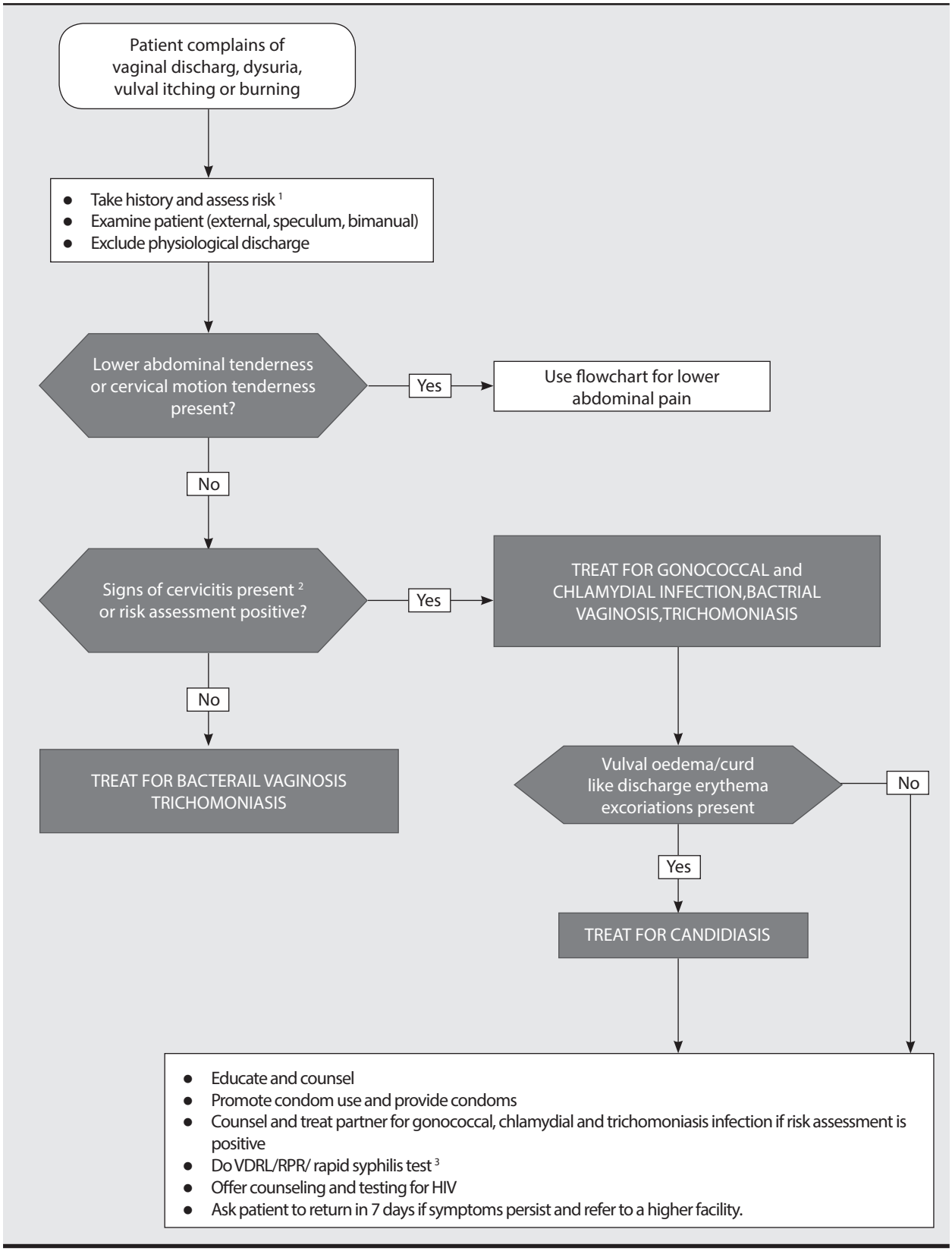


Note:

1. Risk factors such as multiple partners and partner with symptoms are frequently associated with cervicitis
2. See flow chart for serological test of syphilis

Flow Chart- 6

Flow chart of Vaginal Discharge Syndrome with bimanual/ speculum examination

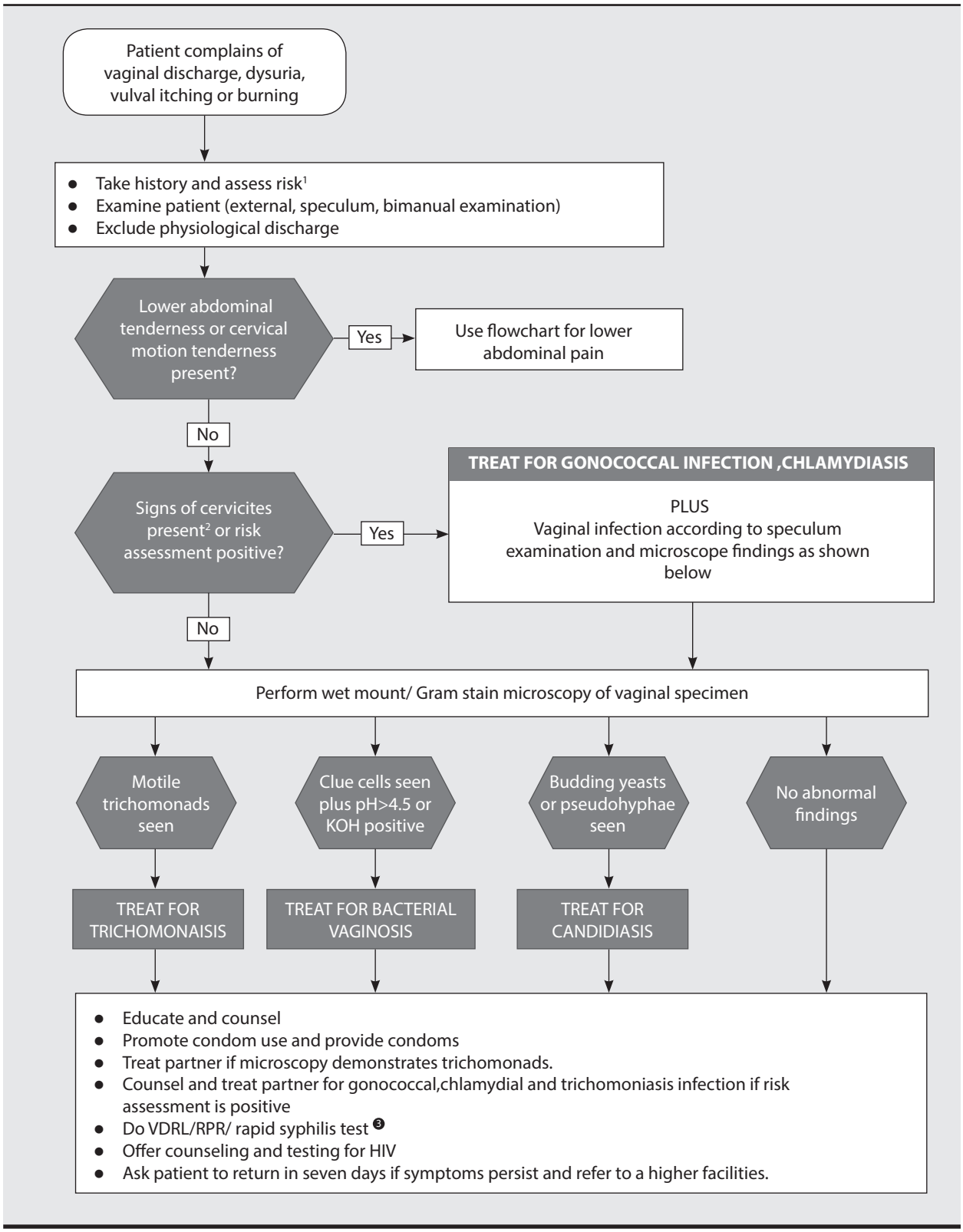


Note:

1. Risk factors such as multiple partners and partner with symptoms are frequently associated with cervicitis
2. Signs of cervicitis include cervical mucopus/erosion, easily induced cervical bleeding
3. See flow chart for serological test of syphilis

Flow Chart- 7

Flow chart of Vaginal Discharge Syndrome with bimanual/ speculum /microscopic examination



Note:

1. Risk factors such as multiple partners and partner with symptoms are frequently associated with cervicitis
2. Signs of cervicitis include cervical mucopus/erosion, easily induced cervical bleeding
3. See flow chart for serological test of syphilis

3.4 Lower Abdominal Pain Syndrome

The Lower Abdominal Pain Syndrome is also called Pelvic Inflammatory Disease (PID). It is an infection of the female upper genital tract (uterus, fallopian tubes, ovaries or pelvic cavities). It is a common complication of STI in women which occurs as an ascending infection through the cervix. However, other surgical emergencies for lower abdominal pain such as appendicitis, ectopic pregnancies should be ruled out.

If PID is not diagnosed and treated in time, it will produce consequences like ectopic pregnancy (with the possible risk of sudden death from internal bleeding), infertility, and chronic pelvic pain. PID can be differentiated from other causes of lower abdominal pain by abdominal and pelvic examination (bimanual and speculum) and can be managed with the help of flow charts.

LOWER ABDOMINAL PAIN SYNDROME

Symptoms:

- Pain lower abdomen (episodic or continuous)
- Fever low or high grade depending on severity
- Vaginal discharge
- Abnormal vaginal bleeding, pain during intercourse, pain during menstruation or pain during urination may occur.
- Sometimes nausea and vomiting

Signs:

- High temperature (above 38.5 degree Centigrade)
- Tenderness in lower abdomen
- Vaginal discharge

Speculum examination

- Cervical erosion/ulcer
- Abnormal (mucopurulent) discharge from the cervix

Bimanual Pelvic examination

Cervical excitation (pain on moving the cervix) may be present

Causative organisms:

- Neisseria gonorrhoeae
- Chlamydia trachomatis
- Anaerobic bacteria,G. vaginalis, Haemophilus influenze, enteric gram negative rods, M.hominis, U.urealyticum etc

To treat Gonococcal infection, use

Ceftriaxone, 250mg by intramuscular injection. As a single dose

PLUS

To treat Chlamydia infection, use

Doxycycline, 100mg orally, twice daily for 14 days

OR

Erythromycin, 500mg orally, 4 times a days for 14 days

PLUS

To treat Anaerobic infection, use

Metronidazole, 400mg orally twice daily for 14 days

Note: Seriously consider referring for hospitalization when:

- The diagnosis is uncertain and there is severe illness, nausea, vomiting, high fever > 38°C
- Appendicitis or ectopic pregnancy cannot be ruled out
- Pelvic abscess/peritonitis is suspected
- The patient is pregnant
- The patient cannot tolerate or follow outpatient treatment
- The patient fails to respond to outpatient therapy.

Follow-up:

Outpatients with PID should be followed up at 3 to 7 days or sooner if necessary, and should be referred to a nearby hospital for admission if condition does not improve.

Inpatient (Hospitalized patients) Treatment (for severe PID)

Ceftriaxone or other third generation Cephalosporin IV daily*

PLUS

Doxycycline100 mg oral twice a day for 14 days

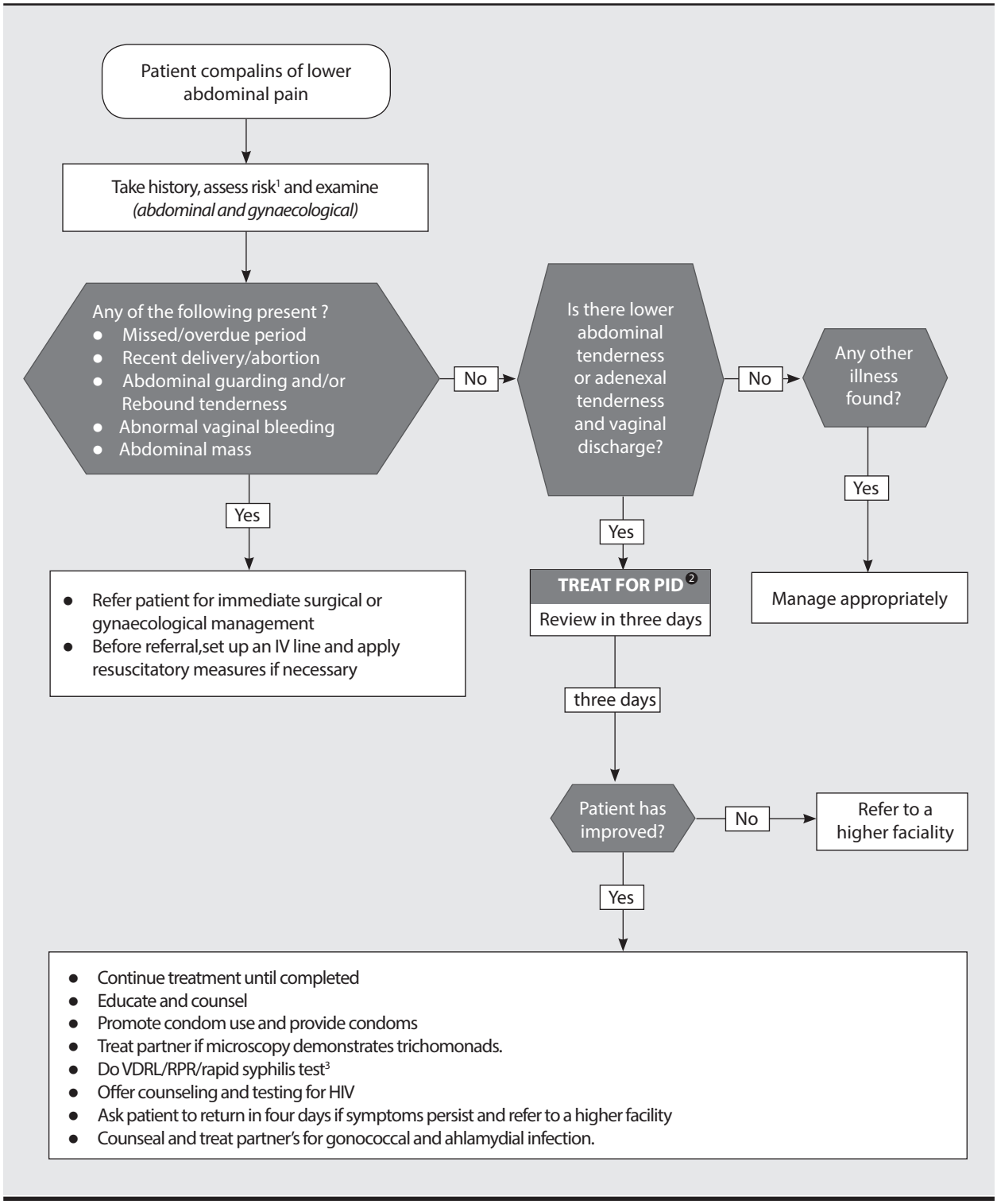
PLUS

Metronidazole 400 mg thrice a day for 14 days

** (Dose and duration to be determined on the basis of severity and clinical judgment)*

Flow Chart- 8

Flow chart of Lower Abdominal Pain Syndrome



Notes:

1. Risk factors such as multiple partners and partner with symptoms are frequently associated with cervicitis
2. Patient with acute PID should be referred for hospitalization, when
   - they have severe illness, nausea and vomiting, and /or high degree fever >38°C
   - the patient is pregnant
   - the patient is unable to follow or tolerate outpatient regimen
   - the patient has failed to respond the outpatient therapy, or
   - there are clinical signs of tubo-ovarian abscess or pelviv peritonitis
3. See flow chart for serological test of syphilis

3.5 Neonatal Conjunctivitis Syndrome

Neonatal Conjunctivitis Syndrome, also called Opthalmia Neonatorum, is a bilateral or unilateral erythema/swelling of eyelids with purulent discharge due to transmission of infected mother (cervicitis) to child during delivery within 21 days of birth. If this condition is not treated early, it may lead to blindness of the child due to gonorrhea. Chlamydia can also cause pneumonia, which may be fatal and cause impaired vision. So it is very important that all pregnant women be properly screened for cervicitis both by assessing risk factors and by laboratory tests for possible STI and preventive measures be taken immediately after the child's birth.

NEONATAL CONJUNCTIVITIS SYNDROME

Clinical features:

The clinical features may start from the first day up to the 21 days.

- Swelling of the lids
- Conjunctival congestion
- Discharge from the eye
- Difficulty in opening the lids
- Crusting and ulceration around the lid margin

Causative organisms:

- N. gonorrhoeae
- Chlamydia trachomatis
- Rarely – other bacterial or viral infections

Diagnosis:

Diagnosis is based on the history of STI in the mother or her partners, risk assessment for STI and the clinical findings on the eyes of the baby.

To treat Gonococcal conjunctivitis, use

Ceftriaxone, 50 mg/kg by intramuscular injection as a single dose,

to a maximum of 125 mg total dose

OR

Spectinomycin, 25 mg/kg by intramuscular injection as a single dose,

to a maximum of 75 mg total dose

PLUS

To treat Chlamydial conjunctivitis, use

Erythromycin syrup, 50 mg/kg per day orally, in four divided doses

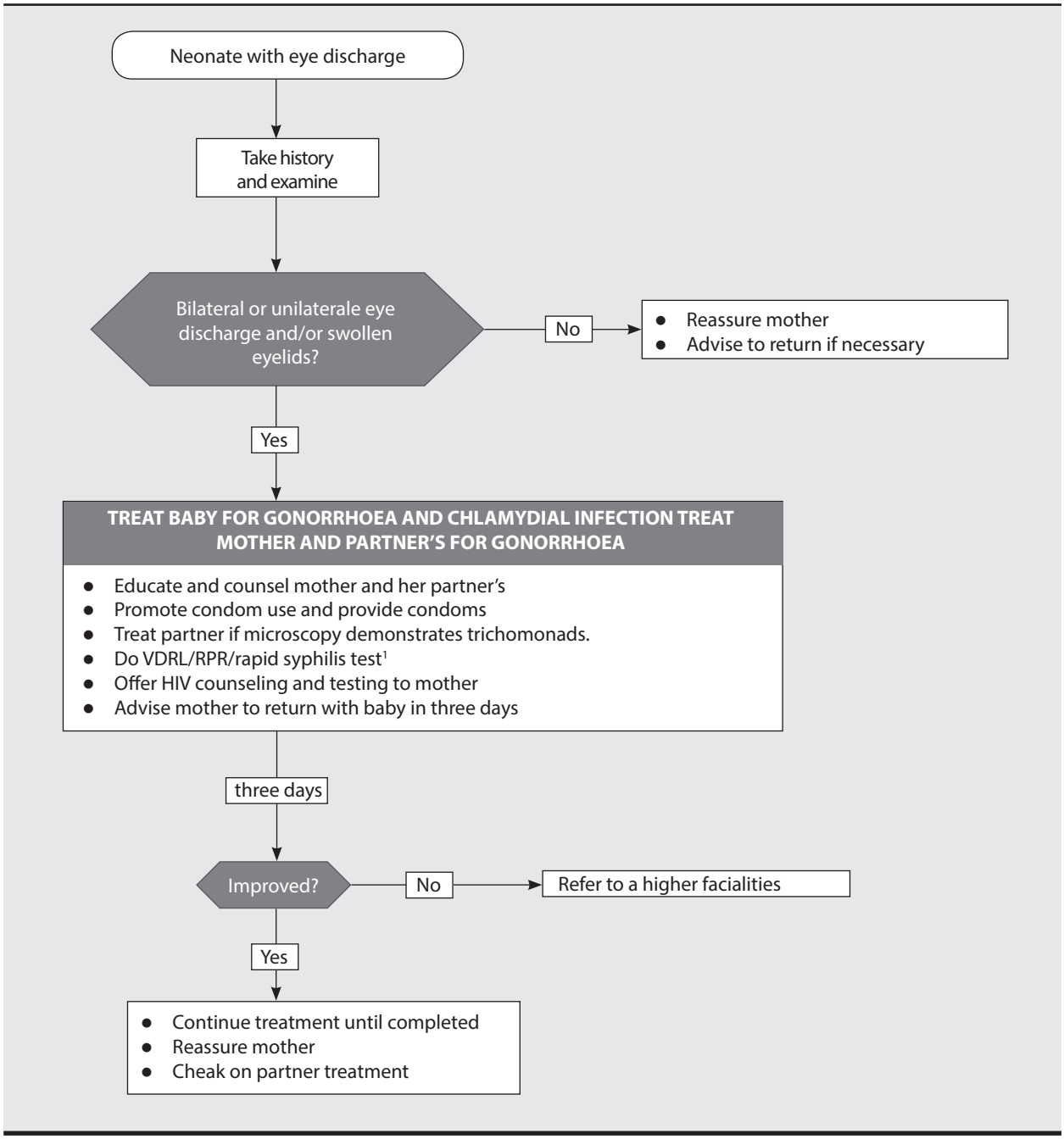
for 14 days

Note:

- When there is visible discharge, advise the mother to clean the baby's eyes starting from the inner to the outer aspect of the eyes with boiled and cooled water or sterile saline (if available) using a clean, soft cotton wick.
- Single-dose ceftriaxone and kanamycin have proven efficacy; therefore, addition of tetracycline eye ointment to these is of no documented benefit.
- Topical antibiotic treatment alone is inadequate for the treatment of chlamydial infection, and would not take care of infection in other sites such as chlamydial pneumonia.
- The mothers of infants who have gonococcal or chlamydial conjunctivitis should be treated for these infections appropriately, and their sex partners should also be evaluated and treated.
- An association between Erythromycin and infantile hypertropic pyloric stenosis (IHIS) has been reported in infants aged <six weeks who were treated with this drugs, Infants treated with erythromycin should be followed for signs and symptoms of IHPS.

Flow Chart- 9

Flow chart of Neonatal Conjunctivitis Syndrome



Notes:

1. See flow chart for serological test of syphilis

3.6 Genital Ulcer Disease Syndrome (GUD)

GUD syndrome is a common STI syndrome presenting with genital ulcers with or without inguinal lymphadenitis and can be caused by several organisms. More than one disease is detected in three to 10 percent of patients with GUD. The clinical differential diagnosis is not accurate as there are multiple causes. The clinical manifestations and pattern of genital ulcer disease may be further altered in the presence of HIV infection. Syphilis and HIV screening should be done at the time of ulcer presentation and again after three months at the end of the window period of both diseases.

GENITAL ULCER DISEASE SYNDROME

Symptoms

- Soreness or pain
- Ulcers – single or multiple in the genitalia
- Unilateral or bilateral inguinal lymphadenopathy

Signs

- Ulcers may be single or multiple, superficial or deep, clean or dirty looking.
- May be associated with enlarged, tender or non-tender, unilateral or bilateral, soft or rubbery lymph nodes.
- Occasionally, there may be non-itchy maculo-papular rashes all over the body including palms and soles.(sign of secondary syphilis)

Where to look for ulcers:
In men:
External genitalia including the inner surface of the foreskin and the part it normally covers.
In women:
Examine the skin of the external genitalia and at the mucus surfaces by separating the labia.
In both sexes:
Ulcers may be present at, perineum, peri-anal region, anus or oral cavity.

Causative Agents

- Treponema pallidum
- Herpes simplex virus (HSV)
- Haemophilus ducreyi
- Klebsiella granulomatis(previously Calymmatobacterium granulomatis) – causative organism of granuloma inguinale (donovanosis)

Treatment for Syphilis

Benzathine benzylpenicillin G,

2.4 million IU by intramuscular injection as a single dose

OR

Procaine benzylpenicillin,

1.2 million IU by intramuscular injection, daily for 10 consecutive days

PLUS

Treatment for Chancroid

Azithromycin 1 gram oral single dose

OR

Erythromycin 500 mg six hourly orally for seven days

OR

Ciprofloxacin 500 mg twice daily for three days

OR

Inj. Ceftriaxone 250 mg IM single dose

To treat for the first clinical episode of Genital herpes, use

Acyclovir, 400 mg orally, three times daily for seven days

OR

Acyclovir, 200 mg orally, five times daily for seven days

For severe disease#

Acyclovir, 5—10 mg/kg IV, every eight hours for five—seven days or until clinical resolution

is attained

To treat for a recurrent episode of Genital herpes, use

Acyclovir, 400 mg orally, three times daily for five days

OR

Acyclovir, 200 mg orally, five times daily for three days

OR

***To suppress recurrent episodes of Genital herpes, use**

Acyclovir, 400 mg orally, twice daily, for one year

OR

For severe genital herpes and co-infection with HIV

Acyclovir, 5–10 mg/kg IV, every eight hours for five–seven days or until clinica resolution is attained

**If the patient complains of repeated recurrences, "suppressive therapy" is indicated.*

 # With HIV co-infection.

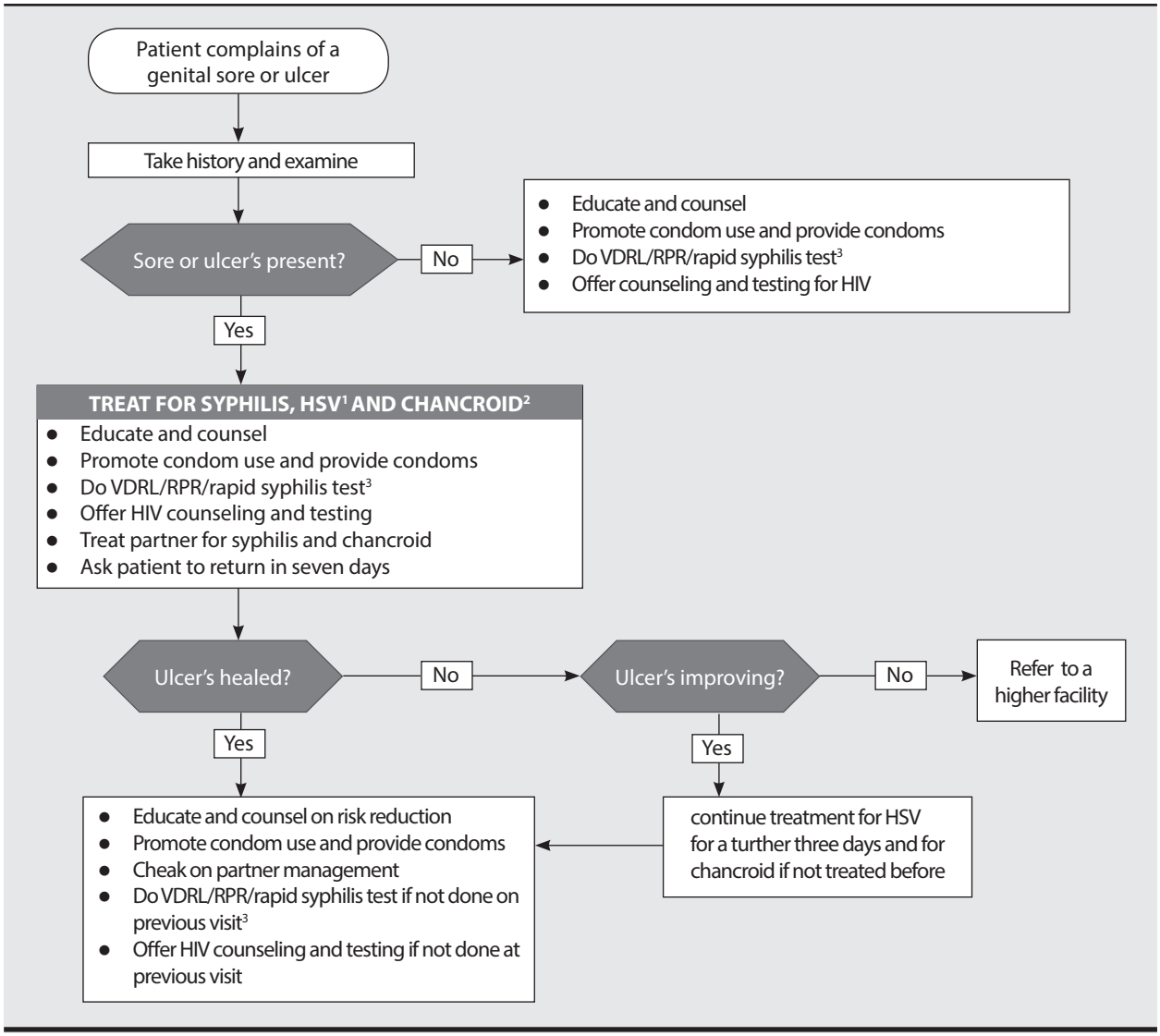
As topical therapy with acyclovir only produces minimal shortening of the duration of symptomatic episodes and is not recommended.

Advise all patients presenting with genital ulcer/s on the basic care of lesion.

Management of genital ulcer disease	Management of genital herpes simplex
• Treat for syphilis, genital herpes, and, depending upon local epidemiology, either chancroid, granuloma inguinale or lymphogranuloma venereum • Aspirate any fluctuant gland if required through surrounding healthy skin(surgical incision should be avoided) • Educate and counsel on risk reduction • Offer syphilis serological testing and HIV serological testing where appropriate facilities and counseling are available • Promote and provide condoms • Review in seven days	• Advise on basic care of the lesion (keep ulcers clean and dry) and genital hygiene • Provide or prescribe specific antiviral treatment for herpes according to local policy • Educate and counsel on compliance, risk • reduction, natural history of HSV-2 infection, • sexual transmission, prenatal transmission and risk of HIV transmission or acquisition • Offer serological testing for syphilis • and HIV where appropriate facilities and counseling are available • Promote and provide condoms • Advise to return in seven days or sooner if there is clinical deterioration

Flow Chart- 10

Flow chart of Management of Genital Ulcer Disease Syndrome



Notes:

1. If history of recurrent episodes of ulcer/s present, consider HSV suppressive therapy if >6 recurrences per year
2. Treat for chancroid where it is prevalent
3. See flow chart for serological test of syphilis

3.7 Inguinal Bubo Syndrome

Inguinal bubo syndrome is characterized by painful swelling in the groin and caused by different groups of organisms causing STI.

INGUINAL BUBO SYNDROME

Symptoms

- Pain/swelling in the inguinal region with or without ulcers in the genitalia.

Signs

- Unilateral/bilateral, tender/non-tender, single/multiple, solid/fluctuant lymph node swellings in the inguinal region.
- Discharging sinus may be present.
- Ulcer in the genitalia may be present.

Note: Infections of the lower limb and other non-STI causes can also cause swelling of the lymph nodes and these causes should be ruled out.

Common causative organisms:

- Haemophilus ducreyi
- Chlamydia trachomatis (serovars L1 - L3)

To treat Chancroid, use

Azithromycin, 1 g orally as a single dose

OR

Inj Ceftriaxone 250mg IM Stat

OR

Ciprofloxacin, 500 mg orally, twice daily for three days

To treat for LGV, use

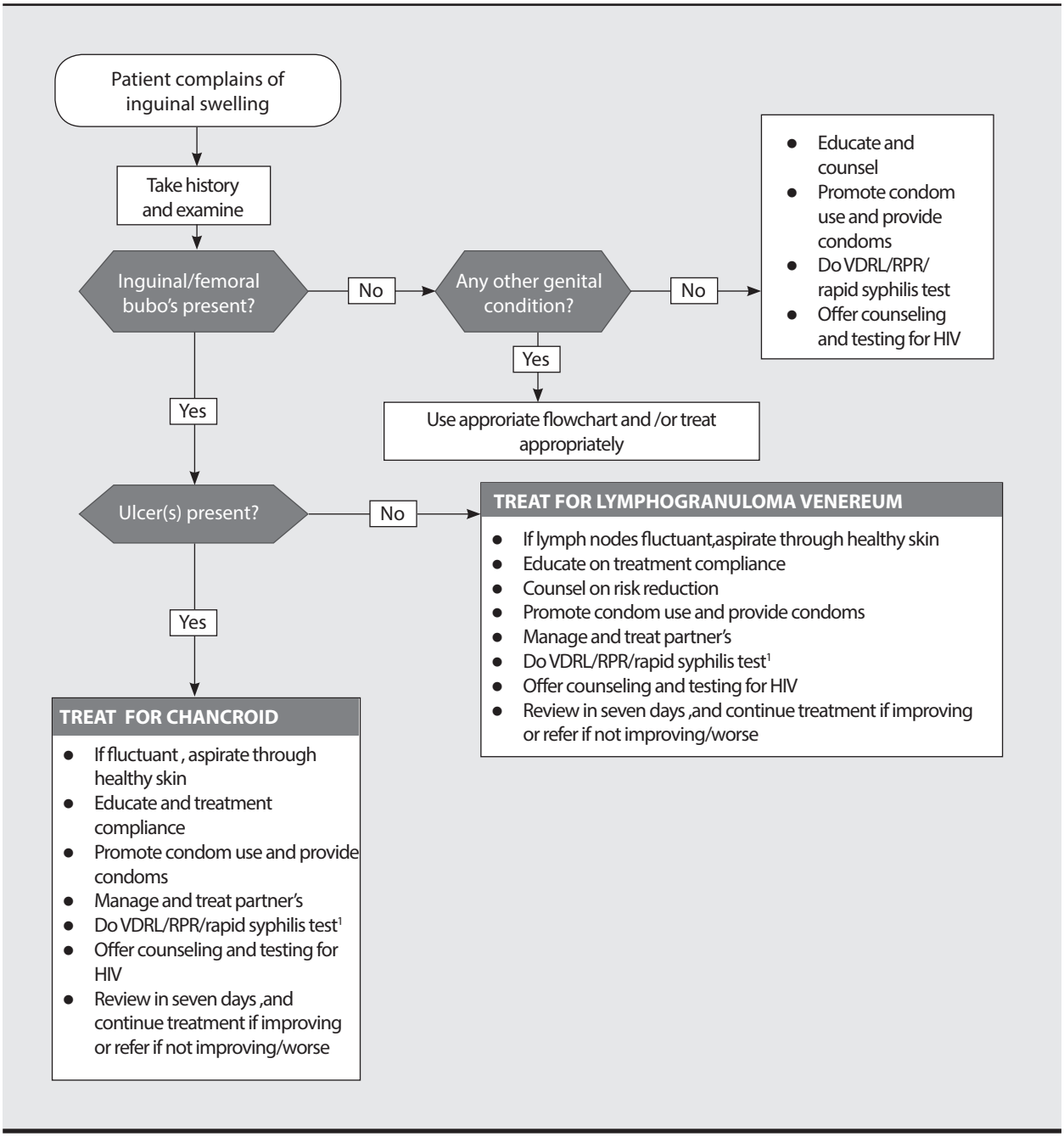
Doxycycline, 100 mg orally, twice daily for 14 days

OR

Erythromycin, 500 mg orally, four times daily for 14 days

Flow Chart- 11

Flow chart of Inguinal Bubo syndrome



Note:

1 See flow chart for serological test of syphilis.

- Some cases might require longer treatment than 14 days as recommended above.
- Fluctuant lymph node should be aspirated through healthy skin. Incision and drainage or excision of lymph nodes may delay healing so should not be attempted.
- Where there is doubt and/ or treatment failure referral for diagnostic biopsy is advised.

Common Sexually Transmitted Infections

STI are a group of infections which are primarily transmitted through sexual contact from one individual to another. They are one of the major public health problems because of their morbidity, social impact and relationship with HIV and AIDS. Comprehensive management of STI has a significant role in preventing HIV.

According to the type of infective agents involved, STI can be classified as bacterial, viral, protozoal, fungal or parasitic. STI may be asymptomatic or symptomatic. Clinical features of STI may differ between males and females; some STI may remain without symptoms and may produce significant complications. With the exception of some viral STI, many STI are curable, provided they are properly diagnosed and treated

Symptoms of STI

Male:
- Dysuria, burning micturation
- Frequency of urine
- Urethral discharge
- Genital ulceration
- Abnormal growth or mass in genital /anal area
- Itchy/burning lesions in genital/anal area
- Acute scrotal swelling associated with pain
- Inguinal lymphadenopathy
- Perianal pain
- Anal discharge

Female:
- Dysuria, burning micturation
- Frequency of urine
- Vaginal discharge
- Genital ulceration
- Abnormal growth or mass in genita/anal area
- Lower abdominal pain
- Vulval itching
- Dyspareunia
- Inguinal lymphadenopathy
- Perianal pain
- Anal discharge

Etiological agents of STI

Bacterial	Neisseria gonorrhea,Chlamydia trauchomatis,Haemophilus ducreyi, Klebsiella granulomatis, micoplasma
Spirochete	Trepanoma pallidum
Viral	Hepatitis, Herpes Simplex, Human Papilloma, Molluscum contagiosum
Protozoal	Trichomonas vaginalis
Parasites	Pubic lice, Sarcoptes scabei
Fungal	Candida albicans

Reproductive Tract Infections (RTI)

Some RTI are due to overgrowth of organisms that are normally present in the vagina (endogenous) and may produce some symptoms or may have complications.

- Candidiasis (fungal yeast infection)
- Bacterial vaginosis (caused by group of an aerobic bacteria like microplasma hominis and gardenerella vaginalis)

They need not to be sexually transmitted.

Note: *There are different types of* ***hepatitis virus infections*** *that are commonly transmitted sexually and may remain either asymptomatic or may manifest as hepatitis. While hepatitis does not produce any symptoms and signs in the genitalia, after several years, some may have various complications, like hepatic failure or even hepatic carcinoma and liver cirrhosis.*

4.1. Bacterial

4.1.1. Gonorrhoea

It is caused by Neisseria gonorrhea and diagnosed by demonstrating Gram-negative intracellular diplococci within PMNLs on microscopic examination of genital secretions. It is characterized clinically in males through urethral discharge and dysuria and in females, it is initially asymptomatic but may cause vaginal discharge, which later on manifests with complications.

Clinical features:

Male: Almost 90 percent are symptomatic and experience:

- burning micturition/dysuria
- purulent discharge from urethra
- painful scrotal swelling (in the later stages)

Female: 80 to 90 percent are asymptomatic in the early stage but can still transmit the infection to their sexual partners. The symptom of gonococcal infection in women is that of vaginitis and /or cervicitis.

Laboratory diagnosis:

Gram staining of urethral swabs from males or endocervical swabs from females. Smears show many polymorphonuclear leukocytes (PMNLs) or pus cells with intracellular Gram-negative diplococci.

Treatment of gonorrhea: Uncomplicated ano-genital infections (Infection of urethra, cervix, rectum)**,**

Ceftriaxone, 250 mg IM, single dose
(It is the preferred treatment for adults, adolescents and pregnant women with uncomplicated gonorrhea infection. Dual therapy with a regimen effective against C.trauchomatis is routinely recommended regardless of Chlamydia results.)

If not an option, then only

Cefixime, 400 mg oral single dose

Or

Spectinomycin 2.0 g IM single dose(In case of resistance to cephalosporins)

PLUS

Tab Azithromycin 1gm PO Stat *

***Since we cannot rule out chlamydia, Azithromycin should be given with both ceftriaxone and cefixime.**

Follow up after one week (or in next visit).

Management of partners and counseling:
Sexual abstinence is strongly advised for at least one week after treatment has been completed.

It is recommended that contact-tracing and treatment of sexual partners be conducted.

Alternate regimen
(Either of the following single dose cephalosporin)

Cefotaxime 500 mg IM stat

or

Cefpodoxime 400 mg oral stat

Or

Cefuroxime axetil 1gm oral stat

or

Spectinomycin, 2 gm IM stat, single dose

Pharyngeal infection

Inj. Ceftriaxone 250 mg IM Stat (It is the only recommended regimen)

Plus

Treatment for Chlamydial infection

Epididymitis:

Inj. Ceftriaxone 250 mg IM Stat

Plus

Treatment for Chlamydial infection (doxycycline 100 mg twice a day for 10 days)

Follow-up after one week
Advise sexual abstinence for up to one week after initiation of therapy provided symptoms have resolved and partner is also adequately treated.

Note: Persistence of pain, discomfort or irritation during voiding urine beyond three months is a feature of chronic prostatitis and or chronic pelvic pain syndrome

Disseminated infection

Ceftriaxone, 1 gm IV, once daily

or

Inj. Cefotaxime 1 gm IV every eight hourly

or

Spectinomycin, 2 gm, IM two times daily

Treatment should be continued for 24-48 hours after clinical improvement then switched to one of the following oral regimes to complete at least one week of antimicrobial therapy.

Cefixime 400 mg oral twice a day

Or

Cefpodoxime 400mg oral twice a day

Meningitis - As above but for two weeks
Endocarditis - As above but for four weeks

Gonococcal ophthalmia
In adults - As for ano-genital infections

In Neonates –

Ceftriaxone, 50mg/kg IM, single dose not exceeding to a maximum of 125 mg

In addition, careful cleaning of the infected eye with sterile saline should be carried out at two to three hour intervals until discharge ceases. Care should be taken not to transfer infection from an affected to an unaffected eye.

4.1.2 Chlamydia

In developing countries, one of the most common infections of the genitalia is Chlamydial, which often coexists/appears with other STI, especially Neisseria gonorrhea. Depending on the serovar of Chamydia trachomatis, different symptoms will develop. Serovar A-C causes trachoma, while Serovar D-K causes non gonococcal urethritis and Serovar L1, L2, L3 causes lymphogranuloma venereum. Most genital chlamydial infections produce signs and symptoms similar to mild gonorrhoea

Clinical features:
Dysuria with muco-purulent urethral discharge in males

Cervicitis:
May be asymptomatic or associated with lower abdominal pain and or vaginal discharge (originating from the cervix)

Diagnosis:
Mostly done on clinical grounds and with exclusion of gonococcal infection. Urethral or endo-cervical smear showing Polymorphonuclear leucocytes (PMNL) or pus cells >5 and >25 respectively in the presence or absence of gram negative intracellular diplococci (GNID), should be presumptively diagnosed and treated for Chlamydia trachomatis.

Treatment for Chlamydia anogenital infections:

Azithromycin 1.0 g orally, single dose

OR

Doxycycline 100 mg orally twice a day for seven days

OR

Tetracycline 500mg four times daily for seven days

OR

Erythromycin 500 mg orally four times daily for seven days

Treatment for Chlamydia in pregnant women:

Azithromycin 1.0 g 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 Conjunctvitis
Erythromycin base syrup 50 mg/kg /day orally four times a day for two weeks

Chlamydial Pneumonia
Erythromycin syrup 50 mg/kg /day orally four times a day for three weeks

Management of sex partners and counseling:
Advise sexual abstinence for at least one week and until treatment has been completed, symptoms have resolved, and the patient's sex partner or partners have been treated.

Follow-up:
Ask the patient to come back after one week if symptoms persist.

4.1.3 Chancroid

Chancroid is an ulcerative STI caused by a Gram-negative bacillus called Haemophilus ducreyi.

Clinical manifestations:
Chancroid symptoms include non-indurated or soft, painful genital ulcers with purulent base (usually multiple), with or without tender unilateral inguinal lymphadenopathy, which becomes fluctuant (bubo) in both male and female.

- Fever or other systemic symptoms are often present
- History of recent sexual exposure

Treatment for Chancroid, use

Azithromycin, 1 g orally, as a single dose

OR

Ceftriaxone, 250 mg by intramuscular injection as a single dose

OR

Ciprofloxacin, 500 mg orally, twice daily for three days

OR

Erythromycin base, 500 mg orally, four times daily for seven days

Note: *Some cases may require therapeutic or diagnostic needle aspiration of an infected fluctuant lymph node (bubo) through healthy skin.*

Management of partners and counseling:
- Advise sexual abstinence until treatment is complete and lesions are completely healed.
- Examine all partners contacted within one month prior to onset of the illness and treat partners contacted within 10 days preceding onset of symptoms.
- Strongly encourage partners for RPR/HIV testing.

Follow-up:

Re-examine weekly until healed, repeat syphilis serology and HIV serology (if HIV-negative or not tested at time of diagnosis) within three months.

Note: *Ciprofloxacin is contraindicated in pregnancy.*

4.1.4 Lymphogranuloma Venereum (LGV)

Lymphogranuloma venereum (LGV) is an STI caused by C. trachomatis serovars L1, L2, or L3. It is characterized by transient primary genital lesion followed by multilocular suppurative regional lymphadenopathy.

Clinical features:

The most common clinical manifestation of LGV among heterosexuals is tender inguinal and/or femoral lymphadenopathy that is most commonly unilateral. Women and homosexually active men may have hemorrhagic procto-colitis or inflammatory involvement of perirectal or perianal lymphatic tissues resulting in fistulas and strictures. A self-limited genital ulcer sometimes occurs at the site of inoculation. However, by the time patient seek care, the ulcer usually has disappeared. It is usually associated with systemic symptoms like fever.

The most common presenting picture in heterosexual men is the inguinal bubo syndrome which is characterized by painful inguinal lymphadenopathy beginning 2- 6 weeks after exposure.

Diagnosis:

The diagnosis of LGV is usually made by complication of untreated infection include fistula in ano, peri rectal abscess, recto vaginal, recto vesicle and ischiorectal fistula. Rectal stricture is a late complication. Lymphatic obstruction may produce elephantiasis.

Treatment for LGV

Doxycycline, 100 mg orally, twice daily for 14 days

OR

Erythromycin, 500 mg orally, four times daily for 14 days

OR

Tetracycline, 500 mg orally, four times daily for 14 days

Pregnancy:

Pregnant and lactating women should be treated with erythromycin.

HIV Infection:

LGV in HIV infected persons should receive the same regimens as those who are HIV-negative. However, prolonged therapy may be required and delay in resolution of symptoms may occur.

Follow-up:

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

Management of sex partners and counseling:

Persons who have had sexual contact with a patient who has LGV within the 30 days before onset of the patient's symptoms should be examined, tested for urethral or cervical chlamydial infection, and treated.

4.1.5 Granuloma Inguinale (Donovanosis)

Granuloma inguinale is a chronic progressive, destructive genital ulcerative disease caused by intracellular gram negative bacterium Klebsiella granulomatis (formerly Calymmatobacterium granulomatis).

The disease is rare in Nepal but is endemic in certain tropical and developing countries including India, Papua New-Guinea, central Australia, and southern Africa.

Clinical features:

The disease commonly presents as painless, progressive skin nodule that slowly becomes a round, beefy red moist smooth foul smelling ulcerative lesion without regional lymphadenopathy. The lesions are highly vascular ("beefy red appearance") and bleeds easily on touch. In the long run, they may also present as hypertrophic, necrotic, or sclerotic variants.

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. The lesions may develop secondary bacterial infection or may be co-infected with another sexually transmitted pathogen.

Treatment:

Treatment halts progression of lesions, although prolonged therapy may be required to permit granulation and re-epithelialization of the ulcers. Relapse can occur 6 to 18 months after apparently effective therapy.

Treatment for Granuloma Inguinale

Azithromycin, 1 g orally on the first day, then 500 mg orally, once a day

OR

Doxycycline, 100 mg orally, twice daily

OR

Erythromycin, 500 mg orally, four times daily

OR

Tetracycline, 500 mg orally, four times daily

OR

Trimethoprim 80 mg/**sulfamethoxazole** 400 mg, two tablets orally, twice daily

(Treatment should be continued until all the lesions have completely epithelialized.)

Follow-up:

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

Management of sex partners and counseling:

Persons who have had sexual contact with a patient who has granuloma inguinale within the 60 days before onset of the patient's symptoms should be examined, and treated.

4.1.6. Syphilis/Management of RPR

Syphilis is an infectious disease, mostly transmitted sexually and caused called Treponema pallidum.

Types of Syphilis

1. Acquired Syphilis:

a) Early (Less than two years duration)
   - Primary Syphilis
   - Secondary Syphilis
   - Early latent Syphilis

b) Late (More than two years duration)
   - Late latent Syphilis
   - Tertiary Syphilis

2. Congenital

a) Early (Less than two years duration)
b) Late (More than two years duration)

Primary Syphilis:

Primary Syphilis is characterized by an initial lesion called a primary chancre, which appears at the site of contact following an incubation period of about three weeks (nine to 90 days).

Classical Chancre:

Single, typically round, non-tender, clean and indurated with a slightly elevated and well-demarcated border. Usually bilateral, non-tender inguinal lymph node develops one to two weeks after the primary chancre. Untreated chancre heals within three to eight weeks and may pass into secondary syphilis.

Secondary Syphilis:

Starts from six to eight weeks of infection

Common symptoms/signs are:

- Usually non itchy generalized skin rashes including palms and soles
- Generalized lymphadenopathy
- Mucous patches
- Condylomata lata
- Patchy hair loss (moth-eaten alopecia)
- Diffuse hair loss (is more common than patchy-moth eaten appearance)

Latent Syphilis:

Early latent Syphilis

This is defined as syphilis is confirmed by a positive serological test without clinical signs (duration less than two years after contracting infection).

Late latent Syphilis

Duration of infection is greater than two years**.** This is the arbitrary cut-off period for being infectious to others. It is not infectious, except in the case of pregnant women.

Tertiary Syphilis:

- Syphilitic Gumma
- Cardiovascular – the most important cause of mortality
- Neurosyphilis
  - Symptomatic neurosyphilis
  - Asymptomatic neurosyphilis

Congenital Syphilis:

Congenital Syphilis is through vertical transmission
It can also be of two types:

- Early congenital Syphilis
- Late congenital Syphilis

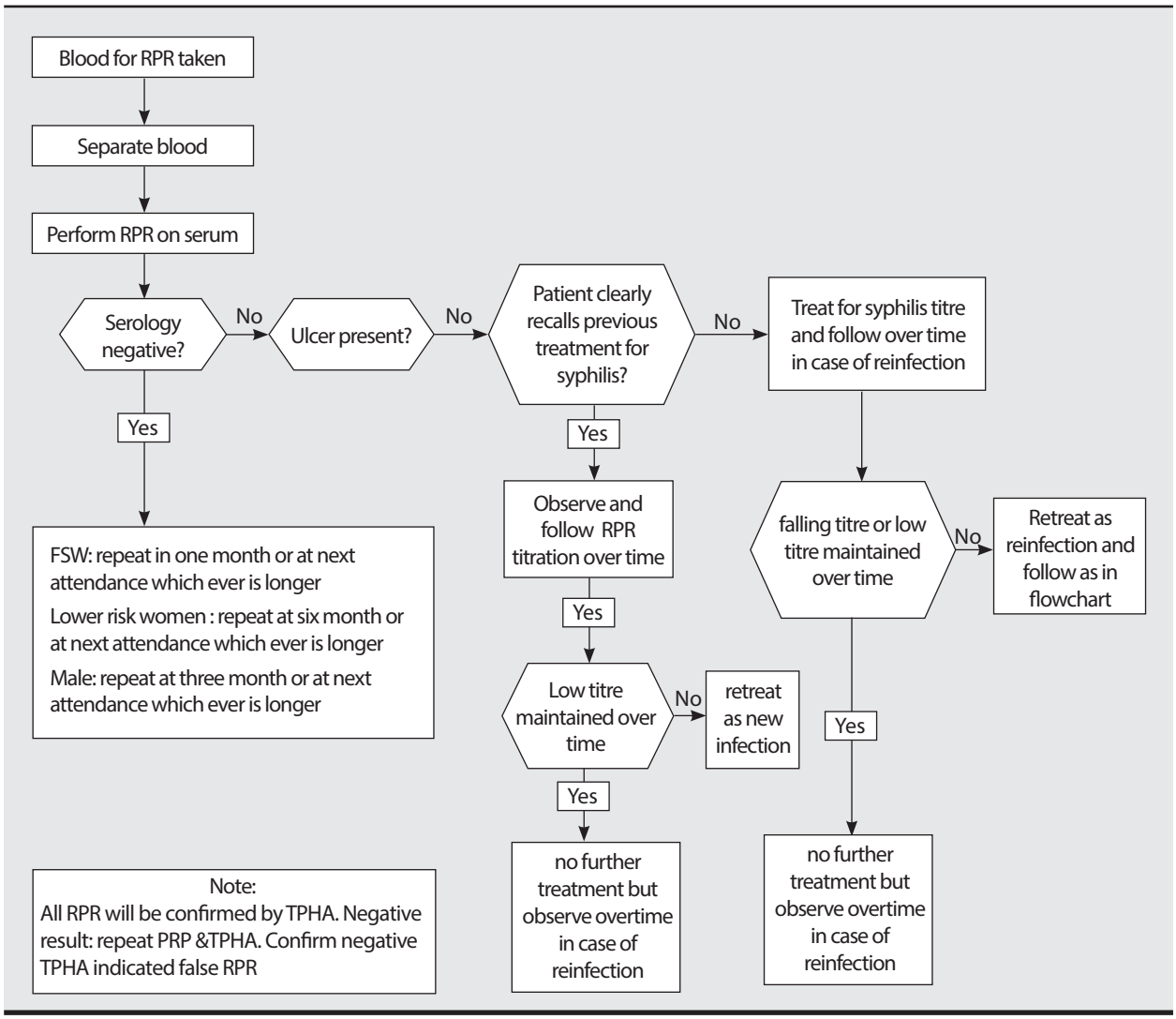
Congenital Syphilis is characterized by:

- Depression of nasal bridge
- Hutchinson's incisors (teeth)
- Perforation of hard palate

Management of Syphilis:

Flow Chart- 12

Flow chart of RPR Management



Treatment

To treat for Primary, Secondary and Early latent Syphilis, use

Benzathine benzylpenicillin G,

2.4 million IU by intramuscular injection as a single dose

OR

Procaine benzylpenicillin,

1.2 million IU by intramuscular injection, daily for 10 consecutive days

OR

NB. Jarisch-Herxheimer reaction (mild fever, body aches and exacebation of symptoms within hours of injection) should be treated with paracetamol tablet, 500 mg thrice daily on 1st day. Patient should be preferably forewarned of the possibility of the reaction.

Alternative regimens for penicillin-allergic non-pregnant patients

Doxycycline, 100 mg orally, twice daily for 15 days

To treat for late latent syphilis, use

Benzathine benzylpenicillin, 2.4 million IU by intramuscular injection,

once weekly for three consecutive weeks

OR

Procaine benzylpenicillin, 1.2 million IU by intra-muscular injection, once

daily for 21 consecutive days

Alternative regimens for penicillin-allergic non-pregnant patients

Doxycycline, 100 mg orally, twice daily for 30 days

OR

Tetracycline, 500 mg orally, four times daily for 30 days

Children

Early Latent syphilis - Benzathine penicillin G 50,000units /kg IM up to the adult dose of 2.4 million units in a single dose

Late Latent syphilis - Benzathine penicillin G 50,000units /kg IM up to the adult dose of 2.4 million units administered as three doses at one week intervals

Cardiovascular Syphilis

Aqueous procaine penicillin, 1.2 million IU IM for 20 consecutive days

If penicillin allergic but non-pregnant, patients

Doxycycline , 100mg, two times daily for 30 days

Or

Tetracycline , 500 mg, four times daily for 30 days.

Neurosyphilis

Aqueous crystalline penicillin G, 3-4 million IU, intravenous injection, every 4 hours for 14 days (18-24 million units/day)

Or

Procaine penicillin, 2.4 million IU IM daily for 10-14 days

Plus

Probenecid, 500 mg, four times daily, for 10 - 14 days

Management of Syphilis in pregnancy:

Close surveillance should be done for pregnant women to detect possible reinfection after treatment. Pregnant patients at all stages of pregnancy, who are not allergic to penicillin, should be treated with penicillin according to the dosage schedules recommended for the treatment of non-pregnant patients at a similar stage of the disease.

Alternative regimen for penicillin-allergic pregnant patients

Erythromycin*, 500 mg orally, four times daily for 14 days

* Erythromycin base, ethyl succinate or stearate can be given. Erythromycinestolate is contraindicated in pregnancy.

All infants born to mothers who are sero-reactive for syphilis should be treated with a single intramuscular injection of benzathine penicillin, 50,000 IU/kg whether or not mother has been treated during pregnancy

Congenital Syphilis

Early Congenital Syphilis: < two years of age and infant:

- **With clinical CNS involvement or with abnormal CSF**, Aqueous procaine penicillin, 50 000 IU/kg body weight, single daily dose IM for 10 days.
- **With normal CSF:** Benzathine penicillin 50,000 IU/kg, body weight by IM stat

Congenital Syphilis of more than two years duration

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, four times daily for 30 days.

Follow-up serological screening:

Patients with early syphilis and congenital syphilis should have quantitative non-treponemal tests done at three, six, and 12 month intervals after the treatment.

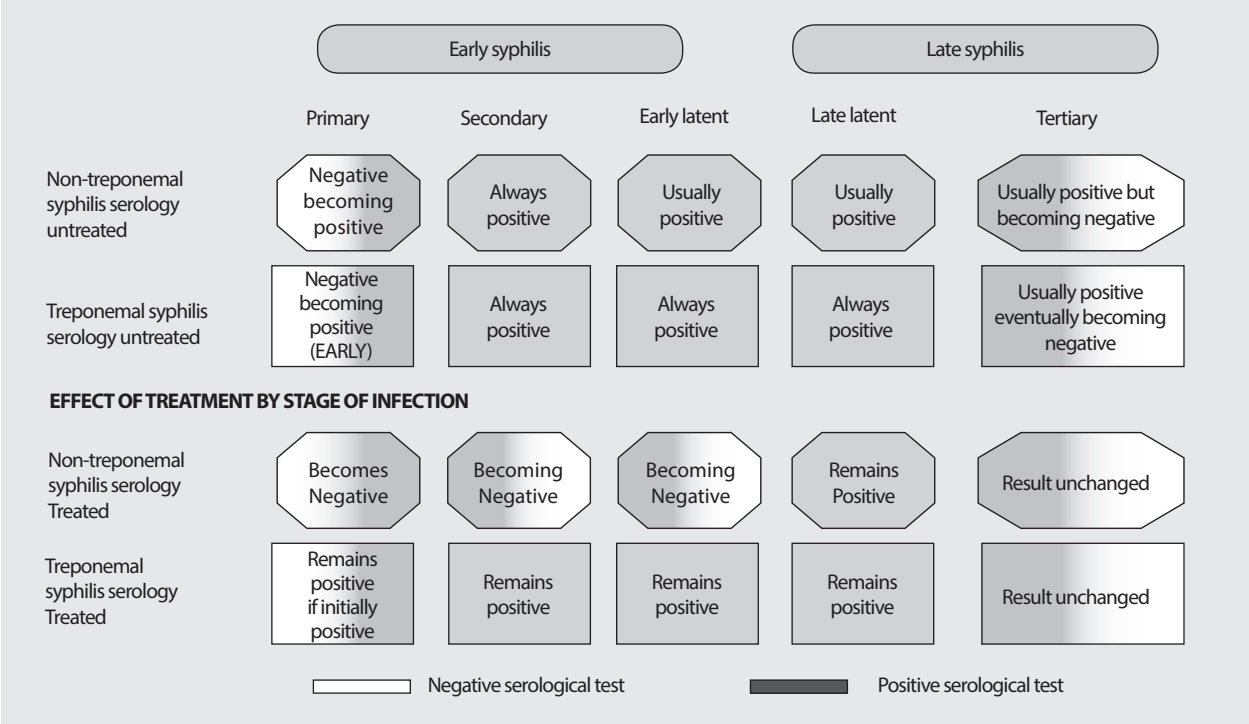
Syphilis in HIV-infected person:

- All patients with syphilis should be tested for HIV infection
- Syphilis can behave differently in HIV-positive people
- Clinical manifestation of syphilis may be altered with atypical presentation such as a painless chancre which becomes painful
- Syphilis increases HIV viral load and decreases the CD4 cell count in HIV-infected persons. Therefore, HIV infectivity may be increased and syphilis infectivity may also be increased.
- The duration of the disease may be prolonged
- Co-infection of more than one STI may exist
- Serological test is altered, therefore may be less reliable
- It may show resistance to treatment. Therefore, the treatment duration may be prolonged and treatment failure is common
- Frequent relapses may occur
- In HIV positive people neurological symptoms are more common in secondary syphilis
- Progression to tertiary syphilis is quicker

Management of Syphilis in HIV-infected persons:

Treatment of syphilis in HIV-infected persons is the same as for non-infected people. However, some authorities advise to examine the CSF and provide more intensive treatment regardless of the clinical stage of syphilis. More careful follow-up is necessary to ensure adequate treatment and to detect treatment failure.

Reactivity of serological tests by stage of Syphilis and effect of treatment-



4.2. Protozoa and others

4.2.1. Trichomoniasis

Trichomoniasis is one of the most common STI found in women. It is caused by a flagellated protozoan called Trichomonas vaginalis. It is almost exclusively sexually transmitted in adults. Although the majority of women infected with T. vaginalis tend to be asymptomatic, they might present with vaginal discharge, dyspareunia, pruritis, and vulvo-vaginal erythema. The discharge is diffuse, yellow green, purulent, malodorous and occasionally has bubbles or is overtly foamy. Cervical petechiae also called "strawberry cervix" are sometimes seen. Similarly most men infected with T.vaginalis are asymptomatic, but some present with urethral discharge. In men it could be the cause for persistent urethral discharge with or without Mycoplasma genitalium.

Laboratory test:
Demonstration of motile trichomonads on saline mount (and WBCs on saline mount or Gram stain) of vaginal exudates.

Treatment:

Tinidazole 500 mg twice daily orally for five days

OR

Metronidazole 400 mg two times daily for seven days

Plus

To treat for M. genitalium use tab Azithromycin 500mg as a single oral dose six days

Management of sex partners and counseling:
Advice sexual abstinence for one week or until symptoms has improved and partner(s) have been treated

Follow up:
Return if symptoms persist.

Note
Systemic treatment with metronidazole should be delayed until at least 12 hours since last ingestion of alcohol and patients should be advised to avoid alcohol until at least 24 or 72 hours following completion of therapy

4.2.2. Vulvo-vaginal Candidiasis

Vulvo-vaginal candidiasis is also one of the most common genital symptoms of women of reproductive age and is caused by the yeast Candida albicans. Up to 20% of women with the infection may be asymptomatic.

Clinical features:
The most frequent symptom is vulval pruritus or irritation, with thick, curdy, white vaginal discharge with or without dyspareunia or external dysuria. Examination may show abnormal non-offensive vaginal exudate, classically clumped or with adherent, exudative plaques on the vaginal mucosa. Erythema/ oedema/ excoriations from scratching vulva may be present.

Laboratory tests:
Fungal elements (budding yeast or pseudomycelia) often present in KOH mount

Treatment:

Fluconazole 150 mg PO, single dose

OR

Clotrimazole vaginal tablets, 100-200 mg daily at bed-time for three to six days

Treatment of pregnant women:
Clotrimazole 100 mg or other intravaginal imidazole, daily for at least six days
Avoid fluconazole in pregnancy.

Treatment of recurrent VVC (≥ 4 episodes per year):
Fluconazole 150 mg PO, single dose; repeat in three days

OR

Clotrimazole or other intravaginal imidazole tablets for up to 14 days.

Maintenance therapy may be considered for increased frequency of recurrences.

Management of sex partners and counseling:
Advise sexual abstinence as it is needed for comfort, until symptoms resolve. Examination and treatment of partners usually is unnecessary – since most infections are endogenous and are not sexually acquired, but a topical imidazole cream (e.g., miconazole, clotrimazole) is indicated for male partners with erythema of the glans penis or inflammation of the glan penis and foreskin (balanoposthitis)

Follow-up:
As and when needed for recurrent or persistent symptoms.

It is recommended that predisposing factors such as the use of antibiotics and antiseptics /antibiotic vaginal preparations or vaginal douching be reduced or eliminated. Simultaneous treatment of rectal focus with oral nystatin or fluconazole is not useful in preventing recurrences. Other underlying factors like diabetes mellitus, corticosteroid and immune suppression should be considered.

4.2.3. Bacterial Vaginosis

Bacterial Vaginosis is a vaginal condition caused by the replacement of the normal hydrogen producing Lactobacillus species in the vagina with overgrowth of anaerobic bacteria such as Gardenella vaginalis and Mycoplasma hominis. The cause of microbial alteration is not fully understood. It commonly causes a vaginal discharge characterized by a grey-white color, homogenous in texture and often with an offensive odor. They may be seen as organisms of normal vaginal flora but after invasive procedures or delivery, may cause ascending infection. In that case, the woman is said to have an endogenous reproductive tract infection (RTI). Thus in most of the cases it may not necessarily be sexually transmitted.

Clinical features:
Abnormal vaginal discharge with the characteristic fishy odor (sometimes spontaneously noticed)

Lab test
Whiff test is positive
Microscopy: "**clue cells**" on wet mount
(**Clue cells** are squamous epithelial cells covered with many small cocco bacillary organism giving granular stippled appearance, the edge of these cells are not clearly defined, because of large number of bacilli present.)

Treatment:
Symptomatic women should be treated with:

Metronidazole 400 mg oral twice a day for seven days

OR

Tinidazole 2g oral single dose

4.3. Viral

4.3.1. Hepatitis

Hepatitis is caused by different types of Hepatitis Viruses (*i.e.* Hepatitis A through E). HAV infection is primarily transmitted by fecal-oral route and produces self-limited disease but MSM/drug users might get it during sexual activity resulting from fecal oral contact.

Mode of transmission:
HBV/HCV is mainly transmitted by sharing needles, sexual contact, mother to child, and transfusion of blood or blood products.

Clinical features:
Incubation period of both types (HBV/HCV) range from six weeks to six months. Both are found in highest concentration in blood and in lower concentration in other body fluids (semen, vaginal secretions and wound exudates). They are also transmitted sexually, but apparently do not produce any genital lesions. HBV is more infectious and more stable in the environment than HCV and HIV. For Hepatitis C, sexual transmission rate is very low (< two percent per year).

They may manifest as acute icteric hepatitis, or may remain as an asymptomatic carrier with chronic infection. However, after many years of infection, some of them may manifest features of chronic liver disease. In adults, approximately half of newly acquired HBV infections are symptomatic and approximately 1% of reported cases result in acute liver failure and death. Risk of chronic infection is inversely related to age, at acquisition approximately 90% of infected infants and 30% of infected children aged<five years become chronically effected, compared with 2-6% of persons who become infected as adults. Risk of premature death from cirrhosis or hepato-cellular carcinoma is 15-25% among chronic HBV infection. HBV is efficiently transmitted by percutaneous or mucus membrane exposure to blood or body fluids that contain blood. The primary risk factors are unprotected sex with infected partner, unprotected sex with multiple partners, MSM, PWID, history of other STIs.

Laboratory tests: Screening antibody tests to Hepatitis B (HBsAg) and C (ELISA)

Treatment:
The treatment of HBV/HCV is quite costly and is not easily accessible.

Education and counseling on safer sexual behavior and on the spread of hepatitis is important. Partner notification, screening and vaccination are advised.

Prevention:

- Hepatitis A vaccines are advisable for all MSM and drug users, available in two dose series 0 - 6 to 12 months.
- Hepatitis B vaccination is recommended to those at risk. It is available in 3 dose series 0-1-6 months. It should be recommended to all unvaccinated adolescents and adults at risk of getting HBV, who are attending STI clinic, and all adults seeking protection from HBV. For the general public, safer behavioral practices are advised.
- No vaccine is available for HCV.
- All pregnant women receiving STI services should be tested for HBV, regardless of whether they have been previously treated or vaccinated. HBsAg negative pregnant women seeking STI services who are not vaccinated previously should be vaccinated.
- Routine testing for HCV infection is not recommended for all pregnant women except when at risk.
- HIV can impair the response to hepatitis B vaccination so might need the additional doses.
- Sex partners of HBV/HCV patients should be counseled to use latex condom. Household contacts, needle sharing /sex partners should be tested and vaccinated.

4.3.2. Genital Herpes

Genital herpes is a chronic, lifelong viral infection. It is one of the most common STI and is caused mostly by Herpes Simplex Virus type II (HSV-2) and occasionally by type I (HSV-1). It is characterized clinically by mild burning pain or itching followed by the appearance of grouped vesicles in and around genitalia.

Most persons infected with HSV-2 have mild on unrecognized infections, but shed the virus intermittently in the genital tract. As a result, the majority of genital herpes infections are transmitted by persons unaware that they have the infection or who are asymptomatic when transmission occur.

Primary genital herpes:

It is the first clinically recognized episode of genital herpes. There is no known cure for genital herpes but the course of symptoms can be modified if systemic therapy with acyclovir or its analogues is started as soon as possible following the onset of symptoms. 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.

Recurrent genital herpes:

Patients experience the second or subsequent episodes of genital herpes. Generally, recurrent episodes are self-limiting and cause minor symptoms. If the recurrences are frequent, the symptoms are severe, or the patient is in distress, episodic therapy can be given, which will shorten the duration of genital lesions.

Clinical Manifestations:

Grouped vesicles or vesiculo-pustules or tender ulcerative lesions of the genitals or surrounding areas are reliable diagnostic criteria of genital herpes; however most cases lack such typical appearances and many remain asymptomatic or have only mild or atypical symptoms.

Recurrences and subclinical shedding are much less frequent for genital HSV-1 infection than for genital HSV-2 infection.

Laboratory diagnosis:

Usually is not possible to perform at the field level. Type specific serology can be done at higher level.

Serological test for syphilis should also be carried out to exclude syphilis.

Treatment:

Primary genital herpes:

Systemic antiviral therapy is indicated for all patients with initial episodes of genital herpes, unless healing is well underway.

The aim of the treatment in genital herpes should be to start antiviral therapy as early as possible after onset of symptoms, but may be effective for initial herpes for as long as new lesions continue to appear or until lesion pain subsides.

1st clinical episode

Acyclovir 400 mg orally thee times a day for Seven – 10 days

OR

Acyclovir 200 mg orally five times a day for seven days

OR

Valaciclovir 1 gm orally twice daily for seven days

OR

Famciclovir 250 mg three times daily for seven days

Recommended regimen for severe disease

Acyclovir 5-10 mg/kg IV, every eight hours for five-seven days or until clinical resolution.

Recurrent episodes of genital herpes

Acyclovir 400 mg orally three times a day for five days

OR

Acyclovir 200 mg orally five times a day for five days

OR

Acyclovir 800 mg orally two times a day for five days

OR

Valaciclovir, 1 gm orally once a day for five days

OR

Famciclovir, 125 mg two times daily for five days

Suppressive therapy for recurrent genital herpes
If the patient complains of repeated recurrences, suppressive therapy is indicated. Individual assessment is required before initiating suppressive therapy**.**

Acyclovir 400 mg oral two times daily for one year

OR

Valaciclovir,1gm orally twice daily for one year

OR

Famciclovir, 250 mgm twice daily for one year

(Supressive therapy – six or more than six attacks/ episodes in a year)

Suppressive therapy has not been associated with the emergence of clinically significant acyclovir resistance among immune competent patients.

Note: Valaciclovir/ Famciclovir not available in Nepal at present

Genital herpes in pregnancy
First clinical episode of genital herpes should be treated with oral acyclovir. Neonatal herpes can develop in babies born to mothers, who develop primary herpes genitalis shortly before vaginal delivery. Babies born to women with recurrent disease are at very low risk. Caesarian section is indicated if mother has active lesions at the time of birth.

Treatment for neonates
Acyclovir, 10 mg/kg IV three times a day for 10 days

Herpes and HIV co – infection
Persistent and /or severe muco-cutaneous ulcerations involving large areas of peri-anal, scrotal or penile skin is indicative of HIV co-infection. Doses and duration of treatment with acyclovir should be increased.

Recommended regimens
Acyclovir, 400 mg orally three–five times daily until complete clinical healing of lesions

Other supportive care:
- Keep affected area clean and dry
- Advise sexual abstinence until all lesions have healed or advise to use condom consistently.
- Analgesics **or** topical anesthetic agents may be helpful for selected patients.

Management of sex partners and counseling:
- Advise patients to abstain from sex with their partner from onset of symptoms until lesions have healed completely.
- All infected persons and their partners should be counseled about consistent use of condoms and avoidance of sex during symptomatic stage and use of condom even after treatment as there will be viral shedding even when there is no skin lesion.

Follow up:
For primary herpes:
Follow up should be arranged within one to two weeks after diagnosis (or sooner if symptoms are severe)

For recurrent herpes:
Return as and when needed for persistent or recurrent symptoms.

4.3.3. Ano-genital warts

It is one of the most common sexually transmitted infections of skin and mucus membranes of ano-genital region.

Ano-genital warts:
Synonyms: Genital warts, venereal warts, condyloma acuminata

Anogenital wart is one of the most common STI of skin and mucus membrane around the anogenital region caused by several geno types of human papilloma virus (HPV).

HPV infection is in increasing trend occurring throughout the world. It has an incubation period of about one month to two years (average three to four months). HPV genotype 6 and 11 cause most ano-genital warts whereas Genotypes 16, 18, 31, 33, 35 are commonly associated with malignant lesions.

- Genital warts are usually transmitted sexually through close skin-to-skin contact.
- Presence of erosion/ulcer facilitates and increases the chances of infectivity.
- Vertical transmission from mother to child during delivery is also possible.The clinical pictures depend upon the site of the lesion and type of virus.
- May be asymptomatic.
- Soft, non-keratinized and fleshy growth which may be of pink, red or skin color on warm, moist non hair bearing skin. Firm and keratinized wart are usually seen on dry skin. It may be filiform, verrucous, flat, pedunculated or cauliflower-like growth.
- Different sizes may vary from a tiny projection to giant size.
- During pregnancy and in the presence of discharge they may grow more rapidly and disseminate.

Diagnosis is mainly based on clinical findings but in sub-clinical types, the lesion can be painted with low concentrations (3 to 5 %) of acetic acid. The lesion turns white (acid wrap test or aceto-whitening test).

Sites of lesion in males include sub preputal area, coronal sulcus, inside the urethral meatus, shaft of penis, perineum and anus. In females, they include vulva, vaginal wall, cervix, perineum and anus.

It has to be differentiated from other diseases like condylomata lata (secondary syphilis), molluscum contagiosum, pearly penile papules, carcinoma (squamous cell carcinoma) sebaceous cyst, lichen nitidus, angiokeratoma etc.

Whether warts are treated or not, the infection can be transmitted to sexual partners. It may progress into cervical, penile, and anal carcinoma. Large warts may obstruct delivery and may necessitate a caesarean. During delivery, infection may be transmitted to fetus, causing ano-genital warts or respiratory papillomatosis. Respiratory papillomatosis may be life threatening and may present as hoarseness, stridor or respiratory distress.

Treatment:

There is no specific antiviral treatment available and no treatment is satisfactory. Local treatment will remove the wart but recurrences may occur. It is only palliative for cosmetic purpose (i.e. treatment does not remove HPV infection) and the risk of sexual transmission remains. Relapse rate is high**.** Spontaneous regression is possible in some cases.

Chemical cautery:

1. Podophylline - 25 percent in compound tincture of benzoin (to be applied by the HCP).

- The area should be properly cleaned with normal saline before application and the surrounding area should be protected from its irritant nature by applying Vaseline.
- Treat <10 sq cm per session. Limit the total volume of podophylin solution applied to <0.5 ml per treatment session. The patient should be instructed to wash the podophylline off after four-six hours.
- If wart persists, retreat at weekly interval for six-eight weeks.
- Side effects are irritation, swelling, neuorotoxicity may occur in large doses.
- Large amounts should not be used due to its toxicity.

Other topical preparations:

Trichloracetic acid (TCA - 80 to 90 percent) – can be applied by the HCP carefully to the warts, avoiding normal tissue followed by powdering of the treated area with talc or sodium bicarbonate to remove excess acid. Repeat at weekly intervals. TCA causes immediate chemical cauterization. It is not absorbed systemically so safely can be used during pregnancy.

Imiquimod 5% cream - can be used by the patient using a cotton swab at bedtime left overnight, three times a week for as long as 16 weeks. The patient should be instructed to wash off after six-10 hours.

Podophylline, and Imiquimod are contraindicated during pregnancy and lactation

Physical methods:

1. Cryo-therapy with liquid nitrogen, solid CO^2 (dry ice) or a cryoprobe. Repeat applications every one-two weeks. Cryo-therapy is non-toxic, does not require anesthesia and if carried out properly does not result in scarring.
2. Electro-cautery
3. Surgical excision
4. Laser therapy

These methods are not feasible at peripheral level. Management of vaginal and/or cervical warts, urethral meatal warts and anal warts in men and women should be undertaken in higher facility.

HPV and pregnancy

Genital wart can proliferate and become friable during pregnancy. Cesarean delivery is indicated only when pelvic outlet is obstructed or if vaginal bleeding will result in excessive bleeding as there is low risk of warts in larynx during delivery.

HIV and HPV

HIV infected people are more likely to develop warts than non-infected and they are more recalcitrant to treatment due to depressed cell mediated immunity.

Screening for cervical cancer

Cervical cancer is a recognized complication with a few specific high risk strains of HPV (16, 18, 31, 33, 35, etc). It is the second most common cancer worldwide. Screening and treatment in the early stages (cervical dysplasia) is effective in reducing morbidity and mortality from cervical cancer.

Cytology by Papanicolaou (Pap) smear is currently recommended as a screening tool for cervical cancer. It is an effective, low cost screening test for preventing invasive cervical cancer but it is not a test for screening of STI pathogens. It also gives the opportunity to look for other cervical infection. Visual inspection with acetic acid or lugol iodine may also be used for screening if pap smear facilities are not available.

It is a recommended practice to examine the cervix in all female patients with STI and regularly examine pap smear of the cervix in this population.

Vaccines

Vaccines against HPV are now available, which offer protection against HPV 16 and 18, which are responsible for 70% of cervical cancer. It can be administered to girls aged 11-12 years, and it is best if given before sexual activity. These vaccines are administered in three doses over a period of six months: the second is given after one-two months of first dose, and the third dose given at six month of first dose. (0-1-6 months). Regular cancer screening has to be done as it does not cover all types of oncogenic types.

The vaccine Cervirax is bivalent vaccine for HPV 16 and 18, whereas Gardasil is quadrivalent vaccine for

HPV 6,11,16,and 18. Gardasil also protects against the types that cause 90% of genital warts. HPV 6 and 11 are the cause of genital warts and recurrent respiratory papillomatosis.

Management of sex partners and counseling:

- Abstinence until all lesions resolved and sites healed
- Routine STI and HIV evaluation of partners and counseling

Follow-up:
When recurrences occur

Counseling

- HPV spreads through vaginal and anal sexual contact, and can also be spread by oral sexual contact.
- Correct and consistent male condom use might lower the chances of giving/getting genital HPV but such use is not fully protective because HPV can infect areas that are not covered by a condom.
- Sexually active persons can lower their chances of getting HPV infection by abstaining from sexual activity/limiting their number of partners and/or being faithful to a single partner
- Genital warts are not life threatening, and if left untreated may disappear spontaneously, remain same, or grow in size and number.
- A diagnosis of HPV in one sex partner is not indicative of sexual infidelity in the other partner.
- HPV does not effect a woman's fertility or able to carry pregnancy to term.
- They commonly recur after treatment, especially in the first three months and do not turn into cancer.

4.3.4. Molluscum Contagiosum

Molluscum Contagiosum is a viral infection caused by the Molluscum Contagiosum Virus (MCV – a pox virus) and is clinically characterized by pearly white or pink, pinhead to pea –sized papular lesions with a distinctive central depression (umbilication) and firm white material can be expressed from the lesion. Although common in childhood through direct skin-to-skin transmission, it is also often sexually transmitted in young adults. In adults, the lesions are usually seen either on the genitals or peri-genital areas. The condition is harmless and treatment is essentially cosmetic.

Note: Large numbers of lesions or facial lesions in an adult may be a sign of immunodeficiency related to HIV infection.

Treatment:

If few lesions are present, un-roof them with a sterile needle and express central core and disinfect the wound with an agent such as povidone iodine. Chemical cauterization can also be done with 50% TCA. Locally 5% KOH every alternate night till it disappears. Cryotherapy with liquid nitrogen is also effective.

Management of sex partners and counseling:

- Abstinence until all lesions resolved and sites healed
- Routine STI and HIV evaluation of partners and counseling

Follow-up:
When recurrences occur

4.4 Parasites

4.4.1. Scabies/Pediculosis

Scabies and Pediculosis are caused by ectoparasites, namely Sarcoptes scabei and Pthirus pubis, and are commonly transmitted from one individual to another through close contact, sharing of cloth, beds, and linens; hence, they are often sexually transmitted in adolescents and adults. Both are clinically characterized by intense itching (more at night in case of scabies) and excoriation, and are often secondarily infected with pyogenic bacteria.

Incubation period: three weeks; on repeated infection, immediate symptoms appear within one to two days.

In pediculosis, the patient may either present with parasites underneath the clothing or on the skin surface/ hairs, or the clinician (upon examination) may find the parasite or its nits.

In scabies vesicles, papules or pustules with excoriation marks are mostly located on the intertrigenous and flexural areas, including inter digital webs, wrist, lower part of abdomen, the breast etc.

In fair-skinned people, burrow (linear groove ending with a vesicle) may be observed.

HIV infected patients may present atypically with exaggerated or incrusted form called Norwegian/ crusted Scabies.

Diagnosis

Diagnosis is mostly done clinically through proper history taking, including contact history and examination.

Laboratory diagnosis is done by observing the parasites and its mites (pediculosis) directly or under microscopic examination of skin scrapings from a burrow (scabies).

Management

Recommended Treatment Regimens for ScabiesGamma –Benzene Hexachloride, 1% lotion/ cream applied in a thin layer to all areas of the body from the neck down at night and thoroughly washed off after 8 to 12 hours.

OR

Benzyl benzoate emulsion *25*% applied to all areas of the body from the neck down daily every night for three consecutive days

OR

Permethrin (5%) (safe in pregnancy and during lactation) applied to all areas of the body from the neck down and washed off after eight–12 hours

OR

Ivermectin 200 µgm/kg orally, repeated in two weeks

Recommended treatment regimes for Pediculosis pubis

Gamma –Benzene Hexachloride, 1% lotion/cream applied to all the hairy areas excluding the scalp and thoroughly washed off after eight to 12 hours.

OR

Permethrin cream 5% (safe in pregnancy) applied to all areas of the body from the neck down and washed off after eight–12 hours

General management

- Cloth, bedding and fomites should be washed in hot water or at the dry cleaners'.
  Sexual partners and close contacts within the last month should be treated accordingly.
- They may need retreatment after one week if no clinical improvement.
- Pruritis may be controlled by anti-histamines.
- Treat with appropriate antibiotics if evidence of secondary bacterial infections

STI in Specific Groups

5.1. STI and HIV

Since HIV is one of the STI, both STI and HIV have a common mode of infection (mainly through sexual contact) and so co-infection is more likely. Both STI and HIV can also impact each other by increasing each other's susceptibility and infectivity. HIV alters the clinical features of STI, producing bizarre clinical presentation and making it difficult to diagnose. Some of the STI do not respond to normal doses of regular drug regimen, leading to frequent drug resistance. This prolongs the duration of the disease and causes more complication and more chances of infection.

Impact of STI on HIV

Both ulcerative and non-ulcerative STI have been found to facilitate HIV transmission, either by increasing HIV susceptibility or HIV infectiousness or both. Early and correct treatment of STI along with the effective prevention program greatly reduces the risk of sexual transmission of HIV.

- People with STI have three-10 times greater risk of being infected with HIV
- In a single sex act, the STI can increase HIV risk from 1:1,000 to more than 1:10
- In many countries, STI are a major 'driving force' of the HIV epidemic

High STI rates are seen in people with behavioral risks, which could also greatly facilitate HIV transmission. Reducing this risk includes meeting the challenge of reducing sexual risk-taking behavior, and preventing or successfully treating curable infections in time.

Successful STI management program has been found to be very effective in the prevention and control of HIV transmission, but the program needs high-level commitment on raising awareness of the general population and intervention for targeting high-risk populations (FSW, their clients, MSM and injecting drug users).

STI increases infectivity of HIV

HIV is found in the genital fluid of both HIV infected males and females and also from the exudates of genital ulcers. The shedding of HIV in genital fluids is increased by STI-related inflammatory responses and exudates from lesions. This makes men and women who are infected with STI and HIV positive more infective. . Studies have shown that treating STI reduces both the infectivity and the amount of HIV in ejaculate.

Impact of HIV on STI

HIV lowers the immune status and thereby increases the susceptibility to STI. It also alters the natural history of some STI resulting in:

- bizarre presentation;
- difficulty in making diagnosis;
- abnormal serological tests results;
- no response to the common drug in their normal doses and requirement of prolonged duration and;
- increased drug resistance and drug interactions

5.2. STI in Pregnancy

STI are among the most important cause of maternal morbidity and perinatal morbidity and mortality. They can have severely debilitating effects on pregnant women, their partners, and their fetuses. All pregnant women and their sex partners should be asked about STI, counseled about the possibility of perinatal infections, and ensured access to treatment, if needed.

- STI in pregnant women can lead to early onset of labor, abortion, premature rupture of the membranes and uterine infection after delivery. It has harmful effects on babies like stillbirth, low birth weight, conjunctivitis (eye infection), pneumonia, neurological damage, congenital syphilis etc.
- Pregnant women can have many of the same consequences of STI as women who are not pregnant: cervical and other cancers, chronic hepatitis, cirrhosis, and other complications.
- STI can be transmitted from a pregnant woman to her offspring before, during, or after birth.
- Some STI (such as syphilis and HIV) can cross the placenta and infect the fetus during its intrauterine life.
- Other STI (such as gonorrhea, chlamydia, hepatitis B virus, and herpes simplex virus - HSV) are transmitted from the mother to the infant as the infant passes through the birth canal.
- HIV infection can cross the placenta during pregnancy, infect during the birth process, and, unlike most STI, infect an infant as a result of breast-feeding.

The interactions between STI and pregnancy include the effects of pregnancy on STI and of the STI in pregnancies, which are as follows:

STI	Effects of STI on pregancy and neonate	Effect of pregancy on STI
Trichomoniasis	Premature Rupture of Membranes, Preterm Labor, Low Birth Weight	No effects
Candidiasis	Virtually none	Increased frequency and severity of infection
Bacterial vaginosis	Premature Rupture of Members Chorioamnionitis, Premature Delivery, Low Birth Weight, Puerperal Sepsis	No effects
STI	**Effects of STI on pregancy and neonate**	**Effect of pregancy on STI**
Gonorrhoea chlamydial infection	Prematurity, Premature Rupture of Membranes, Choriamnionitis, Postpartum Sepsis, Conjunctivitis in the new born	Disseminated gonococcal infection is reported to be more common
Syphilis	Abortion, Intrauterine Growth Retardation, Stillbirth Congenital Syphilis	No effect
Herpes Simplex Virus(HSV) infection	Abortion, Intrauterine Growth Retardation, Premature Delivery, Congenital HSV, Neonatal Herpes	Longer duration of symptoms primary infection more severe dissemination may occur
Human papillomavirus infection (genital warts)	Laryngeal papillomatosis (rare)	Increase in size and number of warts

STI prevention in pregnant high-risk women:
Although a woman may be monogamous during her pregnancy, she can remain at risk of STI if her partner is not monogamous. For this reason, she should be advised to consider sexual abstinence or consistent and correct use of condoms.

Protection is critical throughout a woman's pregnancy, including during the last trimester when active infection can present a great threat to the health of a woman and her baby.

Treatment of STI in pregnancy:
Bacterial STI (e.g., chlamydia, gonorrhea, and syphilis) can be treated and cured with antibiotics during pregnancy. There is no cure for viral STI such as genital herpes and HIV, but antiviral medication for herpes and HIV can reduce symptoms in the pregnant woman. In addition, the risk of passing HIV infection from mother to baby is dramatically reduced with treatment. For women who have active genital herpes lesions at the time of delivery, a cesarean section may be indicated to protect the newborn against infection

Common STI syndromes and recommanded medicines for STI in pregnancy		
Syndrome	**Common causes**	**Recommended Drug**
Vaginal discharge	Candida, TV, BV	Clotrimazole Vaginal Pessary + Metronidazole
Genital ulcer dieases	Herpes, Syphilis	Acyclovir + Benz. Penicillin
Lower abdominal pain	PID	Inj. Ceftriaxone + Metronidazole + Azithromycin
Neonatal conjunctivites	Chlamydia, Gonococcus	Inj. Ceftriaxone

Drugs recommended for the treatment of individual STIs	
Syphilis	Benzathine Penicillin and Erythromycin (in penicillin allergy)
Gonorrhea	Oral Cefixime or Inj. Ceftriaxone
Chlamydial infection	Ceftriaxone or Azithromycin
BV/TV	Oral Metronidazole (single dose is not recommanded for BV)
Candidal vaginosis	Clotrimazole Vaginal Pessary
Herpes genitalis	Mild no treatment Acyclovir in Severeinfection
Genital wart	TCA or surgical ablation
Drugs contraindicated	Doxycycline, Podophyllin, Ciprofloxacin, Ofloxaxcin

STI to be screened during pregnancy:

- All pregnant women should be routinely screened for syphilis with VDRL/RPR at the first antenatal visit or as early as possible. Retesting is recommended in the third trimester/delivery, if feasible, to detect infection acquired during pregnancy (particularly for those who are at risk). Since biological false positive VDRL/RPR may occur during pregnancy, positive test should be confirmed with specific tests like TPHA/TPPA. All mothers with syphilis should be treated according to the stage of syphilis and attempt should be made to complete the treatment before 36 weeks of pregnancy. Infants should not be discharged until the syphilis serology status of the mother is known in pregnancy and preferably again at delivery. Any woman who delivers a stillborn infant should be tested for syphilis. All asymptomatic infants born to sero positive mothers who have completed treatment according to stage of syphilis before four weeks of delivery should be treated with a single prophylactic dose of benzathine penicillin G 50,000IU/kg intramuscularly. Infants with suspected congenital syphilis; those born to mothers treated less than four weeks before delivery; and mothers treated with non-penicillin regimen or not treated, or who have no record of being treated, should be treated as congenital syphilis.
- All antenatal patients should have HIV testing at the first visit/as soon as possible. Re-testing to be done at third trimester if at risk. If HIV positive, antiretroviral therapy should be administered.
- All pregnant women should be routinely tested for Hepatitis B surface antigen (HBsAg) at the first visit even if they are previously vaccinated. High risk antenatal mothers should be tested again at the time of admission and vaccinated if at risk. HBsAg testing should be done before vaccination if positive, and immunoprophylaxis should be given to infants if available.
- All pregnant women should be tested for Chlamydia trauchomatis at first visit, if possible. Retest if positive at three-six months interval. Retest at third trimester if at risk. All pregnant women at high risk should be screened for gonorrhea at first visit. If positive, they should be retested at 3-6 months.
- Those who are at risk of getting Hepatitis C like PWID, those who have had blood transfusion, and organ transplant patients should be screened for Hepatitis C antibodies at the first visit even when vaccination is not available.
- All pregnant women should undergo pap test at same frequency as non-pregnant women.
- Routine screening for BV, Trichomoniasis, HSV is not needed if not symptomatic.
- All pregnant women with symptomatic vaginal discharge in the second and third trimester should be treated for BV, Trichomoniasis and candida. If risk assessment is positive, they should be treated for gonorrhea and chlamydia, along with their partner.
- Prophylactic caesarean delivery is not indicated in women of HSV who do not have active genital lesion at the time of delivery.
- Presence of genital wart is not indicative of caesarean delivery.

Note.
Fluconazole is contraindicated throughout pregnancy. Metronidazole in the first trimester was contraindicated previously studies have not demonstrated a consistent association between metronidazole use during pregnancy and teratogenic effects in newborns.

5.3 STI and Family Planning (FP)

The FP visit is useful as it provides an opportunity to prevent both unwanted pregnancies and infections. It is also useful to detect silent STI and also offer treatment to symptomatic women (and their partners), who may otherwise not use the health services.

The basic strategies for preventing STI involve avoiding or reducing the chances of exposure. FP providers can talk to clients about how they can protect themselves both from STI, including HIV, and pregnancy (dual protection). Every FP client needs to think about preventing STI, including HIV- even people who assume they face no risk. A provider can discuss what situations place a person at increased risk of STI, including HIV, and clients can think about whether these risky situations come up in their own lives. The provider needs to help and guide the client to make their dual protection strategy. Consistent use of condoms has been recommended to reduce the risk of STI/HIV transmission and also to prevent unwanted pregnancy. However, an effective FP method (OCPs, Injectables, IUD, Implants, Sterlisation) should be advised for use for the prevention of unwanted pregnancy. Dual method use "when effective contraceptive method for pregnancy prevention is combined with a barrier method for STI and HIV transmission prevention" should be recommended in a "Condom PLUS" approach.

Assessing Women for Risk of STI before insertion of Intra Uterine Device (IUD)

A woman who has had gonorrhea or chlamydia should not have an IUD inserted. Having these sexually transmitted infections (STI) at insertion may increase the risk of pelvic inflammatory disease. The provider should therefore discuss with the client the personal behaviors and the situations that are most likely to expose them to STI.

Steps to take before providing IUD for client with a very high individual risk of STI

- Provide counseling on all FP methods.
- If the client chooses IUD post counseling, tell the client that a woman who faces a very high individual risk of STI generally should not initiate IUD due to an increased risk of introducing infection into upper genital tract during the insertion procedure. Ask if she would consider other effective methods.
- If other methods are not acceptable to her or are

contraindicated for medical reasons, but she still wants an IUD:

- Assess for symptoms and signs of current STI by questions and pelvic examination (both speculum and bi-manual)
- Woman who has symptoms and/or signs of chlamydia and gonorrhea: treat for both infections with a single dose regimen and provide IUD after she is symptom-free (approximately one week after treatment). Counsel about the importance of using condoms consistently and correctly in a meantime.
- Ensure that the client will return for a routine follow-up visit 3-4 weeks after insertion to check for infection. She should also be asked to return at once if she develops a fever and either low abdominal pain, or abnormal vaginal discharge, or both.
- Take client's contact information to remind about follow-up appointment.
- Link clients with prevention or outreach staff to ensure timely follow-up.

5.4 Management of STI among MSM/ WSW/ MSW and Third Genders (TGs)

MSM

MSM is the abbreviation used to define men who have sex with other men. They might have receptive, insertive anal and/or oral sex or other sexual behaviors. They might identify as heterosexual, bisexual or homosexual – or even have a "gay" identity as seen in Western countries and some may choose not to identify themselves as any of the sexual orientations mentioned. They might have a locally known identity (e.g., "ta" and "dohori"). Many MSM consider themselves to be heterosexual rather than homosexual, especially if they are having simultaneous sex with women, are married take the penetrative role only in anal sex, or have sex with men for money and convenience.

Third Gender (Transgender- TGs)

The term 'Third Genders' broadly describes men or women who feel different about their gender identities regardless of their biological sex. A male child can feel feminine and a female child can feel masculine, hence a male to female third gender and female to male third gender. The risk of STI is seen more in male to female third genders who are also known in Nepal as "meti."

(Transsexual- people who wish to live as the gender other than that assigned to them at birth whereas Transvestite are the cross dressers who dress of the opposite sex but retain their normal gender identity.)

Characteristics of MSM/TGs

- Many MSM/TGs also have sex with opposite sex.
- Their common sexual practices include:
  - Receptive and/or insertive anal sex
  - Receptive and/or insertive oral sex
  - Insertive vaginal sex
  - Mutual masturbation
- Some MSM/TGs also have other risks e.g., alcohol or drug use, needle sharing for drug use etc.

MSM and third genders are at greater risk of STI, including HIV infection, as evidenced by the IBBS study 2012 among this group. This is partly because of high rates of partner change and low rates of condom use. This situation is inevitably worse where there has been little intervention aimed at increasing condom use or improving both health-seeking behavior and the quality of clinical services for STI.

Additionally, many infections remain asymptomatic. For example, the primary chancre of syphilis is typically painless. Painless penile ulcer is very likely to be noticed quickly by patients, and they may approach health services; however, a painless peri-anal ulcer is much less likely to be noticed and thus remain untreated. Gonococcal and chlamydial infections of the rectum are also commonly asymptomatic. Most syphilis in the community is latent (i.e. asymptomatic) and remains undetected unless serological tests are performed.

Men and women who practice unprotected receptive anal course are at risk of getting STI. They may lead to symptomatic or asymptomatic distal proctitis (inflammation of the distal 10-12 cm of rectum). Gonococcal, Chlamydial, T. pallidum and HSV are common causes of proctitis. Acute proctitis can present with pain, tenesmus, mucopurulent anal discharge, anorectal bleeding, constipation, sensation of rectal fullness of incomplete defecation, perianal pain or discomfort.

Laboratory tests for MSM/TGs

It should be done regardless of history of condom use during exposure

- HIV serology - if HIV negative or not tested within the previous year
- Screening for syphilis by RPR and confirmation by TPHA/TPPA
- Test for urethral infection for gonorrhea and chlamydia for men who have had insertive intercourse during the preceding year
- Test for rectal infection for gonorrhea and chlamydia for men who have had receptive intercourse during the preceding year
- Test for pharyngeal infection for gonorrhea in men who have receptive oral intercourse during the preceding year
- All MSM should be tested for HBV and HCV if available
- More frequent STI screening should be done every 3- 6 months interval who have multiple partner or anonymous partner.
- Vaccination of all MSM against Hepatitis A and B is recommended

Treatment of STI in MSM

The drug treatments and the duration to treat STI are

the same as in other people with STI.

Regular follow-up, partner notification (contact tracing) and treatment and motivation on consistent use of condoms are essential aspects of management, which reduce the risk of acquisition and transmission of STI.

On anoscopy, if there is macroscopic pus or if there are >1 polymorphs/HPF on Gram stain of rectal swabs, treat MSM for both gonorrhea and Chlamydia.

Inj Ceftriaxone 250 mgm IM stat

PLUS

Tab. Azithromycin – 1 gm oral single dose stat

PLUS

Metronidazole 400mg oral three times a day for seven days, if diarrhoea, blood and or history of abdominal cramping

If ulcer is seen in the rectum, treat accordingly for syphilis and herpes.

Emphasize 4 Cs for each STI patient.
Emphasize to use condom with lubricants during sex.

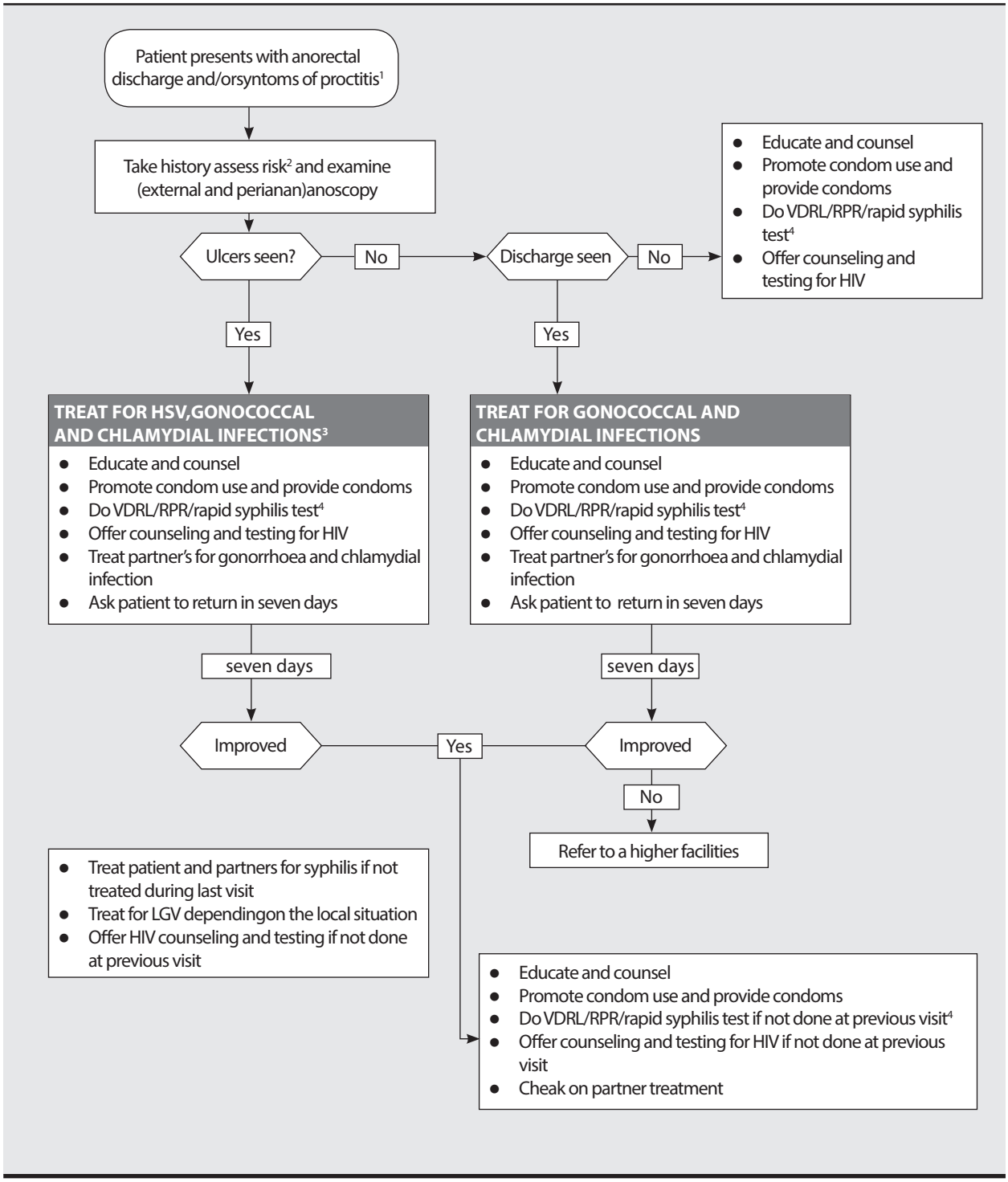
If the patient has pharyngeal gonoccoccal/chlamydial infections (diagnosed from the history, clinical findings (and lab support if available), treat both for gonococcal and chlamydial infections with same two drugs and doses as of above.

Note: Treatment of individual STI such as Genital wart, Genital Herpes, Chancroid, Syphilis etc, among MSM/TG are same as for STI in other persons. Syndromic approaches of STI treatment among MSM/TGs are also the same. However, since MSM/TG have more frequent ano-rectal and oral symptoms of STI, especially of Gonococal and Chlamydial infection, special attention is given here to manage such symptoms.

Women who have sex with women have diverse group with variations in sexual identity sexual behaviors, sexual practices and risk behaviors. They can have oral genital sex, vaginal or anal sex using hands, fingers or penetrative sex items. HPV/HSV transmission can occur due to skin to skin or skin to mucosa contact. BV is common.

Flow Chart- 13

Flow chart of Management of Anorectal Discharge



Note:

1. Sypmtoms of proctitis include perianal pain, mucopurulent an ddischarge, anorectal bleeding, constipation, sensation of rectal fullness or of incomplete defecation, tenesmus and discomfort
2. Receptive anal sex during six months, insertive partner has STI, multiple partners, unprotected sex (risk factors need to be validated according to the country setting)
3. Treat for Mycoplasma infection depending on the local situation
4. If syphilis serology results are available and are positive, treat ptient and partner/s for syphilis. See serological tests for syphilis.

5.5 Screening and Treatment of Asymptomatic Infections for Key Affected Population at risk of HIV

KAPs at risk of HIV in our country include FSW, MSWs, MSM, TGs, PWID, and migrant populations (who work abroad and visits FSW) and their sexual partners. They are at high risk of acquiring STI, including HIV, due to their nature of work, inconsistent use of condom and sexual networks. Therefore, they need to be screened and treated for asymptomatic STI. For all regular syphilis and HIV and HBsAg screening is recommended.

Among the KAPs, FSW require monthly screening for STI as they are very prone to risk of getting STI. Monthly screening should include history taking, physical examination, vaginal examination with speculum, and microscopy of vaginal and cervical smear. FSW are recommended for presumptive treatment of cervicitis for gonococcal and chlamydial infections. It is recommended to provide presumptive treatment to all FSW coming to the facility for the first time and every time when they report after a gap of more than three months of the last screening date. Because of the high prevalence of infection and reinfection, presumptive treatment is indicated even if there are no symptoms.

All clients from KAPs require counseling regarding consistent and correct condom use.

Refer to flow chart 1 for management STI in high risk women.

5.6 STI in Young Adults.

- Increased risk of STI is due to multiple partners, failure to use barrier protection, increased susceptibility to infection, multiple obstacles to accessing health care, drug use, MSM, etc .
- Routine screening for Chlamydia of all sexually active young females is recommended annually (if at risk).
- Routine screening for gonorrhea of all sexually active young females aged< 25 years and above is recommended annually if at risk.
- HIV screening is encouraged for those who are sexually active and who are injecting drugs.
- Cervical screening is advised with a pap test 3 years after initiating sexual activity. This should be done no later than the age of 21 years.
- Sexually active young adults require routine screening for syphilis, BV, Trichomoniasis, and HBV, even if they are asymptomatic.

5.7. STI in Children

Certain diseases like gonorrhea/syphilis and chlamydia after the neonatal period are virtually 100% indicative of sexual contact.

5.8. STI in Correctional Facilities

STI are common because members of this population have unprotected sex, multiple partners, use drugs and alcohol, and engage in different sexual activity for survival.

Wet mount, gram stain if discharge, serology for HIV/syphilis/Hepatitis B should be done and treated accordingly.

5.9. STI among Sexual Assault

Trichomoniasis/BV/Gonorrhoea, and Chlamydia are the most commonly diagnosed STI among women who have been sexually assaulted.

Wet mount, gram stain if discharge, serology for HIV/syphilis/Hepatitis B should be done and treated accordingly.

Venereophobia

The term venereophobia is used to define the fear of suffering from STI, including HIV, without having an actual STI. It has to be differentiated from actual STI. Young people commonly present with it; the person suffering from it often goes from one doctor to another doctor taking unnecessary treatment without obvious improvement.

Causes

The common reasons for venereophobia are anxiety and guilt associated with:

- Risky sexual behavior
- Pre-marital and extra-marital sexual contact
- Masturbation
- Use of sex toys
- Normal anatomical variations, e.g. presence of pearly penile papulosa
- Others (sharing same toilet, towels, bed, etc).

Symptoms

- Pain, itch or burning sensation on the genitalia
- Discharge per urethra – (sometimes normal and due to sexual arousal)
- Sore, rash, growth
- Colour change of the genitalia
- Decreased size of the genitalia
- Decreased libido
- Bizarre symptoms

Examination findings

No STI related abnormalities will be detected.

Laboratory findings

Will be within normal limits repeated in several occasions.

Diagnosis

Should be based on a thorough history with special attention to sexual history; proper clinical examination including ano-genital examination; and the available laboratory tests, all of which should be negative.

Management

Proper education and counseling; anti-anxiety counseling; and referral to psychotherapy if necessary.

Note: Before labeling any patient with venereophobia, all the available tests to exclude STI should be negative.

Safer Sexual Behavior

As STI are predominantly transmitted through the sexual contact, for the prevention and control of STI, people who are especially at high risk should be well informed about safer sexual behaviors. Safer sexual behaviors are those in which no exchange of vaginal fluid, semen and blood can take place between the sexual partners during the sexual activities. Following activities can be included under safer sexual behaviors:

- Complete abstinence from sex
- Having sex with only one faithful uninfected partner
- Correct and consistent use of condoms in all types of sexual intercourse (vaginal, anal or oral sex)
- Practicing non-penetrative sex
- Avoiding sex while intoxicated

Condom Promotion

A condom is thin latex (synthetic rubber) covering that is placed on the penis during intercourse. If used correctly and consistently, condoms are an excellent means to prevent the sexual transmission of STI and HIV from an infected partner to the uninfected one. It makes sex safer by not allowing the exchange of vaginal fluid, semen and blood between the sex partners. Clients should be well informed about the advantages of using condoms, the places where condoms are available and condom demonstration should be done for providing the skills to use it properly.

Advantages of Condoms

- Protects from STI
- Protects from HIV
- Prevents from getting pregnant
- Prolongs sexual intercourse

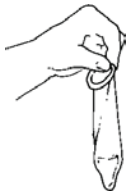
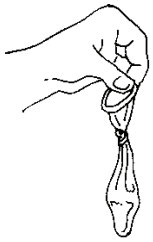
Sources of Condoms

- Health Post/Sub Health Post
- District Health Officer/District Public Health Officer
- Hospitals/Clinics
- Health Workers/Volunteers
- Medical Shops/Pharmacies
- Pan Pasal
- Groceries

Proper Care of Condoms

- Do not use condoms if packages are ripped or have a hole in them.
- Do not use condoms that are dirty, brittle, yellowed, sticky or damaged.
- Condom should be used before the expiry date stamped on it or within five years from the date of manufacturing.
- Store condom in a cool, dark and dry place because heat, light and humidity can damage condom.
- Do not keep condoms in a tight pocket or in a wallet for a long period.
- Do not use grease, oil, lotion or Vaseline® to make condoms slippery - these oils break the condom.
- Do not unroll a condom to check before putting it on.
- Tie the end of the condom to prevent spills or leaks and wrap it in paper. Burn or bury the condom with other garbage.

Detailed instructions on the correct use of male condoms follow. Condom use should be demonstrated to the patient using a penis model or banana.

	1. Remove the condom from the package carefully, to avoid tearing.		**2.** Squeeze the air out of the tip of the condom.
	3. Unroll the condom onto the erect penis.		**4.** After ejaculation, withdraw the penis from the vagina while the penis is still erect. Hold on to the rim of the condom while withdrawing to prevent it from slipping off and the semen spilling into the vagina.
	**5.** Remove condom from penis, and tie a knot in it to prevent spills or leaks. Dispose of condom safely (where it cannot cause any hazard)		

Female Condoms

Safety and Effectiveness

The effectiveness of the female condom for preventing pregnancy is similar to other barrier methods, such as the diaphragm and latex male condom.If used correctly and consistently every time, the female condom is 95% effective.

According to the manufacturer, no allergic reactions have been reported. The female condom is a good option for the small number of people who are allergic to latex, the material used in most male condoms. However, the female condom should not be used by people who are sensitive to polyurethane or silicone.

Using the Female Condom

The female condom is a thin, soft polyurethane sheath with two flexible polyurethane rings. The inner ring is closed and helps with insertion and placement. The outer ring and about 1 inch of the sheath remain outside the vagina during use. Each condom is pre-lubricated with silicone, and a container of water-based lubricant is supplied for those who prefer more lubrication. Because female condoms are made from polyurethane, they are not damaged by oil-based lubricants

There is only one size of female condom, no fitting is required. The female condom is designed to fit most women.

Any sharp object, including fingernails, rings, or other jewelry, can rip or tear the female condom. The device can be used by pregnant and menstruating women.

How to Use a Female Condom

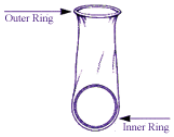
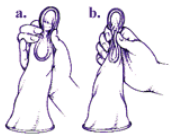
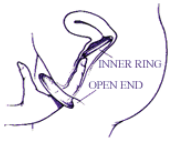
The female condom is a relatively new method and requires practice and patience. The woman should practice putting it in and removing it several times before using it for the first time during sexual intercourse. It is lubricated and is slippery, making it difficult to insert initially. However, it becomes easier and easier to insert with practice.

Step-by-step instructions for using a female condom:

- Open the package carefully; tear at the notch on the top right of the package. Do not use scissors or a knife to open it.
- Place yourself in a position that is comfortable for insertion (e.g., squat, raise one leg, or sit or lie down).
- Look at the condom and make sure it is lubricated. Condoms are pre-lubricated. If you want to use additional lubricant, use either water or oil-based lubricant.
- While holding the sheath at the closed end, grasp the flexible inner ring and squeeze it with the thumb and second or middle finger so it becomes long and narrow. With the other hand, separate the outer lips of the vagina.
- Gently insert the inner ring into the vagina. Feel the inner ring go up and move into place.
- Place the index finger on the inside of the condom, and push the inner ring up as far as it will go. Be sure the sheath is not twisted. The outer ring should remain on the outside of the vagina.
- The female condom is now in place and ready for use with your partner. When you are ready, gently guide your partner's penis into the sheath's opening with your hand to make sure that it enters properly; be sure that the penis is not entering on the side, between the sheath and the vaginal wall.
- Use enough lubricant so that the condom stays in place during sex. If the condom is pulled out or pushed in, there is not enough lubricant; add more to either the inside of the condom or the outside of the penis.
- To remove the condom, twist the outer ring to prevent leakage and gently pull the condom out. Try to pull it out before standing up. If you use a female condom, your partner does not have to pull out immediately after ejaculation, as he should when using a male condom. He can go soft inside you and the female condom can be removed when you are ready.
- Wrap the condom in the package or in tissue, and throw it in the garbage. Do not put Into the toilet.

How to use female condoms

The female condom is a soft, loose-fitting sheath with a flexible polyurethane ring at each end. The inner ring at the closed end is inserted into the vagina. The outer ring at the open end remains outside the vagina during intercourse and covers outer genitalia.

	**1.** 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.		**2.** The closed end of the female condom will go inside your vagina. Squeeze the inner ring (closed end) between your thumb and middle finger. Insert the ring into your vagina.
	**3.** 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.		**4.** 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.
	5. After intercourse you can safely remove the female condom at any time. If you are lying down, remove the condom before you stand to avoid spillage. Dispose of the female condom safely (where it cannot cause any hazard). Do not reuse it.		

Infection Control

Universal precautions for the control of infection should be taken in any health care setting, including setting where STI patients are being seen. This has become even more important with the appearance of HIV and its fatal sequel, AIDS. Hepatitis B is also transmitted in the same manner as HIV but very much more easily.

Universal precautions
These entail the observation and application of general safety measures for the prevention of infection in the health care setting.

Universal precautions are necessary because
Every person should be considered potentially infections to another person – the infection may be viral, bacterial, and fungal.

Universal precautions require the HCP to
- Ensure and apply safety measures when handling body secretions and contaminated instruments
- Ensure and apply sterilization and disinfection procedures
- Protect HCPs from getting infections - safety in the work place.

Applying Universal Precautions

Apply safety measures
- Assure proper cleanliness and hygiene
- Use barrier/protective clothing, e.g., gloves
- Handle sharps with care
- Do not re-sheath needles
- Handle specimens of blood, discharge and body fluids with care
- Eliminate/dispose of contaminated materials/body specimens properly

Apply sterilization/disinfection procedures
- Sterilize all reusable instruments/equipment
- Disinfection of un-sterilizable instruments/ equipment

Follow instruction on Safety at the workplace-COPE
- Create a barrier between HCP and HIV – not between HCP and patients
- Observe safety precautions
- Precautions in every step/procedure
- Education of all HCP

Quality Assurance of Laboratory Investigations

Quality assurance (QA)Quality Assurance is the total process that guarantees that the final results reported by a laboratory are as accurate as possible. This involves inspecting specimens, reviewing transcriptional measures, using the most reliable assays and verifying final reports.Quality assurance is applied throughout the testing process at all testing process. It is not a one-time event. This is a continual process encompassing three phases: pre-analytical, analytical and post-analytical and there are multiple activities associated with each phase.

Following procedures needs to be followed to prevent errors that may occur during the three phases of Quality Assurance Cycle:

1. Pre-analytical phase

- Monitor storage temperature for test kits and specimens
- Select an appropriate testing workspace
- Check inventory and expiration dates
- Review testing procedures
- Record pertinent information, and label test device
- Collect appropriate specimen (right specimen from right site at right time)

2. Analytical phase

- Perform and review Quality Control (QC)
- Follow safety precautions
- Conduct test according to written procedures (follow the SOPs)
- Correctly interpret test results

3. Post-analytical phase

- Re-check patient/client identifier
- Write legibly
- Clean up and dispose of contaminated waste
- Package EQA specimens for re-testing, if needed

External Quality Assessment (EQA)

EQA is a system of objectively assessing the laboratory performance by an external agency or authorized independent body. This assessment can be retrospective and periodic but is aimed at improving the quality of laboratory services.

All RPR reactive sera and randomly selected 10% of all RPR non-reactive sera will be retained in the clinic and stored in the deep freezer in appropriate cryo-vials labeled with the patient number and date of collection. Thus retained and stored sera will be transported to National Public Health Laboratory (NPHL) or Regional Public Health laboratory (if facility is available) or lab designated by NPHL at the end of each month for re-testing. The transportation of sera will be according to the national guideline and policy for specimen transportation.

NPHL will re-test the sera received from the sites; compare the test results of NPHL and sites; prepare the EQA report; and send back the EQA reports to participating sites. If discrepancies occur between the site's test results and NPHL's test results, NPHL, jointly with the participating site, will try to find the root causes of the errors and solve the problem.

For Gram-stained slides of cervical and urethral specimens, sites will retain all the slides showing Gram-negative intracellular diplococci (GNID). These slides will be kept in slide boxes and stored at room temperature for up to three months in a dry, cool and dark area so as not to be exposed to direct sunlight. Similarly, equal number of Gram- stained slides of cervical or urethral specimens not showing GNID will also be retained and stored properly. Laboratory experts from NPHL or regional public health laboratory will be examining these slides during monitoring visit to the STI clinics and will provide feedback to the clinic.

Internal Quality control (IQC)

IQC denotes a set of procedures undertaken by the staff of health facility, medical as well as laboratory, for continuously and concurrently assessing laboratory work so that the laboratory produces quality results. ICQ comprises those measures that must be included during each test run to verify that the test is working properly. This includes ensuring correct temperature conditions and kit controls. Thus internal quality control indicates whether the test run was valid and has produced acceptable results. ICQ procedures are

essential during daily routine work. They are applied to all work procedures and every test done in the laboratory. Applying IQC procedures, errors can be removed or corrected immediately before the reports are dispatched. Sites will test RPR quality control samples in a frequency as recommended by the manufacturer of the test kit. Quality control results will be recorded and reviewed regularly.

General procedure for IQC

1. Strictly follow the Standard Operating Procedure for each test
2. All specimens should be inspected before run the test to ensure that they are suitable.
3. Do not use haemolysed and contaminated samples.
4. Ensure that all specimens are properly labeled.
5. Bring all reagents and samples to room temperature and mix thoroughly before use.
6. Each batch of tests must include positive and negative controls.
7. Positive and negative controls for RPR should be run with each batch and on weekly basis to ensure the quality of test
8. Do not interchange reagents between different lots.
9. Reagents must be protected from any type of contamination.
10. The test kits must be stored at the required temperature
11. Do not use expired kits.
12. Interpret the test result carefully using the test kits inserts.
13. Record the results with utmost care.

Smears will be taken and Gram-stained as part of the management of some patients. The slides, labeled with the patient's number, will be stored in each clinic in slide boxes in a cupboard. Separate boxes will be used for each category, i.e. male urethral, male rectal, female cervical and female rectal.

Reporting on external quality control

NPHL will submit a written report on the results of each round of quality control.

Serious discrepancies between project reporting and external laboratory are to be discussed with the laboratory staff, and if necessary refresher training is to be provided.

Laboratory staff

Laboratory personnel havening registered in Nepal Health Professional Council who have undergone STI laboratory training approved by NPHL can work as a laboratory staff in a STI clinic.

Note: *All the laboratory staff should strictly follow the universal safety precautions during handling the specimens.*

Disposal of Contaminated Waste

Much of the waste from health care facilities is contaminated. Contaminated waste may carry high loads of microorganisms, which are potentially infectious to any person who contacts or handles the waste, and to the community at large, if not disposed of properly. Contaminated waste includes blood, pus, urine, stool and other body fluids, in addition to items which contacted them, such as used dressings, cotton gauze, broken glassware and used needles.

Proper handling of contaminated waste is required to minimize the spread of infection to clinic personnel and to the local community. All contaminated materials should be decontaminated (by disinfecting or incinerating) before disposal. If materials are decontaminated or disposed of outside the health care center, they should be placed in a strong, leak-proof and puncture proof container to transport them from the health care center to the decontamination site.

Collection of different types of wastes

There should be different types of containers for collections depending on types of wastes generated in the health care settings. The person who generates the waste is responsible for putting it in the appropriate containers. Containers for collecting waste should be designated using defined color-coding.

1. Red color: For collecting contaminated hazardous wastes other than sharps. Used test kits, pipette tips, infected dressing material etc. are solid wastes and collected separately from liquid wastes.
2. Yellow color: For syringes and other sharp wastes generated in the facility. Sharps can be kept in a puncture-proof container with a small hole on the top which allows personnel to put the materials, mainly syringes, into the container.
3. Leak proof container with red cap: The syringes and other sharps generated in the facility can be stored in puncture proof container with red cap with hole on the top.
4. Blue color: For hazard free wastes like paper, plastic covers of syringes and other uninfected materials.
5. Black color: For hazard free decomposable waste generated such as peels of fruits, fruits and other
6. Liquid wastes are collected in a container with 0.5% hypochlorite solution. There must be enough solution in the container so that even when liquid waste is added, the concentration of the solution remains approximately the same.

Disposal of waste

Utility gloves should be worn before handling and disposal waste generated in health care settings. All the contaminated waste from health care centers should be decontaminated before disposal.

Materials that are to be decontaminated or disposed of outside should be placed into a strong leak-proof covered container prior to transporting them outside. Sharp items should be transported in puncture – resistant containers.

Decontaminated liquid wastes can be poured down a utility drain or flushable toilet. Contaminated solid wastes should be disposed in environment friendly manner. These should be decontaminated and treated in autoclave before disposal. Recyclable treated waste should be sent for recycling. If option for autoclave is not available, waste should be incinerated or burnt in an incinerator (Incinerator can be made locally).

Needles and other sharp objects may not be destroyed by burning, and may later cause injuries, which can lead to a serious infection. Sharps should be decontaminated by dipping in 0.5% hypochlorite solution and then buried. Medical waste which cannot be burnt should be disposed by onsite burial. Used needles of syringes can be destroyed by using needle destroyer. After disposal of infectious waste, hands, gloves and containers should be washed.

Recording, Reporting and Surveillance

One of the important components of STI Case Management process is recording, reporting and surveillance of STI. STI case reports and surveillance results provide important information for the planning of STI prevention, control program allocation of resources, and monitor the trends of STI/HIV. STI Case Management facilities in hospital and clinics can also be useful sites for conducting operational research and surveillance about STI and HIV.

All health care providers should therefore know the process and importance of record keeping/reporting of patients treated for STI, and realize their roles, responsibilities and contribution to STI/HIV Sentinel Surveillance.

Recording & Reporting

HMIS provides a specific STI register and records which must be filled for each patient by all service delivery sites from the health post to PHC, community/ district and central hospitals. Similarly, private clinics, hospitals, and I/NGOs providing STI services must record and report the information using standardized recording and reporting formats provided by HMIS/ NCASC. The STI register should be maintained at the STI treatment clinic and the clinic should identify the responsible person for recording and reporting. Every month, the clinic in-charge of the service Center must ensure that the STI report as per the form from HMIS is completed and sent to District Public/Health Office. In coordination with HMIS, NCASC should monitor and verify the monthly reports of STI services.

For each case, a report of diagnosis and treatment must be made and reported according to the STI register. The diagnosis can be aetiological or syndromic. The socio-demographic information and risk group of reported cases must be identified and reported accordingly. An individual with same symptoms in his or her follow up visits should be recorded as an old/ follow up case whereas the same individual with new STI symptoms should recorded as new case. Repetition of same episode of STI symptoms in the same client after some period of treatment and cure should be identified as re-current case. This clarification about case identity should be explored through skillful counseling by responsible and trained health workers. The responsible health workers must be trained for STI counseling, recording and reporting and be provided with refresher training at least once in 3 years.

Examples of monthly (periodic) and daily reporting form and STI register in given in the annex.

STI Surveillance

The ongoing and systematic collection, analysis, interpretation and dissemination of data to describe and monitor rates and trends of STI guide STI control efforts. STI surveillance is also useful for HIV programme as:

1. STI facilitate HIV transmission and
2. STI are markers of high-risk behaviors that also spread HIV.

For these reasons, STI, HIV and behavioral surveillance are often combined and known as 'second-generation surveillance'. In Nepal, HIV sentinel surveillance was conducted through 6 sentinel sites up to 2002. According to Second Generation Surveillance (SGS), HIV epidemic is classified into 3 stages:

- Low Level Epidemic: HIV prevalence consistently below 5% in any sub-populations.
- Concentrated Epidemic: HIV prevalence consistently over 5% in at least one sub-population with high risk behavior and below 1% among women attending antenatal clinic in urban setting.

Generalized Epidemic: HIV prevalence consistently over 1% in pregnant women nationwide.

Nepal falls in the low and concentrated epidemic category as HIV prevalence among some high-risk groups such as PWID has a prevalence rate of over 5%, while prevalence remains below 1% among women attending antenatal clinic in urban settings.

Three primary components of STI surveillance are complementary. They are:

- STI routine case reportingSTI prevalence assessment and monitoring in community and facility based STI sentinel sites
- Specific STI surveillance activities such as:
  - laboratory assessment of antimicrobial resistance
  - validation of syndromic STI management
  - ANC sentinel surveillance for syphilis
  - other special surveys and functions

In all three Low-level, Concentrated, and Generalized Epidemics, STI surveillance should serve as:

- an early warning system for HIV infection and emergence of HIV in new groups or new geographical areas; and
- an evaluation tool for HIV prevention programmes.

STI surveillance should be ongoing and robust enough to enable the evidence based action.

STI case reporting

Nepal follows "universal case reporting," where all cases of a particular STI disease or syndrome are reported to the HMIS. All health centers from the VDC to district levels with STI services must report to HMIS. NCASC reviews and verifies all reports received from implanting partners and collates them as one national report.

STI prevalence assessment and monitoring

The second major component of STI surveillance is prevalence assessment and monitoring in sentinel sites and population groups. The primary objective is to measure the burden of STI and monitor trends. STI prevalence data can be especially useful for determining patterns of spread of STI and where risk of HIV is greatest. High syphilis prevalence in pregnancy is an important cause of spontaneous abortion, stillbirth and congenital syphilis. It is also an indicator of HIV risk in the community. If STI surveillance data show that STI transmission is occurring, then HIV transmission may be occurring as well. STI prevalence data, especially syphilis data, are often available through antenatal clinics (ANCs) and could be compile, analyze and report syphilis prevalence. The same blood samples are often tested for HIV as part of HIV sero-surveillance. Facility based STI sentinel sites should be established to strengthen STI surveillance. Moreover, community based STI sentinel sites should be gradually scaled up to the districts where CB-PMTCT program have reached to amplify the case identification of both and thereby increase the effectiveness of HIV and STI response.

Specific STI surveillance activities

Specific STI surveillance activities are supported with special funding used to supplement the other components of STI surveillance. Some are most useful for the management of STI control programmes, and others are useful for HIV programmes.

These activities include:

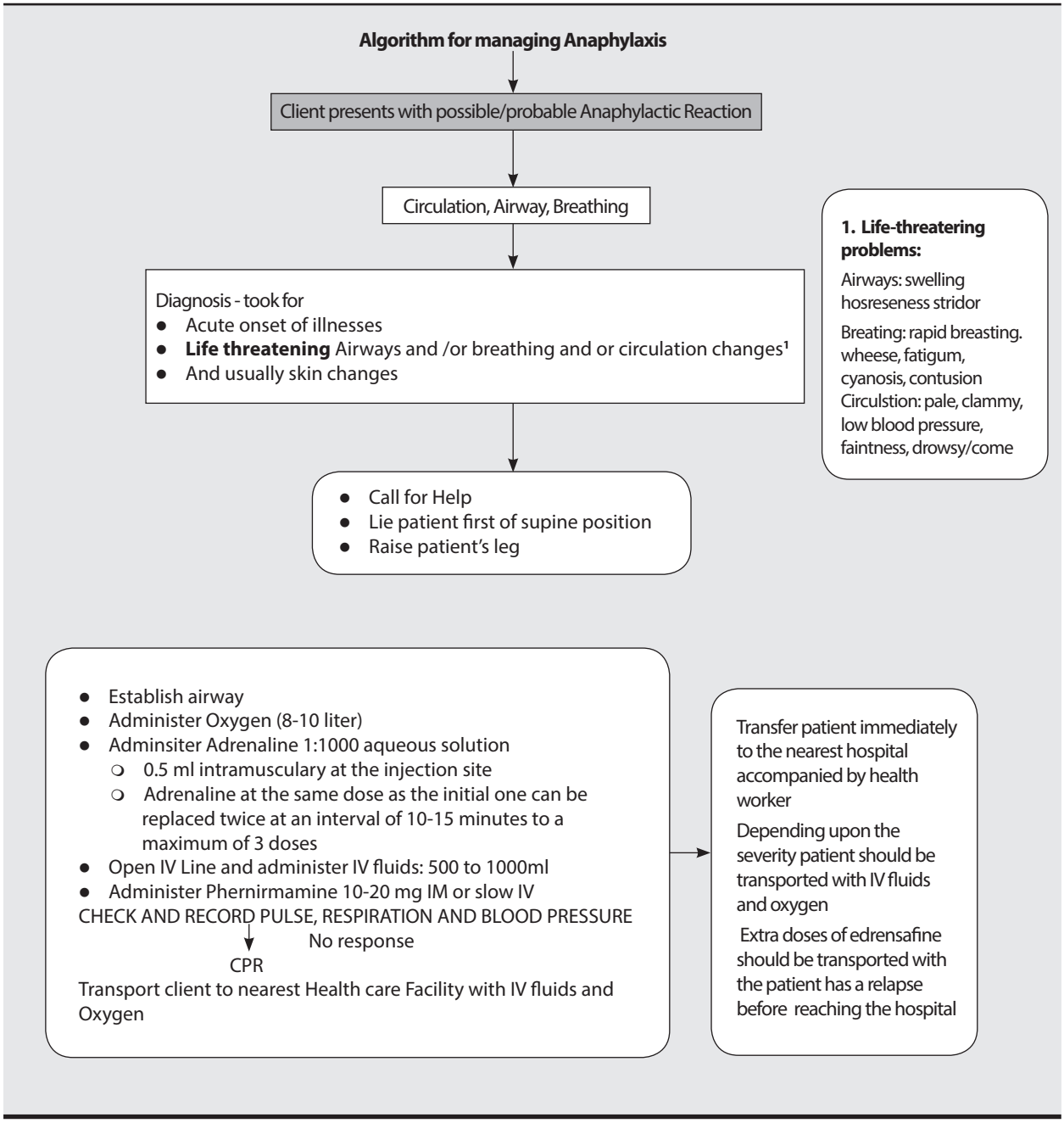
- Monitoring aetiologies for STI syndromes by conducting laboratory tests to find out which STI organisms are present in the most important STI syndromes.
- Measuring antimicrobial resistance patterns to find out if the organisms causing certain STI have become resistant to antimicrobial therapies.
- Behavioral surveys and especially behavioral surveys that are combined with STI and HIV testing to find out what behaviors are associated with STI and HIV infection in various groups.
- Research studies to address aspects of STI epidemiology that cannot be addressed by routine surveillance.
- Mapping and size estimation of key affected population at higher risk

Annexes

Annex – I: Requirements for public or private facilities providing STI services

Referral Clinics/Laboratories	Peripheral Facilities
1. Sterile Swabs	1. Microscope + Microscopic Oil
2. Glass Slides	2. Glass Slides
3. Cover slips	3. Cover Slips
4. Inoculating Wire Loop and Stand	4. Sterile Swabs
5. Petri Dishes	5. Tray
6. Incubator	6. Staining Rack
7. Autoclave + Ordinary Heater	7. Forceps
8. Distillation Plant (glass)	8. Spirit Lamp/burner
9. Weighing Machine with Accessories	9. Steel or Plastic Buckets/Container
10. CO2 Jar or CO2 Incubator	10. Glass Wares - Test Tube, Serological Pipettes
11. Serological Pipettes	11. Micro Pipettes
12. Micro Pipettes	12. Test Tube Rack
13. VDRL Shaker	13. Centrifuge
14. ELISA Reader	14. Dropping Pen
15. Microscope + Microscopic Oil	15. Diamond Pen
16. Glass Wares - tubes, Pasteur Pipettes	16. Table Lamp
17. Steel or Plastic Buckets	17. Refrigerator
18. Water Bath	18. Cold box
19. Burner	19. Serum container
20. Refrigerator	20. Serum container box
21. Tray	
22. Test Tube Rack	
23. Centrifuge	
24. Forceps	
25. Dropping Bottles	
26. Hot Air Oven	
27. Diamond Pen	
28. Glass Marker	
29. Table Lamp	
30. Test Kits/Regents	
• RPR/VDRL	
• TPHA	
• Set of Gram's Staining	
• pH paper	
• Normal Saline	
• Distilled water	
• KOH	
• HIV rapid test kits	

Annex – 2: Management of anaphylaxis



Annex – 3: STI monthly Register(HMIS 7.2)

SEXUALLY TRANSMITTED INFECTIONS (SIT) REGISTER															
Month:			Year:												
SN	Registration					Demographic information									
	Date			MR No	SR No	Client's Name and Caste			Age			Marital status*	Address		Client code
	DD	MM	YY			First Name (Optional)	Last Name (Compulsory)	Caste Code	Sex				District Code	VDC/Mun Code	
									F	M	TG				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

STI Counseling &Diagnosis														Syphilis Screening	Laboratory Investigation			Risk Group *	Treatment				Referral	
Type of Case *	STI Counseling	STI Diagnosis*													RPR +ve	TPPA +ve	GNID +ve		syndromic	Etiological	Sex worker (Presumptive)	Parter (Asymptomatic)	In = 1 Out = 2	
		Circle the appropriate code in case multiple STI please circle the multiple codes. Specify the STI in code no 10 if it is not listed																						
17	18	19												20	21	22	23	24	25	26	27	28	29	
1		1	2	3	4	5	6	7	8	9	10	……		1									1	
2																							2	
1												……		1									1	
2																							2	
1												……		1									1	
2																							2	

Annex – 4: STI monthly reporting form(HMIS 9.3 HIV section)

Risk Groups/Key Population Gorup	Total Clients Assesed	STI Cases -by- Syndromes							STI Cases -by Etiology					
		Urethral Discharge	Scortal Swelling	Vaginal Discharge	Lower Abdominal Pain	Genital Ulcer Disease	Inguinal Budo	Others	Cervicitis	Vaginitis	Herpes genitalis	GNID	Syphilis	
												Gm Stain +ve	Diagonsed	Treated
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Female Sex Workers (FSW)														
People who inject Drugs (PWID)														
MSM and TG														
Clients of FSW														
Male Migrants														
Spouse of Male migrants														
Pregnant women														
Neonates														
Other														

STI Case by Sex & Age group		≤ 14 years			15-19 years			20-24 years			25-49 years			≥ 50 years		
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Syndromic/ Etiologiacal Mgmt of STI	Screened / Couns	F	M	TG	F	M	TG	F	M	TG	F	M	TG	F	M	TG
	Diagonsed															
	Treated															
Presumptive Treatments to SW																
Asymptomatic Partners Treated																

Annex – 5: REVIEW COMMITTEES FOR THE NATIONAL GUIDELINES FOR CASE MANAGEMENT OF STI PATIENTS (2000)

First Review Committee:

Dr. R.K. Shrestha	:	National STI clinical adviser, DV in Charge, Bir Hospital, Chairman
Ms Asha Basnyat	:	Programme Officer, AIDSCAP
Dr. India Basnyat	:	Training Officer, National Health Training Centre
Dr. Kamala Burathoki	:	DV Leprosy Control Section, Teku
Dr. Anil Jha	:	DV in charge, Tribhuvan University Teaching Hospital
Dr. Kasturi Malla	:	Consultant Gynaecologist, TMH
Dr. Rajendra Pant	:	MO, Trisuli Hospital, Nuwakot
Dr. G Raj Shakya	:	DV, Bheri Hospital, Nepalgunj
Dr. Pramila Sharma	:	Medical Director, Family Planning Association of Nepal
Ms Shanta Shrestha	:	Staff Nurse, SCF (US)
Ms Indu Thapa	:	Public Health Nurse, National Health Training Centre
Ex Officio:		
Dr. Benu B Karki	:	Director, NCASC, Teku
Dr. Pulkit Choudhary	:	MO, focal point for STI, NCASC

Second Review committee

Dr. Prakash Arjyal	:	Director, National Centre for AIDS & STI Control
Dr. R.K. Shrestha	:	National STI clinical advisor, Head of DV Department, Bir Hospital
Dr. B.K. Subedi	:	Senior Medical Officer, National Centre for AIDS & STI control
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Mr. K.P. Bista	:	Project Co-ordinator, NCASC, UoH STI/HIV Project
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Technical Committee for Revision of STI Case Management Guidelines, 2004

Dr. Anil Kumar Jha – TUTH

Dr. Arunima Shrestha – Bir Hospital

Dr. B.K. Suvedi – MoH

Dr. Baburam Marasini – NHTC

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Dr. Graham Neilsen, Senior Technical Advisor, FHI-Asia/Pacific

Dr. Kamala Burathoki – Bharatpur Hospital

Ms. Kamala Moktan – FHI

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Dr. Pulkit Choudhary – NCASC

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Mr. Purushottam Poudel – NPHL

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Participants of the Workshop organized for the Revision of National Case Management of STI Guidelines (in 2014)

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1	Dr. Naresh Pratap KC	Director	NCASC
2	Dr. Hemant Chandra Ojha	SMO	NCASC
3	Dr. Dinesh Binod Pokharel	Professor	TUTH
4	Dr. Indira Upadhyaya	Consultant Obs/ Gynecology, Professor	Paropakar Women and Maternity Hospital
5	Dr. Anil Kumar Das	Associate Professor	TUTH
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7	Dr. Sushil Kumar Shakya	Consultant Physician	National Academy of Medical Science
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