सत्यमेव जयते

National Guidelines on

Prevention, Management and Control of Reproductive Tract Infections and Sexually Transmitted Infections

Department of AIDS Control
Ministry of Health and Family Welfare
Government of India

July 2014

NATIONAL RURAL HEALTH MISSION
राष्ट्रीय ग्रामीण स्वास्थ्य मिशन

Maternal Health Division

NACO

STI/RTI Division

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Preface

The prevention, control and management of sexually transmitted infections and reproductive tract infections (STI/RTI) is a well-recognized cost effective strategy for controlling the spread of HIV and AIDS in the country as well as reducing reproductive morbidity. Individuals with STI/RTI have a significantly higher chance of acquiring and transmitting HIV. Moreover STI/RTI is also known to cause infertility, reproductive wastage and affect the quality of life. STI/RTI services provide a window of opportunity for counselling on safer sex practices, HIV prevention and reproductive health and hygiene.

In line with the operational framework for convergence between the National AIDS Control Programme under the Department of AIDS Control and Reproductive and Child Health Programme under the National Health Mission, the earlier technical guidelines have been revised to bring about uniformity in implementation of STI/RTI prevention and control through the public health care delivery system. These revised technical guidelines will facilitate the availability and reach of standardized STI/RTI care at all levels of health facilities. This will strengthen STI service delivery not only to the general population but also to high risk groups, by expanding access to a package of STI/RTI management services at all levels of public health care system.

I am sure that these revised technical guidelines will help in ensuring the provision of quality standardized STI/RTI services across the country.

24/7/2014

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अपनी एचआईवी अवस्था जानें, निकटतम सरकारी अस्पताल में मुफ्त सलाह व जाँच पाएँ
Know Your HIV status, go to the nearest Government Hospital for free Voluntary Counselling and Testing

लव वर्मा
सचिव
LOV VERMA
Secretary

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Foreword

Sexually transmitted infections and reproductive tract infections (STIs/RTIs) are important public health problems in India. Studies suggest that every year 6% of the adult population in India is infected with one or more STI/RTI. Individuals with STI/RTI have a significantly higher chance of acquiring and transmitting HIV. Moreover, STI/RTI is also known to cause infertility and reproductive morbidity, affecting not only the mother but also the new-born's health adversely. Controlling STI/RTI helps decrease HIV infection rates and provides a window of opportunity for counselling about HIV prevention and reproductive health and hygiene.

The implementation framework of the National Health Mission (NHM) provided the directions for synergizing strategies for prevention, control and management of STI/RTI services under the Reproductive, Maternal, New-born, Child and Adolescent Health (RMNCH+A) Programme and the National AIDS Control Progarmame (NACP). While the RMNCH+A programme advocates a strong reference to include STI/RTI and HIV & AIDs prevention, screening and management in Maternal, Child Health and Adolescent Sexual and Reproductive Health Services, the NACP includes services for management of STI/RTI as a major programme strategy for prevention of HIV.

These guidelines are intended as a resource document for programme managers and service providers in RMNCH+A and NACP and would enable the service providers working at different levels of public health care system in ensuring effective case management services for STI/RTI.

(Lov Verma)

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The technical content has been jointly developed by the members of the sub-committee set up to develop these technical guidelines, comprising members of the STI Technical Resource Group, STI division of Department of AIDS Control (National AIDS Control Organization) and Maternal Health Division of MoHFW.

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(Dr S. D. Khaparde)

LIST OF ABBREVIATIONS

AIDS	Acquired Immuno- Deficiency Syndrome
ANC	Ante Natal Clinic
ARD	Ano-rectal Discharge
ARSH	Adolescent Reproductive and Sexual Health
ART	Antiretroviral Therapy
ARV	Antiretroviral
ASHA	Accredited Social Health Activist
BV	Bacterial Vaginosis
CA	Condyloma Acuminata
CD	Cervical Discharge
CHC	Community Health Centre
CMV	Cytomegalovirus
CSF	Cerebrospinal Fluid
CV	Candida Vaginitis
DAC	Department of AIDS Control
DAPCU	District AIDS Prevention and Control Unit
DFA	Direct Fluorescent Antibody
DGI	Disseminated Gonococcal Infection
DMC	Designated Microscopy Centre
DOT	Directly Observed Therapy
DPM	District Programme Manager
DSRC	Designated STI/RTI Clinics
EC	Emergency Contraception
ELISA	Enzyme Linked Immuno Sorbent Assay
e-PTCT	Elimination of Parent to Child Transmission (of syphilis)
EQAS	External Quality Assurance System
FC	Female Condom
FIDU	Female Injecting Drug user

FP/FW	Family Planning/Family Welfare
FSW	Female Sex Worker
FTA-ABS	Fluorescent Treponemal Antibody Absorption Assay
GASP	Gonorrhoea Antimicrobial Surveillance Programme
GI	Granuloma Inguinale
GUD – NH	Genital Ulcer Disease Non-Herpetic
GUD – H	Genital Ulcer Disease Herpetic
GV	Granuloma Venereum
HBIG	Hepatitis B Immuno Globulin
HBsAg	Hepatitis B Surface Antigen
HBV	Hepatitis B Virus
HCP	Health Care Provider
HIV	Human Immunodeficiency Virus
HPF	High Power Field
HPV	Human Papilloma Virus
HRG	High Risk Group
HSS	HIV Sentinel Surveillance
HSV-1	Herpes Simplex Virus Type 1
HSV-2	Herpes Simplex Virus Type 2
IB	Inguinal Bubo
ICTC	Integrated Counselling and Testing Centre
ICMR	Indian Council of Medical Research
IgM	Immunoglobulin M
IPHS	Indian Public Health Standards
IUD	Intra Uterine Device
KOH	Potassium Hydroxide
LAP	Lower Abdominal Pain
LGV	Lympho Granuloma Venereum
LHV	Lady Health Visitor

LT	Laboratory Technician
MARP	Most At Risk Population
MC	Molluscum Contagiosum
MCV	Molluscum Contagiosum Virus
MDG	Millennium Development Goal
MH	Maternal Health
MHA-TP	Micro Haemagglutination Assay for *Treponema pallidum*
MIF	Micro Immuno Fluorescence
MO	Medical Officer
MOHFW	Ministry of Health and Family Welfare
MPHW	Multi-Purpose Health Worker
MSM	Men who have Sex with Men
MTCT	Mother to Child Transmission
NACO	National AIDS Control Organisation
NACP IV	National AIDS Control Programme Phase IV
NGO	Non-Governmental Organization
NGU	Non Gonococcal Urethritis
NHM	National Health Mission
NIRRH	National Institute of Research in Reproductive Health
ObGyn	Obstetrics and Gynaecology
OIF	Oil Immersion Field
PCR	Polymerase Chain Reaction
pH	Power of Hydrogen (a figure expressing the acidity or alkalinity)
PHC	Primary Health Centre
PID	Pelvic Inflammatory Disease
PLHIV	People Living with HIV
POC	Point of Care Test
PPTCT	Prevention of Parent to Child Transmission (of HIV)
PSS	Painful Scrotal Swelling

PSU	Public Sector Undertaking
PWID	People Who Inject Drugs
RMNCH+A	Reproductive Maternal, Neonatal, Child Health and Adolescent Programme
RNTCP	Revised National Tuberculosis Control Programme
RPR	Rapid Plasma Reagin
RSTRRL	Regional STI Training, Research and Reference Laboratory
RVVC	Recurrent Vulvo Vaginal Candidiasis
SACS	State AIDS Control Society
SSTRL	State STI Training and Reference Laboratory
STI/RTI	Sexually Transmitted Infections/ Reproductive Tract Infections
TI	Targeted Interventions
TPHA	*Treponema pallidum* Haemagglutination Assay
TPPA	*Treponema pallidum* Particle Agglutination Assay
TS/TG	Transsexual/Transgender
TSU	Technical Support Unit
TV	*Trichomonas vaginalis*
UD	Urethral Discharge
VD	Vaginal Discharge
VDRL	Venereal Disease Research Laboratory
VIA	Visual Inspection with Acetic Acid
VILI	Visual Inspection with Lugol's iodine
VVC	Vulvo Vaginal Candidiasis
WHO	World Health Organization

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1 Introduction and Overview of STI/RTI

1. Introduction and Overview of STI/RTI

Sexually Transmitted Infections (STI) and Reproductive Tract Infections (RTI) have a major impact on sexual and reproductive health. As per the World Health Organization (WHO), globally 499 million new episodes of curable sexually transmitted infections (syphilis, gonorrhoea, chlamydia and trichomoniasis) occur yearly (2008 estimates); a significant proportion of these infections occurring in developing countries. Sexually transmitted infections are an important cause of infertility in men and women. In pregnant women with untreated early syphilis, 21% of pregnancies result in stillbirth and 9% in neonatal death. Drug resistance, especially for gonorrhoea, is a major threat to STI control globally. Some STI can increase the risk of HIV acquisition and transmission by three-fold or more.

Of the more than 30 identified pathogens known to be transmitted sexually, syphilis, gonorrhoea, chlamydia, trichomoniasis, human immunodeficiency virus (HIV), human papilloma virus (HPV), herpes simplex virus (HSV), and hepatitis B virus (HBV) have been linked to the greatest incidence of illness.

Sexually Transmitted Infections/Reproductive Tract Infections (STI/RTI) are an important public health problem in India. A community based STI/RTI prevalence study conducted during 2002-03 by the Indian Council of Medical Research (ICMR) has shown that 6% of the adult population in India has one or more STI/RTI. This amounts to occurrence of about 30-35 million episodes of STI/RTI every year in the country. Controlling STI/RTI helps to decrease HIV infection rates and provides a window of opportunity for counselling on HIV prevention and improving sexual and reproductive health.

Currently, the available data from the STI/RTI control and prevention programme suggests a significant decline of bacterial STI (syphilis, gonorrhoea). Chancroid is almost on the verge of disappearance. On the other hand, viral STI (herpes, genital warts, hepatitis B) are showing an increasing trend. There is a significant burden of lower RTI (trichomoniasis, bacterial vaginosis and candidiasis) among women with no evidence to suggest a decline in their prevalence, thus affecting the quality of their reproductive health.

National and State health policies and Indian Public Health Standards (IPHS) are prescribed to achieve and maintain quality of care to the community through the public healthcare delivery system and to achieve programmatic goals. The STI/RTI management services are a key programme strategy for prevention of HIV. The syndromic case management of STI/RTI is adopted as a universal strategy, is applicable at all levels of the health care system (Primary, Secondary and Tertiary care) and ensures access to a package of standardized STI/RTI

management services both for the general population with an emphasis on pregnant and non-pregnant women, children and adolescents and high risk behaviour groups.

The guidelines presented in this document are designed for health care providers working at all levels of the public health care delivery system, public sector undertakings and private sector to enable them to diagnose and treat common STI/RTI following the syndromic approach. These guidelines should be regarded as a source of technical guidance for programme implementation and will not replace standard text books.

These guidelines also cater to the needs of Programme Managers and health care providers working in the Reproductive Maternal, Neonatal, Child Health and Adolescents Programme (RMNCH+A) and the STI/RTI Control and Prevention Programme under the Department of AIDS Control (DAC). The RMNCH+A Programme will find the guidelines useful in implementing effective syndromic case management services through the network of PHCs/CHCs/Mobile Medical Units/and Rural Hospitals. Similarly STI/RTI Programme Managers at State AIDS Control Societies (SACS) and Technical Support Units entrusted with the responsibility of implementing STI/RTI services to both general and high risk groups through targeted interventions (TIs) will find the guidelines useful in ensuring access to quality STI/RTI management services.

The guidelines also provides guidance to service providers to address STI/RTI among high risk groups such as Male and Female Sex Workers (M/FSW), Men who have Sex with Men (MSM), Transsexuals and Trans genders (TS/TG), and People who Inject Drugs (PWID).

The guideline details comprehensive STI/RTI syndromic case management supported by photographs of common STI/RTI to provide a visual impression; syndromic management flowcharts including partner management; management of STI/RTI syndromes among pregnant women; standardized drug regimens; and Directly Observed Treatment strategies to enhance compliance wherever possible. Each syndromic flow chart includes specific instructions that should be followed.

The guidelines describe details of procedures of minimal laboratory tests which can be conducted with basic equipment and minimal skills at various levels of health facilities. These laboratory tests enhance the sensitivity and specificity of syndromic case diagnosis and reduce over diagnosis and over treatment. But under no circumstances should treatment be withheld for want of test results, as it may cause further secondary cases in the community. A brief note on newer STI diagnostics such as 'rapid point of care' tests for syphilis is also included.

In addition, the document also provides information on syndrome specific counselling and client-centred STI/HIV prevention counselling. Interactive counselling can be used effectively by

all health care providers, counsellors, and other clinical staff for educating the patients on preventing future infection and combating current infection.

The Designated STI/RTI Clinic (DSRC) comprises both STI and Gynaecology clinic and should have cross referral linkages with Integrated Counselling & Testing Centres (ICTC), Prevention of Parent to Child Transmission (PPTCT) centres, Anti retroviral Therapy (ART) centres, Blood Banks, Adolescent Reproductive and Sexual Health (ARSH) clinics, FP/FW clinics, other speciality clinics and general laboratory, Targeted Intervention projects, and Care and Support Centres including PLHIV networks. This ensures enhanced coverage and better utilization of DSRC (STI/RTI) services. Further, DSRC should also have referral linkages with State STI Training and Reference Laboratories (SSTRL) and Regional STI Training, Research and Reference Laboratories (RSTRRL) for managing cases of suspected treatment failure and persistent infections.

The National AIDS Control Programme IV (NACP IV) acknowledges the need for engaging with both organized Public Sector and Private Sector in provision of STI/RTI services. It is important that treatment facilities in both public and private sectors are linked to targeted interventions projects which will enhance the access to and coverage of quality STI/RTI service delivery to general population and high risk behaviour groups. The Department of AIDS Control already has formalized MoUs, with organized Public Sectors (such as Coal and Shipping) and private health care sectors. The health services of these organizations and individual providers in private practice are highly encouraged to use and adhere to the National STI/RTI guidelines. This will help to standardize and scale up the STI/RTI management services. Universal adherence to standardized drug regimens helps to reduce emergence of drug resistance.

The health care providers are directed to follow and adhere to the recommended syndromic treatment regimens. However, alternative regimens can be considered in instances of significant drug allergy or other contraindications to the recommended regimens as specifically mentioned under each condition. The choices for therapy are prioritized based on efficacy, convenience, and cost.

Currently the programme is generating aetiological STI data from Regional STI Training, Research and Reference Laboratories. It is envisaged to scale up aetiological screening by establishing additional Regional and State STI Training and Reference Laboratories. These centres will act as STI laboratory based surveillance sites. The data generated from these STI surveillance sites will be useful to identify the emergence of STI hotspots, drug resistance, evidence based planning and will enable the programme to take appropriate mid course corrections, if needed.

2 Syndromic Case Management

2. Syndromic Case Management

A syndrome is defined as a group of common symptoms and signs caused by more than one organism. An STI/RTI syndrome is a combination of symptoms and signs typically associated with sexually transmitted microorganisms, e.g. Genital ulcer disease syndrome, which may be due to syphilis, chancroid, herpes simplex, etc.

The aim of STI/RTI syndromic case management is to identify the syndrome correctly and manage them accordingly. While clinical diagnosis is based on identifying the specific causative agent, syndromic diagnosis leads to immediate treatment for all of the most important possible causative agents. This is important because mixed infections occur frequently in STI/RTI. Besides, syndromic management of STI/RTI can effectively treat cases in settings with limited or no laboratory facilities. This means syndromic treatment can quickly render the patient non-infectious.

Objectives of STI/RTI Syndromic Management

1 Enhance access to STI/RTI control and prevention services to all; especially for pregnant and non-pregnant women, adolescents and high risk group population who are constrained to seek services and face several access related barriers.

2 Focus on prevention, with special reference to counselling, partner management, condom demonstration and provision; follow -up and management of side effects.

3 Emphasis mostly on single dose regimens and directly observed therapy (DOT) for better treatment adherence and outcomes.

4 Reinforce Behaviour change communication - inter personal communication leading to improved knowledge on causation, transmission and prevention of STI/RTI.

5 Ensure good linkages with Obstetrics & Gynaecology, Ante Natal Clinic, and cross referral linkages with Integrated Counselling and Testing Centres, Prevention of Parent to Child Transmission Centres, ART centres, Blood Banks, ARSH clinic, Designated Microscopy centres (RNTCP), Community Support Centres including PLHIV networks and Targeted Intervention projects. Ensure linkages also with Regional and State STI Training and Reference Laboratories especially for managing suspected treatment failure and persistent cases.

6 Screen all attendees of designated STI/RTI clinic and ANC clinic for syphilis and HIV preferably through single window and single prick testing.

7. Ensure non-judgemental STI/RTI control and prevention service provision for high risk groups such as Male & Female Sex Workers, Men who have Sex with Men, Transsexuals/Transgenders and People who Inject Drugs (PWID).

8. Offer interactive counselling to clients by all health care providers, counsellors, and other clinical staff. Client-centred STI/RTI/HIV counselling can increase the likelihood that the patient undertakes or enhances risk-reduction practices.

Essential Steps of STI/RTI Syndromic Case Management

The essential steps of STI/RTI syndromic case management include:

1. History taking

2. Clinical examination: genital/oral and ano-rectal apart from general examination

3. Appropriate syndromic diagnosis as per syndromic flow charts

4. Minimal laboratory tests, wherever available.

5. Early and effective treatment, preferably single dose and directly observed.

6. Promotion and provision of condoms.

7. Counselling for behaviour change and risk reduction

8. Referral for syphilis screening and HIV counselling and testing

9. Partner/s notification and management.

10. Follow-up as per schedule.

11. Documentation of case details and laboratory results

1. History taking

History must be taken in a language, which the client understands well. Clients are often reluctant to talk about their condition due to shyness or fear of stigma. Individuals may come to

the clinic with other non specific complaints or requesting a check-up, assuming that the health care provider will notice any thing abnormal that needs treatment. Therefore, health care workers should maintain a high index of suspicion about the possibility of STI/RTI. Hence health care providers should ensure privacy, confidentiality, be empathetic, understanding, non-judgmental and culturally sensitive while eliciting history.

Start the conversation by welcoming your client, taking them into confidence and encouraging him/ her to talk about their complaints. If a couple comes together, each of them needs to be interviewed and examined separately.

Clients seeking services from ARSH clinics, antenatal care, abortion, infertility and family planning/welfare services should be viewed as opportunities to provide general information about STI/RTI and should be asked about STI/RTI symptoms and referred for services as per the need.

Patients with problems relating to the genital area tend to be guarded and evasive while giving a history.

- Ask an open-ended question, such as “What brought you to hospital?” to initiate a dialogue.

- Phrase your questions in a way such that the opportunity for the patient to mislead you is minimized. For example, “When did you last have sex with someone?” is preferable to “Did you have sex with someone?”

- Once the subject is broached and patient is comfortable, closed-ended questions (calling for “yes” or “no” answers) can be helpful in eliciting brief answers, for example, “Do you have pain?”

- In order to make an accurate diagnosis it is often necessary to ask more questions during the examination.

- Do not show annoyance if the patient’s history has obvious discrepancies or keeps changing.

Presenting symptoms and signs

Obtain a detailed history of the presenting symptom/s. Enquire about the presence of other symptoms that are common, such as discharge from the urethra in a patient with genital ulcers, or recurring genital ulcers in a patient presenting with urethral discharge.

Table 2.1: Symptoms of STI/RTI

FEMALES	MALES
Dysuria, frequency of urination	Dysuria, frequency of urination
Vaginal discharge	Urethral discharge
Genital ulceration	Genital ulceration
Abnormal growth or mass in genital area	Abnormal growth or mass in genital area
Lower abdominal pain	Acute scrotal swelling, pain
Inguinal lymphadenopathy	Inguinal lymphadenopathy
Vulval itching	Genital itching, Balanitis
Dyspareunia	Dyspareunia
Perianal pain	Perianal pain
Anal discharge	Anal discharge
Pharyngitis	Pharyngitis

Medical, obstetric and menstrual history

History of other illnesses, medication (current and past) and allergies to medication should be noted.

Table 2.2: Medical, obstetric and menstrual history

MEDICAL HISTORY	MENSTRUAL HISTORY	OBSTETRIC HISTORY
Other illness such as Diabetes mellitus	Date of last menstrual period	Missed or overdue period
Medications - current and past	Regular/irregular periods	Contraception
Drug allergies	Pain during periods	Mode of delivery
Past History of catheterization	Excessive bleeding	Number of pregnancies and outcomes
	Post-coital bleeding	Sibling status
		Past History of termination of pregnancy

Behavioural risk assessment

If the patient is to receive proper education and counselling, these must be preceded by behaviour risk assessment. Make sure that the patient is aware that the history will be kept strictly confidential. Inquire about the following risk factors:

- Marital status: married, living together, single, separated, widowed.
- Occupation: sex workers (male and female), seamen, workers in the hospitality industry, transport workers, migrant workers, etc.

- Travel: Frequent traveller (holidays, business or employment).
- Unprotected casual sexual encounters (other than with regular partner).
- Previous history of STI.
- History of injections or blood transfusions.
- Substance use: alcohol, drugs (e.g. heroin).
- Tattooing.
- Partner with symptoms suggestive of STI.
- Multiple sexual partners.

Sexual history

A sexual history must be taken from all patients before examining them and managing their sexual health problems. All individuals should be asked about the following:

- Sex of the partner.
- Type of exposure (oral, vaginal, anal).
- Use of condoms with any type of partner.
- Relationship to partner/s (spouse, regular non-spouse, casual).
- Problems or symptoms in the partner/s.
- Date of last sexual intercourse.
- Number of partners in the past three months.

2. Clinical examination

This is an important step to arrive at a probable syndromic diagnosis and avoids making an incorrect diagnosis based on the patient's history alone. Inform the patient that you will do a genital examination and obtain the patient's permission to do so. Ensure privacy during the examination. Always have a female attendant when examining a female patient (particularly if the HCP is a male).

Genital examination includes a bimanual and speculum examination of the genital tract for all female patients, and rectal examination (including proctoscopy, if indicated and available) for patients (male and female) practising receptive anal sex.

In addition to genital examination, an oral examination (to look for oral STI) and an adequate and appropriate general examination is also required.

3. Minimal laboratory tests

If laboratory facilities are available, use appropriate, available tests to confirm a probable syndromic diagnosis. In particular, the Rapid Plasma Reagin (RPR)/rapid treponemal test, Gram stain and wet mount can assist in the diagnosis. If HIV testing facilities are available, offer HIV counselling and testing or refer the patient for this. Do not delay or with hold treatment because laboratory investigations are incomplete or the results of the tests are not available.

4. Appropriate syndromic diagnosis

Correct syndromic diagnosis: On the basis of the history, clinical examination and laboratory investigations (if available) that have been carried out, the following actions must be taken.

- Use the appropriate syndromic flowchart for managing the patient.
- Be particularly careful when confronted with a patient with lower abdominal pain (in women) and scrotal swelling (in men).
- Be certain that you are not dealing with a surgical emergency. Arrange for early follow up if uncertain.

(Please see the flow charts specific to the syndrome)

5. Early and effective treatment

Treat the patient as per national STI treatment guidelines. While treatment will be curative in most instances, only palliative therapy is possible in the case of viral STI.

When prescribing medication, educate patients on the following：

- **Compliance** — educate the patient on the importance of taking the treatment as prescribed . The full course of treatment should be taken even if the patient feels better after a few doses .
- **Side effects** — patients may stop therapy due to adverse effects unless they have been previously informed of possible adverse effects .Advise the patient to come back if these effects are intolerable .

- **Treatment failure** — re evaluate for possible non compliance or re infection .If neither seems likely, then refer to a higher centre providing adequate laboratory support .

6. Promotion and provision of condoms

- **Prevention of STI and HIV -** Explain to the patient the association between STI and HIV, and that the same risk behaviours can lead to acquisition and/or transmission of both these conditions. Educate the patient on the methods of risk reduction through safer sex practices including abstinence and regular use of condom during sexual intercourse with any partner.

- **Condom use -** Discuss the use of condoms for risk reduction .Provide free condoms if feasible and available .Demonstrate on a penis model the correct way of using a condom and develop the patient's skills in correct use .Desensitize the patient about condoms, especially if he or she is a regular risk taker who should be consistently using condoms .

7. Counselling for behaviour change and risk reduction

Counselling is an interactive confidential process where a health care provider helps a patient to reflect on issues associated with STI/RTI and to explore possible lines of action. Counselling is more time-consuming than providing information, and also requires more empathy and understanding from health care workers.

In a counselling session, the following issues should be addressed :

a) Inform the partner (s) or spouse about the diagnosis of STI/RTI options: either the patient or the HCP informs the partner(s) or spouse.

b) Assess the patient's risk for HIV and assist the patient in making a decision to undergo HIV testing.

c) Help the patient to learn about, and come to terms with, worrisome complications of STI/RTI, such as infertility and congenital syphilis.

d) Educate the patient on his/her present STI/RTI and how it was acquired. Inform the patient that bacterial STI are curable, viral STI recur, and the effects of not taking treatment properly. Patients with recurrent genital herpes and recurrent vulvo-vaginitis are usually very distressed and need repeated counselling sessions.

e) Inform the patient on how to deal with an incurable STI, such as herpes genitalis or genital warts, which may be transmitted to the partner (s) or spouse.

f) Educate the patient on how to prevent future infections, including strategies for discussing and introducing condom use with the partner (s) or spouse.

g) Tell the patient about confidentiality, disclosure and the risk of violence or stigmatizing reactions from the spouse, partner (s), family or friends and ways to overcome these.

h) Enable patients to take control of their own lives and understand their responsibilities for disease prevention.

8. Referral for syphilis screening and HIV counselling and testing

All the patients attending the DSRCs should be referred for syphilis screening and HIV testing after proper counselling and clarifying the patient's curiosity, questions and doubts.

9. Partner notification and management

While maintaining confidentiality, the patients who have been put on treatment for STI/RTI must be encouraged to bring in their sexual partners for screening and management of STI as per the syndromic management guidelines.

Note *:Routine partner treatment is not required for asymptomatic partners of patients with GUD herpetic and for female patients with vaginal discharge especially when HCP suspects candida or bacterial vaginosis* .

10. Clinical follow up

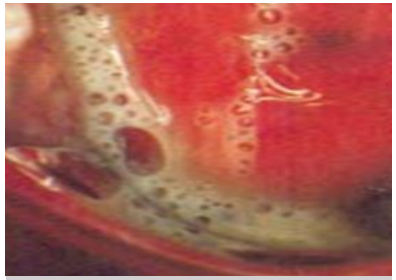
Appropriate clinical follow up is a part of comprehensive case management of STI/RTI. The follow up schedules are prescribed for each syndrome in the respective flow charts. Patients should be advised to return if their symptoms get worse or persist after the prescribed period of therapy.

11. Recording & reporting of cases

Record each individual patient attending the clinic in records and registers as mentioned in the operational guidelines. Once a month the data is compiled and reported in the monthly SIMS format. The records and registers should be kept in a safe place to ensure confidentiality of patient related information.

Diagnosis and Management of STI/RTI using Syndromic Flow Charts

Flowchart 2.1: Management of Vaginal Discharge syndrome (Vaginitis)



Frothy vaginal discharge in trichomoniasis

Causative Organisms of Vaginitis

- *Trichomonas vaginalis* (TV)
- *Candida albicans*
- Multiple organisms including *Gardnerella vaginalis*, *Mycoplasma*, *Ureaplasma* and other fastidious and uncultivated anaerobes

History

- Nature and type of discharge (quantity, smell, colour, and consistency)
- Genital itching
- Burning while passing urine, increased frequency
- Any ulcer, swelling on the vulval or inguinal region
- Genital complaints in sexual partners
- Low backache
- Menstrual history to rule out pregnancy

Assess risk

- Poor genital hygiene
- Unprotected sexual encounter/s
- Multiple sexual partners
- Recent change in sexual partners
- History of similar complaints in the past

Examination

- Per speculum examination to differentiate between vaginitis and cervicitis.

  The classic clinical presentations of the various causes of vaginitis include the following, but may not be distinguishable:

  - Trichomoniasis - greenish frothy discharge
  - Candidiasis - curdy white discharge
  - Bacterial vaginosis – adherent discharge
  - Mixed infections may present with atypical discharge
- Speculum examination followed by bimanual pelvic examination to rule out pelvic inflammatory disease

***Note**: If speculum examination is not possible or client is hesitant, treat both for vaginitis and cervicitis.*

Laboratory Investigations (if available)

- Wet mount microscopy of the discharge for *Trichomonas vaginalis*
- 10% KOH preparation for *Candida albicans*
- Gram stain of vaginal smear for clue cells seen in bacterial vaginosis
- RPR test for syphilis
- Refer to ICTC for HIV counselling and testing

Treatment

Vaginitis (TV+BV+Candida)

- Tab. Secnidazole 2 gm orally, single dose **OR**

  Tab. Tinidazole 500 mg orally, twice daily for 5 days **OR**

  Tab. Metronidazole 400 mg, twice daily for 7 days.
- Treat for candidiasis with Tab Fluconazole 150 mg orally single dose **OR** local Clotrimazole 500 mg vaginal pessary once

Note:

- *If vaginitis and cervicitis are present together treat for both or if provider is unable to do speculum examination then treat for both vaginitis and cervicitis.*
- *Instruct client to avoid douching*
- *Pregnancy, diabetes, HIV may also be influencing factors and should be considered in recurrent infections*
- *Consumption of alcohol should be avoided by patients during metronidazole therapy and for at least 48 hours after completion of treatment.*

Syndrome specific guidelines for partner management

For Vaginitis due to BV and Candida:

- Not required
- Treat current partner only if no improvement after initial treatment
- If partner is symptomatic, treat client and partner using above protocols

For Trichomonas infection:

- Treat all sexual partners in the last 30 days with the above protocol
- Advise sexual abstinence during the course of treatment

Management of pregnant women

Per speculum examination should be done to rule out pregnancy complications like abortion, premature rupture of membranes

Treatment for vaginitis (TV+BV+Candida)

- Local treatment with Clotrimazole vaginal pessary/cream only for candidiasis.
- Oral Fluconazole is contraindicated in pregnancy.
- Tab Metronidazole 400 mg bid for 7 days for BV/TV.

Note*: Evidence has shown that Metronidazole can be safely used in the first trimester of pregnancy.*

Follow up

After 7 days,

- To document symptomatic cure
- To document results of tests done for HIV and syphilis.
- If symptoms/signs persist assess whether it is due to lack of treatment compliance or treatment failure or re-infection and advise prompt referral.

Key counselling messages

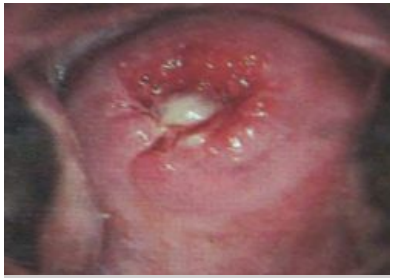
- Educate and counsel client and sex partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment.
- Provide condoms, educate about their correct and consistent use.
- Schedule return visit after 7 days.

Vulvo-vaginal candidiasis: Recurrence of symptoms within 2 months is indicative of recurrence. It is recommended that predisposing factors such as the use of antibiotics and antiseptic/antibiotic vaginal preparations or vaginal douching be reduced or eliminated. Simultaneous treatment of a rectal focus with oral Nystatin or Fluconazole is not useful in preventing recurrences.

Other underlying factors to be kept in mind for recurrent vulvo-vaginal candidiasis include uncontrolled diabetes mellitus, immunosuppression and corticosteroid use.

Bacterial vaginosis: Douching might increase the risk for relapse, and no data support the use of douching for treatment or relief of symptoms. The results of clinical trials indicate that a woman's response to therapy and the likelihood of relapse is not affected by treatment of her sexual partner(s). Therefore, routine treatment of sexual partners is not recommended.

Flowchart 2.2: Management of Cervical Discharge syndrome (Cervicitis)



Cervical discharge on colposcopy

Causative Organisms of Cervicitis

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- Other organisms
  - o *Trichomonas vaginalis*
  - o *Herpes simplex virus*
  - o *Human papilloma virus*

History

- Nature and type of discharge (quantity, smell, colour, and consistency)
- Genital itching
- Burning while passing urine, increased frequency
- Any ulcer and/or swelling on the vulval or inguinal region
- Low backache
- Menstrual history to rule out pregnancy
- Problems or symptoms in the sexual partner(s)

Assess risk

- Unprotected sexual encounter/s
- Multiple sexual partners
- Recent change in sexual partners
- History of similar complaints in the past
- History of urethral discharge in the male partner(s)

Examination

- Cervicitis frequently is asymptomatic, but some women complain of an abnormal vaginal discharge and intermenstrual vaginal bleeding (e.g. after sexual intercourse).
- Two major diagnostic signs characterize cervicitis:
  - o a purulent or mucopurulent endocervical exudate visible in the endocervical canal or on an endocervical swab specimen (commonly referred to as mucopurulent cervicitis or cervicitis)
  - o sustained endocervical bleeding easily induced by gentle passage of a cotton swab through the cervical os.

  Either or both signs might be present.
- Per speculum examination to differentiate between vaginitis and cervicitis. The following features are characteristic of cervicitis:
  - o erythematous cervix
  - o mucopurulent cervical discharge
- Bimanual pelvic examination to rule out pelvic inflammatory disease.

***Note**: If speculum examination is not possible or client is hesitant, treat both for vaginitis and cervicitis.*

Treatment for cervical infection (chlamydia and gonorrhoea)

- Tab. Cefixime 400 mg orally, single dose

  PLUS

- Tab. Azithromycin 1 gm, 1 hour before food. If vomiting occurs within 1 hour, give anti-emetic and repeat

Note:

- *If vaginitis and cervicitis are present together treat for both or if provider is unable to do speculum examination then treat for both vaginitis and cervicitis.*
- *Instruct client to avoid douching.*
- *Consumption of alcohol should be avoided by patients during metronidazole therapy and for at least 48 hours after completion of treatment.*

Laboratory Investigations (if available)

- Wet mount microscopy of the discharge for *Trichomonas vaginalis*
- Gram stain of endocervical smear to detect gonococci. Though this test has low sensitivity, it is highly specific.
- A finding of leucorrhoea (>10 WBC per high-power field on microscopic examination of vaginal fluid) has been associated with chlamydial and gonococcal infection of the cervix. In the absence of inflammatory vaginitis, leucorrhoea might be a sensitive indicator of cervical inflammation with a high negative predictive value. While this test is highly sensitive, it is not specific and can potentially lead to over treatment.
- RPR test for syphilis.
- Refer to ICTC for HIV counselling and testing.
- For further investigations refer to higher centre.

Syndrome specific guidelines for partner management

- For Cervicitis and Trichomonas infection: treat all sexual partners in the last 30 days with the above protocol
- Advise sexual abstinence during the course of treatment

Management of pregnant women

Same as in non-pregnant women.

Follow up

After seven days,

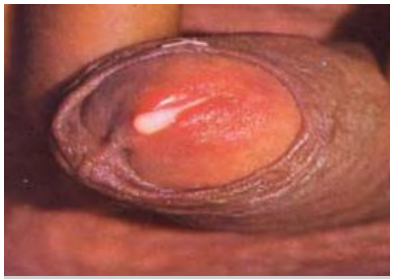
- To document symptomatic cure
- To document results of tests done for HIV and syphilis.
- If symptoms/signs persist assess whether it is due to lack of treatment compliance or treatment failure or re-infection and advise prompt referral.

Note: *relapses are common and may lead to persistent and recurrent cervicitis. M. genitalium is attributed as a key factor.*

Key counselling messages

- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment.
- Treat partner(s) as per syndrome recommendations.
- Advise sexual abstinence during the course of treatment.
- Provide condoms, educate about their correct and consistent use.
- Schedule return visit after 7 days.

Flowchart 2.3: Management of Urethral Discharge/Burning Micturition in Males



Gonococcal urethritis: inflamed meatus with purulent discharge

Causative Organisms

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- *Trichomonas vaginalis*
- Other organisms like *Mycoplasma genitalium, Herpes simplex virus, enteric bacteria and adenovirus*

History

- Sexual exposure including high risk practices like oro-genital sex in the previous 2 months
- Urethral discharge
- Pain or burning while passing urine
- Increased frequency of urination

Assess risk

- H/o recent unprotected sex
- Condom breakage or other issues in its usage
- Multiple sexual partners
- Recent change in sexual partners
- Partner with symptoms suggestive of STI in recent past

Examination

- Redness and swelling of the urethral meatus
- Presence of urethral discharge
- If urethral discharge is not seen, then gently massage the urethra from the ventral part of the penis towards the meatus and look for thick, creamy greenish-yellow or mucoid discharge

Laboratory Investigations (if available)

- Gram stain examination of the urethral smear to demonstrate gram-negative intracellular diplococci in case of gonorrhoea
- More than 5 neutrophils per oil immersion field (1000X) in the urethral smear or more than 10 neutrophils per high power field in the sediment of the first void urine in case of non-gonococcal urethritis
- RPR test for syphilis
- Refer to ICTC for HIV counselling and testing.

Treatment

As dual infection is common, the treatment for urethral discharge should adequately cover for both, gonorrhoea and chlamydial infections.

Recommended regimen for uncomplicated urethral discharge (UD) syndrome

Uncomplicated infections indicate that the disease is limited to the anogenital region (anterior urethritis and proctitis).

- Tab. Cefixime 400 mg orally, single dose

  PLUS

- Tab. Azithromycin 1 gm orally single dose under supervision **OR**

  Cap. Doxycycline 100 mg twice a day for 7 days

- Advise the client to return after 7 days of start of therapy
- Patients who have UD syndrome and also are infected with HIV should receive the same treatment regimen as those who are HIV negative.
- When symptoms persist (discharge or only dysuria persists after 7 days) after adequate treatment in the index client and partner(s), they should be treated for *Trichomonas vaginalis*.
  - Tab. Secnidazole 2 gm orally, single dose (to treat for *T. vaginalis*)
- Even after the above treatment, if symptoms persist, refer the patient to higher centre.

Management of pregnant partners

- Pregnant partners of male clients with urethral discharge should be examined by doing per speculum as well as per vaginal examination and should be treated.
- Cephalosporins to cover gonococcal infection are safe and effective in pregnancy
  - Tab. Cefixime 400 mg orally, single dose **OR**

    Inj. Ceftriaxone 250 mg by intramuscular injection

    PLUS
  - Tab. Azithromycin 1 gm stat orally **OR**

    Tab. Erythromycin 500 mg orally four times a day for 7 days **OR**

    Cap Amoxicillin 500 mg orally, three times a day for 7 days to cover chlamydial infection

***Note**: Quinolones (like ofloxacin, ciprofloxacin), and doxycycline are contraindicated in pregnant women.*

Syndrome specific guidelines for partner management

- All sexual partners of patients with UD syndrome whose last sexual contact with the patient was within 60 days before onset of symptoms or diagnosis of infection in the patient should be evaluated and treated for UD syndrome.
- Treat female partners on same lines after ruling out pregnancy and history of allergies.
- Advise sexual abstinence during the course of treatment .

Follow up

After seven days

- To document symptomatic cure
- To document results of tests done for HIV and syphilis
- If symptoms/signs persist, assess whether it is due to Trichomonas infection, if possible treat with Tab. Secnidazole 2 gm orally
- If symptoms/signs persist assess whether it is due to treatment failure or re-infection and advise prompt referral.

Key counselling messages

- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment
- Treat partner(s) as per syndrome recommendations
- Advise sexual abstinence during the course of treatment
- Provide condoms, educate about their correct and consistent use.
- Schedule return visit after 7 days.

Recurrent and Persistent Urethritis

- Objective signs of urethritis should be present before the initiation of antimicrobial therapy.

  Note: In persons who have persistent symptoms after treatment without objective signs of urethritis, the value of extending the duration of antimicrobials has not been demonstrated.

- Persons who have persistent or recurrent urethritis can be retreated with the initial regimen if they did not comply with the treatment regimen or if they were re-exposed to an untreated sexual partner.
- Persistent urethritis after doxycycline treatment of 100 mg twice daily for 7 days might be caused by *T. vaginalis* and doxycycline-resistant *U. urealyticum* or *M. genitalium.*
- If compliant with the initial regimen and re-exposure can be excluded, the following regimen is recommended while awaiting the results of the diagnostic tests.

Recommended Regimens

- Metronidazole 2 gm orally in a single dose **OR**

  Tinidazole 2 gm orally in a single dose

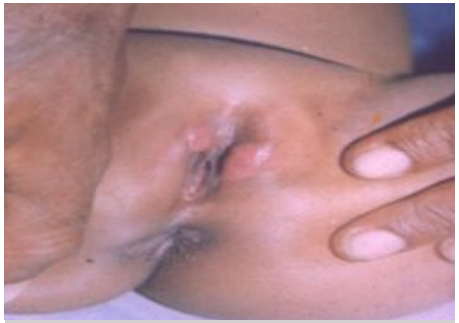
  PLUS

- Azithromycin 1 gm orally in a single dose (if not used for initial episode)

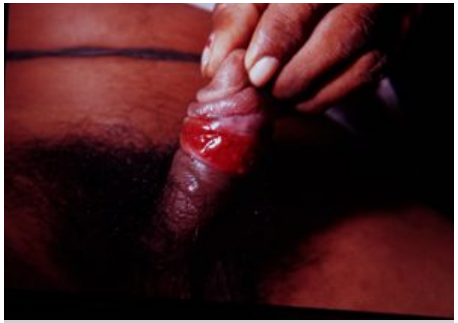
Note:

- *Persistent urethral discharge may also be due to treatment failure from Cefixime. In this case, management might include Ceftriaxone 250 mg IM + Metronidazole 2 gm orally + Azithromycin 2 gm orally. Advise and facilitate for N. gonorrhoea culture and antimicrobial resistance monitoring at the nearest STI Reference Laboratory.*
- *Referral to a urologist should be considered for men who experience pelvic pain for more than 3 months within a 6-month period.*
- *Consumption of alcohol should be avoided by patients during metronidazole therapy and for at least 48 hours after completion of treatment.*

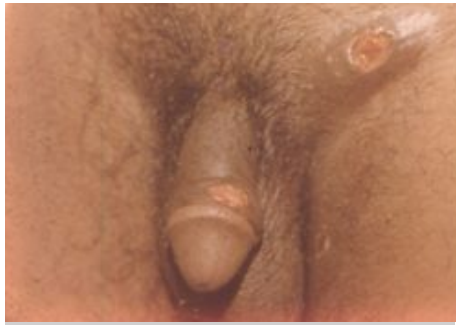
Flowchart 2.4: Management of Genital Ulcer Disease Non-Herpetic syndrome



Syphilis



Granuloma inguinale



Chancroid

Causative Organisms

- *Treponema pallidum* (Syphilis)
- *Haemophilus ducreyi* (Chancroid)
- *Klebsiella granulomatis* (Granuloma inguinale)
- *Chlamydia trachomatis* (Lymphogranuloma venereum)

History

- Genital ulcer
- Burning sensation in the genital region
- Sexual exposure of either partner including high risk practices like oro-genital sex

Assess risk

- Unprotected sexual encounter/s
- Multiple sexual partners
- Recent change in sexual partners

Examination

- Presence of genital ulcer- single or multiple
- Ulcer characteristics:
  - Painless ulcer with firm lymph nodes - Syphilis
  - Painless ulcer without inguinal lymph nodes - Granuloma inguinale
  - Transient painless penile ulcer with painful, enlarged inguinal lymph nodes – LGV
  - Painful ulcers usually multiple and associated with painful bubo- Chancroid

Laboratory Investigations (if available)

- Gram stain for chancroid
- Leishman stain for donovanosis
- RPR test for syphilis
- Refer to ICTC for HIV counselling and testing
- For further investigations refer to higher centre

Treatment

- If vesicles are not seen and only ulcer is seen, treat for syphilis and chancroid
  - Inj. Benzathine penicillin 2.4 million IU IM single dose after test dose in two divided doses (with emergency tray ready) (for syphilis)

    PLUS
  - Tab. Azithromycin 1 gm orally single dose/ Erythromycin 500 mg four times a day for 7 days **OR**

    Tab. Ciprofloxacin 500 mg orally, twice a day for 3 days (for chancroid)
- In individuals allergic or intolerant to penicillin:
  - Cap. Doxycycline 100 mg orally, twice daily for 15 days **OR**

    Tab. Azithromycin 2 gm as a single dose to treat early syphilis.

Note:

- *Inj. Benzathine penicillin is the drug of choice for treating syphilis*
- *Caution should be exercised in using azithromycin as it may develop drug resistance.*
- *Patients should be followed up and retested after three months of therapy.*
- *Azithromycin should not be used among men who have sex with men (MSM).*
- *If provider is in doubt about the clinical diagnosis then treat for herpes and non-herpes (syphilis and chancroid) together.*

Syndrome specific guidelines for partner management

- Partners should be treated for syphilis and chancroid with same regimen.
- Treat all partners who are in contact with client in last 3 months prior to the onset of ulcer.
- Advise sexual abstinence during the course of treatment or till the lesions heal.

Follow up

- After seven days,
  - To document symptomatic cure
  - To document results of tests done for HIV and syphilis
  - If symptoms/signs persist assess whether it is due to lack of treatment compliance or treatment failure or re-infection and advise prompt referral.
- Follow up of individuals treated for syphilis
  - Individuals should be followed up at 3, 6, 12 and 24 months following treatment.
  - During each follow up visit, conduct clinical examination, qualitative, and quantitative non-treponemal tests (RPR/VDRL).
  - Retreatment should be undertaken if there is serological evidence of re-infection or relapse.
  - To ensure that results are comparable, follow up test should be performed by using the same non-treponemal test (RPR/VDRL) that was used initially.

Management of pregnant women

- Quinolones (like ofloxacin, ciprofloxacin), doxycycline, sulfonamides are contraindicated in pregnant women.
- Pregnant women who test positive for RPR in any dilution should be considered infected and should be provided treatment for syphilis unless adequate treatment is documented in the medical records and sequential serologic antibody titres have declined.

  Inj. Benzathine penicillin 2.4 million IU IM after test dose (with emergency tray ready)
- Pregnant women who are allergic to penicillin should be treated with erythromycin and the neonate should be treated for syphilis after delivery.

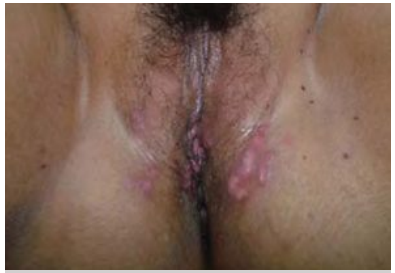
  Tab. Erythromycin 500 mg orally four times a day for 15 days

  ***Note**: Erythromycin estolate is contraindicated in pregnancy because of drug related hepatotoxicity. Only Erythromycin base or erythromycin ethyl succinate should be used in pregnancy.*

Key counselling messages

- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment
- Treat partner(s) as per syndrome recommendations
- Advise sexual abstinence during the course of treatment
- Provide condoms, educate about their correct and consistent use
- Schedule return visit after 7 days.

Flowchart 2.5: Management of Genital Ulcer Disease Herpetic syndrome



Herpes genitalis
Multiple superficial ulcers with exudate

Causative Organism

- *Herpes simplex virus* (genital herpes)

History

- Genital ulcer/vesicles
- Burning sensation in the genital region
- Sexual exposure of either partner including practices like oro-genital sex
- Recurrent lesions or history of similar lesions in the past

Examination

- Presence of vesicles
- Presence of multiple genital erosions/ulcer

Laboratory Investigations (if available)

- RPR test for syphilis
- Tzanck smear for multinucleated giant cells
- Refer to ICTC for HIV counselling and testing

Treatment

- If vesicles or multiple painful ulcers are present treat for herpes
- In Primary episodes (first episodes): Tab. Acyclovir 400 mg three times a day for 7 days
- For Recurrences: Tab. Acyclovir 400 mg orally, three times a day for 7 days.
- For further investigations refer to higher centre, if not responding to treatment

If provider is in doubt about the clinical diagnosis then treat for herpes, syphilis and chancroid together.

Note: *If history of recurrent episodes of ulcer/s, consider HSV suppressive therapy (Tab. Acyclovir 400 mg twice a day) if there are more than 6 incidences per year. Suppressive therapy may be discontinued after a maximum of a year and the frequency of recurrence is reassessed. Patients who continue to have unacceptably high rates of recurrence may be restarted on treatment.*

Suppressive therapy has not been associated wi th the emergence of clinically significant acyclovir resistance among immunocompetent patients.

Syndrome specific guidelines for partner management

- No partner treatment for herpes (in the absence of active episode/ lesions)
- Advise sexual abstinence during the course of treatment or till the lesions heal.

Management of pregnant women

- All pregnant women should be asked history of genital herpes and examined carefully for herpetic lesions.
- Women without symptoms or signs of genital herpes or its prodrome can deliver vaginally.
- Women with genital herpetic lesions at the onset of labour should be delivered by caesarean section to prevent neonatal herpes.
- Acyclovir may be administered orally to pregnant women with first episode genital herpes or recurrent herpes.
- Pregnant women should be administered Tab. Acyclovir 400 mg three times a day during the last four weeks of pregnancy.
- Pregnant women who test positive for RPR in any dilution should be considered infected and should be provided treatment for syphilis unless adequate treatment is documented in the medical records and sequential serologic antibody titres have declined.
  - Inj. Benzathine penicillin 2.4 million IU IM after test dose (with emergency tray ready)
  - Pregnant women who are allergic to penicillin should be treated with erythromycin and the neonate should be treated for syphilis after delivery.

    Tab. Erythromycin 500 mg orally four times a day for 15 days

    Note: *Erythromycin estolate is contraindicated in pregnancy because of drug related hepatotoxicity. Only Erythromycin base or erythromycin ethyl succinate should be used in pregnancy. Quinolones (like ofloxacin, ciprofloxacin), doxycycline, sulfonamides are contraindicated in pregnant women.*

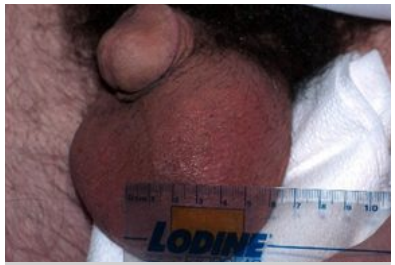
Follow up

- After seven days,
  - To document symptomatic cure
  - To document results of tests done for HIV and syphilis
  - If symptoms/signs persist assess whether it is due to lack of treatment compliance or treatment failure or recurrence and advise prompt referral.
- Follow up of individuals treated for syphilis
  - Individuals should be followed up at 3, 6, 12 and 24 months following treatment.
  - During each follow up visit, conduct clinical examination, qualitative, and quantitative non-treponemal tests (RPR/VDRL).
  - Retreatment should be undertaken if there is serological evidence of re-infection or relapse.
  - To ensure that results are comparable, follow up test should be performed by using the same non-treponemal test (RPR/VDRL) that was used initially.

Key counselling messages

- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment.
- Treat partner(s) as per syndrome recommendations.
- Advise sexual abstinence during the course of treatment.
- Provide condoms, educate about their correct and consistent use.
- Schedule return visit after 7 days.

Flowchart 2.6: Management of Painful Scrotal Swelling syndrome in Males



Scrotal swelling

Causative Organisms

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- Scrotal swelling can also be caused infrequently by
  - Non STI infectious causes such as tuberculosis, filariasis, coliforms, pseudomonas, mumps virus infection.
  - Non-infectious causes such as trauma with or without haematoma, and torsion.

History

- Swelling and pain in scrotum
- Pain or burning while passing urine
- Urethral discharge
- Systemic symptoms like malaise, fever

Assess risk

- Unprotected sexual encounter/s
- Multiple sexual partners
- Recent change in sexual partners

Examination

- Scrotal swelling
- Redness and oedema of the overlying skin and raised local temperature
- Tenderness of the epididymis and vas deferens
- Associated urethral discharge/genital ulcer/inguinal lymph nodes - if present refer to the respective flowchart
- A trans-illumination test to rule out hydrocele

Laboratory Investigations (if available)

- Gram stain examination of the urethral smear to demonstrate gram-negative intracellular diplococci in case of gonorrhoea
- More than 5 neutrophils per oil immersion field (1000X) in the urethral smear or more than 10 neutrophils per high power field in the sediment of the first void urine in case of non-gonococcal urethritis.
- RPR test for syphilis
- Refer to ICTC for HIV counselling and testing.

Treatment

As dual infection is common, the treatment regimen should adequately cover for both, gonorrhoea and chlamydial infections.

Recommended regimen for painful scrotal swelling (PSS) syndrome

- Tab. Cefixime 400 mg orally, single dose

PLUS

- Tab. Azithromycin 1 gm orally single dose under supervision
- Advise the client to return after 7 days of start of therapy
- Patients who have PSS Syndrome who are HIV positive should receive the same treatment regimen as those who are HIV negative.
- Supportive therapy to reduce pain (bed rest, scrotal elevation with T-bandage and analgesics)

***Note**: If quick and effective therapy is not given, damage and scarring of testicular tissues may result, causing sub fertility*

Syndrome specific guidelines for partner management

- All sexual partners of patients with PSS syndrome, whose last sexual contact with the patient was within 60 days before onset of symptoms or diagnosis of infection in the patient, should be evaluated and treated.
- Treat female partners on the same lines after ruling out pregnancy and history of allergies
- Advise sexual abstinence during the course of treatment

Management of pregnant partners

- Pregnant partners of male clients with PSS syndrome should be examined by doing a per speculum as well as per vaginal examination and should be treated.
- Cephalosporins to cover gonococcal infection are safe and effective in pregnancy

  Tab. Cefixime 400 mg orally, single dose **OR**

  Inj. Ceftriaxone 250 mg by intramuscular injection

  PLUS
- Tab. Erythromycin 500 mg orally four times a day for 7 days **OR**

  Cap. Amoxicillin 500 mg orally, three times a day for 7 days **OR**

  Tab. Azithromycin 1 gm orally in a single dose to cover chlamydial infection

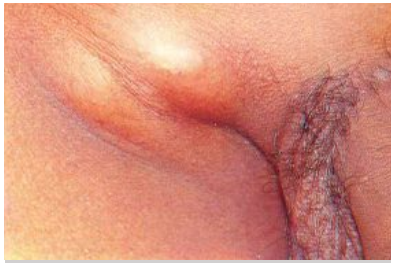
Follow up

- Patient is advised to follow up after seven days,
  - o To document symptomatic cure
  - o To document results of tests done for HIV, syphilis
- If symptoms/signs persist assess whether it is due to treatment failure or re-infection. Advise prompt referral to higher centre since complicated gonococcal infection needs parenteral and longer duration of treatment.

Key counselling messages

- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment.
- Treat partner(s) as per syndrome recommendations.
- Advise sexual abstinence during the course of treatment
- Provide condoms, educate about their correct and consistent use.
- Schedule return visit after 7 days.

Flowchart 2.7: Management of Inguinal Bubo



Inguinal bubo

Causative Organisms

- *Chlamydia trachomatis* serovars L1, L2, L3, causative agent of lymphogranuloma venereum (LGV)
- *Haemophilus ducreii* causative agent of Chancroid

History

- Swelling in inguinal region which may be painful
- Preceding history of genital ulcer
- Sexual exposure of either partner including practices like oro-genital sex etc.
- Systemic symptoms like malaise, fever

Assess risk

- Unprotected sexual encounter/s
- Multiple sexual partners
- Recent change in sexual partners

Examination

- Localized enlargement of lymph nodes in the groin which may be tender and fluctuant
- Inflammation of skin over the swelling
- Presence of multiple sinuses
- Oedema of genitals and lower limbs
- Presence of genital ulcer or urethral discharge - refer to respective flowchart

Differential diagnosis

- Tuberculosis lymphadenitis/ Scrofuloderma, filariasis
- Any acute infection of skin of pubic area, genitals, buttocks, anus and lower limbs can also cause inguinal swelling
- If malignancy or tuberculosis is suspected refer to higher centre for biopsy.

Laboratory Investigations (if available)

- Diagnosis is on clinical grounds
- RPR test for syphilis
- Refer to ICTC for HIV counselling and testing

Treatment

- Cap. Doxycycline 100 mg orally twice daily for 21 days

  PLUS

- Tab. Azithromycin 1 gm orally **OR**

  Tab. Ciprofloxacin 500 mg orally, twice a day for 3 days to cover chancroid

Note:

- *A bubo should never be incised and drained at the primary health centre, even if it is fluctuant, as there is a high risk of a fistula formation and chronicity. If a bubo becomes fluctuant always aspirate.*
- *In severe cases with vulval oedema in females, surgical intervention in the form of vulvectomy may be required for which they should be referred to a higher centre.*

Management of pregnant partners

- Quinolones (like ofloxacin, ciprofloxacin), doxycycline, sulfonamides are contraindicated in pregnant women.
- Pregnant and lactating women should be treated with the Erythromycin regimen.

  Tab. Erythromycin base, 500 mg orally, 4 times daily for 21 days

  Note: *Erythromycin base or Erythromycin ethyl succinate only should be given.*

Syndrome specific guidelines for partner management

- Treat all partners who are in contact with client in last 3 months
- Partners should be treated for LGV and chancroid
  - Cap. Doxycycline 100 mg orally, twice daily for 21 days to cover LGV

  PLUS

  - Tab. Azithromycin 1 gm orally single dose to cover chancroid

Key counselling messages

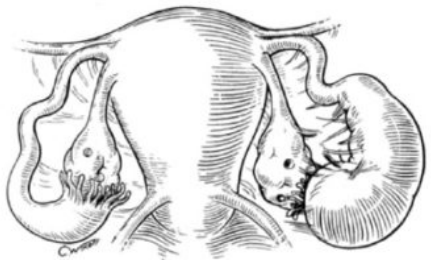
- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment
- Treat partner(s) as per syndrome recommendations
- Advise sexual abstinence during the course of treatment
- Provide condoms, educate about their correct and consistent use.
- Schedule return visit after 7, 14 and 21 days

Follow up

After 7, 14 and 21 days

- To document symptomatic cure
- To document results of tests done for HIV and syphilis

Flowchart 2.8: Management of Lower Abdominal Pain syndrome



Pelvic inflammatory disease

Causative Organisms

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- *Mycoplasma, Gardnerella,* anaerobic bacteria (*Bacteroides sp*, gram positive cocci)

Lower abdominal pain (LAP) syndrome comprises of a spectrum of inflammatory disorders of the upper female genital tract, including any combination of endometritis, salpingitis, tubo-ovarian abscess, and pelvic peritonitis.

History

- Lower abdominal pain
- Fever
- Vaginal discharge
- Menstrual irregularities like heavy, irregular vaginal bleeding
- Dysmenorrhoea
- Dyspareunia
- Dysuria, tenesmus
- Low backache
- Contraceptive use like Intrauterine Device (IUD)

Note:

- *Differences in the clinical manifestations of LAP/PID between HIV infected women and HIV negative women have not been well delineated.*
- *The risk for PID associated with IUD use is primarily confined to the first 3 weeks after insertion and is uncommon thereafter.*

Assess risk

- Unprotected sexual encounter/s
- Multiple sexual partners
- Recent change in sexual partners
- Vaginal douche practices

Examination

- General examination: temperature, pulse, blood pressure
- Per speculum examination: vaginal/cervical discharge, congestion or ulcers
- Per abdominal examination: lower abdominal tenderness or guarding
- Pelvic examination:
  - uterine/adnexal tenderness
  - cervical movement tenderness

Note: *A urine pregnancy test should be done in all women suspected of having PID to rule out ectopic pregnancy.*

Diagnosis

- Usually is based on clinical findings. However the clinical diagnosis is imprecise. Empiric treatment should be initiated in sexually active young women and other women at risk for STI if they are experiencing pelvic or lower abdominal pain, if no cause for the illness other than LAP/PID can be identified, and if one or more of the following minimum criteria are present on pelvic examination:
  - Cervical motion tenderness
  - Uterine tenderness
  - Adnexal tenderness
- One or more of the following additional criteria can be used to enhance the specificity of the diagnosis:
  - Oral temperature >101°F (>38.3°C)
  - Abnormal cervical or vaginal muco-purulent discharge
  - Presence of signs of lower genital tract inflammation (predominance of leucocytes in vaginal secretions, cervical exudates, or cervical friability)
  - Presence of abundant numbers of WBC on saline microscopy of vaginal fluid
  - Elevated erythrocyte sedimentation rate
  - Elevated C-reactive protein
  - Laboratory documentation of cervical infection with *N. gonorrhoeae* or *C. trachomatis*.

Laboratory Investigations (if available)

- Wet smear examination
- Gram stain for gonorrhoea
- Complete blood count and ESR
- Urine microscopy for pus cells
- RPR test for syphilis
- Refer to ICTC for HIV counselling and testing
- For further investigations refer to higher centre

Differential diagnosis

- Ectopic pregnancy
- Twisted ovarian cyst
- Ovarian tumour
- Appendicitis
- Abdominal tuberculosis

Treatment

- In mild or moderate PID (in the absence of tubo-ovarian abscess), out-patient treatment can be given.

  Therapy is required to cover *N. gonorrhoeae*, *C. trachomatis* and anaerobes.
  - Tab. Cefixime 400 mg orally STAT

    PLUS
  - Tab. Metronidazole 400 mg orally, twice daily for 14 days (to treat anaerobic infection)

    PLUS
  - Cap. Doxycyline, 100 mg orally, twice a day for 14 days (to treat chlamydial infection)
  - Tab. Ibuprofen 400 mg orally, three times a day for 3-5 days
  - Tab. Ranitidine 150 mg orally , twice daily to prevent gastritis
- Remove intra uterine device, if present, under antibiotic cover of 24 - 48 hours
- Observe for 3 days. If no improvement (i.e. absence of fever, reduction in abdominal tenderness, reduction in cervical movement, adnexal and uterine tenderness) or if symptoms worsen, refer for inpatient treatment.

Note:

- *PID can be a serious condition. Refer the client to the hospital if she does not respond to treatment within 3 days and even earlier if her condition worsens.*
- *Consumption of alcohol should be avoided by patients during metronidazole therapy and for at least 48 hours after completion of treatment.*

Syndrome specific guidelines for partner management

- Male sexual partners of women with LAP/PID should be examined and treated if they had sexual contact with the patient during the 60 days preceding the patient's onset of symptoms.
- Patients should be instructed to abstain from sexual intercourse until therapy is completed and until they and their sexual partners no longer have symptoms.
- Treat male partners for urethral discharge (gonorrhoea and chlamydia)
- Provide condoms, educate on correct and consistent use
- Inform about the complications if left untreated and sequelae

Management of pregnant women

- Though PID is rare in pregnancy, any pregnant woman suspected to have PID should be referred (because of the high risk for maternal morbidity and preterm delivery) to a higher centre (District or teaching hospital) for hospitalization and treated with a parenteral regimen which would be safe in pregnancy.
- Doxycycline is contraindicated in pregnancy.

Follow up

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

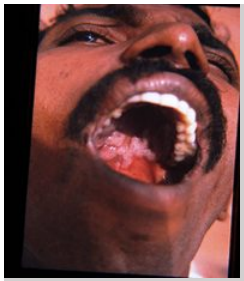
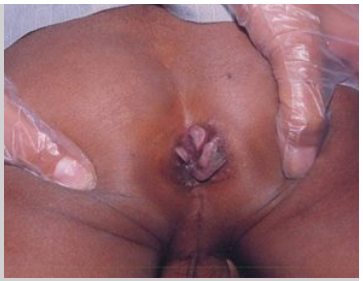
Key counselling messages

- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sexual practices and importance of taking complete treatment.
- Treat partner(s) as per syndrome recommendations.
- Advise sexual abstinence during the course of treatment.
- Provide condoms, educate about their correct and consistent use.

Hospitalization of clients with acute PID should be seriously considered when

- The diagnosis is uncertain
- Surgical emergencies e.g. appendicitis or ectopic pregnancy cannot be excluded
- A pelvic abscess is suspected
- Severe illness precludes management on an outpatient basis
- The woman is pregnant
- The client is unable to follow or tolerate an outpatient regimen
- The client has failed to respond to outpatient therapy.

Flowchart 2.9: Management of Oral & Anal STI

Secondary syphilis: Oral & anal ulcers

Causative Organisms

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- *Treponema pallidum* (syphilis)
- *Haemophilus ducreyi* (chancroid)
- *Klebsiella granulomatis* (granuloma inguinale)
- *Herpes simplex* (genital herpes)
- *Human papilloma virus*

History

- Unprotected oral sex, sore throat
- Unprotected anal sex with anal discharge or tenesmus, rectal bleeding and pain, diarrhoea, blood in stool, abdominal cramping, nausea, bloating

Assess risk

- Unprotected oral, anal and genital sexual encounter/s
- Multiple sexual partners
- Recent change in sexual partners

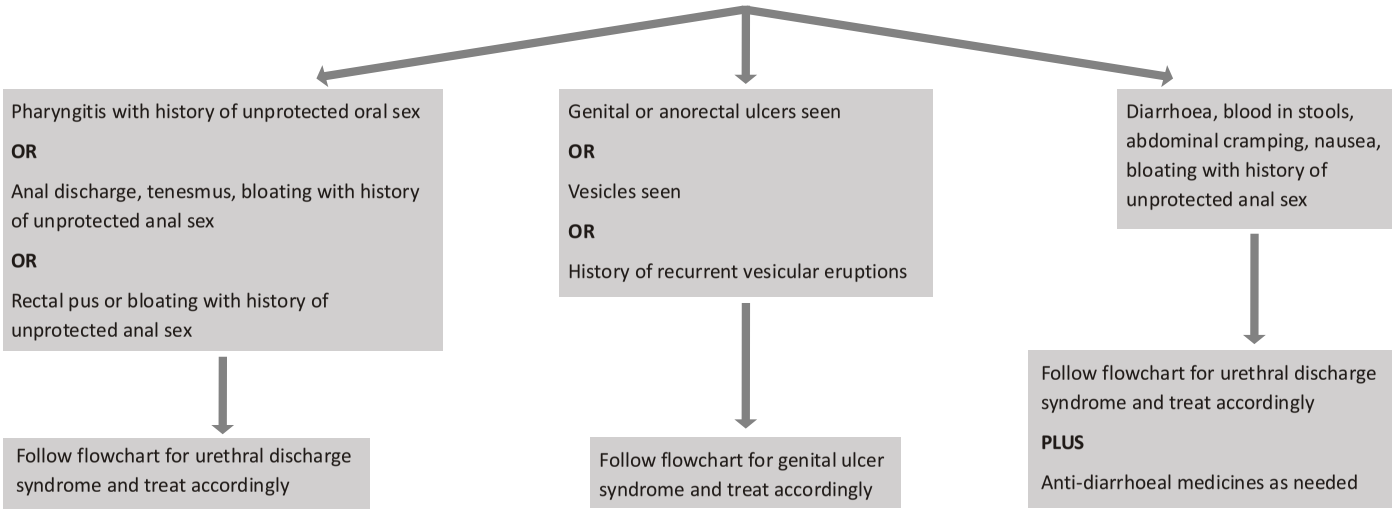
Examination

- Oral ulceration, redness, pharyngeal inflammation, growth etc
- Genital or anorectal ulcers – single or multiple
- Presence of vesicles
- Rectal pus
- Any other STI syndrome

(Do proctoscopy for rectal examination if available)

Laboratory Investigations (if available)

- Gram stain examination of rectal swab for gram negative intracellular diplococci in case of gonorrhoea.
- RPR for syphilis
- Refer to ICTC for HIV counselling and testing



Syndrome specific guidelines for partner management

- Treat all partners who are in contact with client in last 3 months.
- Partners should be treated for corresponding syndrome as diagnosed in index case.

Follow up

Follow up protocol should be as per respective syndromic recommendations

- To document symptomatic cure
- To document results of tests done for HIV and syphilis

Management of pregnant partners

- Quinolones (like ofloxacin, ciprofloxacin), doxycycline, sulfonamides are contraindicated in pregnant women.
- Pregnant and lactating women should be treated with the Erythromycin regimen.

Key counselling messages

- Educate and counsel client and sexual partner(s) regarding STI/RTI, safer sex practices and importance of taking complete treatment
- Treat partner(s) as per syndrome recommendations
- Advise sexual abstinence during the course of treatment
- Provide condoms, educate about their correct and consistent use.
- Schedule return visit after 7 days.

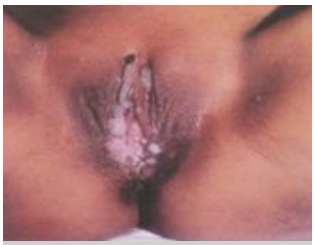
2.10 Management of Other STI

A. Anogenital warts

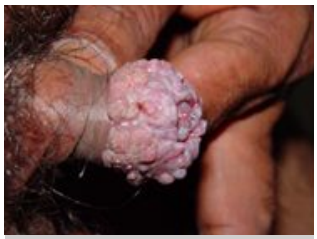
Causative Organism: Human Papilloma Virus (HPV)

Clinical features: Single or multiple soft, painless, pink in colour, "cauliflower" like growths which appear around the anus, vulvo-vaginal area, penis, urethra, and perineum. Warts could appear in other forms such as papules which may be keratinized.

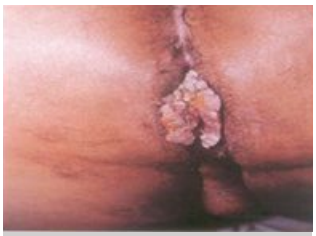
Diagnosis: Clinical diagnosis.



Perivulvar warts



Penile warts



Perianal warts

Figure 2.a: Anogenital warts

Differential diagnosis

- Condyloma lata of syphilis
- Molluscum contagiosum

Treatment: Recommended regimens:

Penile and Perianal warts

(a) Chemical cauterization

- 20% Podophyllin in compound tincture of benzoin applied to the warts, while carefully protecting the surrounding area with Vaseline, to be washed off after 3 hours. It should not be used on extensive areas per session.
- Treatment should be repeated weekly till the lesions resolve completely.
- Podophyllin is effective only in moist areas.

- Podofilox (podophyllotoxin) 0.5% solution or gel twice daily for 3 days, followed by 4 days of no treatment; the cycle repeated up to 4 times. Not more than 0.5 ml of Podofilox should be applied per day.

- Imiquimod 5% cream applied with a finger at bed time, to be washed in the morning with soap and water. It should be applied three times a week up to 12 to 16 weeks.

(b) Physical cauterization

- Cryotherapy with liquid nitrogen, solid carbon dioxide or cryoprobe, if available. Repeat application at 1~2weeks interval. Cryotherapy is preferred by many consultants. It is non-toxic, does not result in scarring if done properly and does not require any anaesthesia.

- Electrocautery

- Surgical excision

Vaginal warts

- Podophyllin 10~25%, using vaginal speculum.

- Trichloroacetic acid (TCA), 50~75%, using vaginal speculum.

Cervical warts

- Podophyllin is contra-indicated.

- Biopsy of warts to rule out malignant change.

- Cryo-cauterization is the treatment of choice.

- Cervical cytology should be periodically done in the sexual partner(s) of men with genital warts.

***Note**: Podophyllin and Podofilox are contra-indicated in pregnancy. Treatment should be given under medical supervision. Clients should be warned against self-medication.*

For other areas as penile shaft, scrotum, vulval skin and pubic areas

- Trichloroacetic acid, cryotherapy or electro/radiofrequency cauterization may be used.

Urethral meatal warts

- 5-fluorouracil, applied weekly for 3 weeks, may eradicate urethral lesions. The cream must be worked down into the urethra, avoiding exposure of the drug to the scrotal skin. A scrotal support or zinc oxide cream applied over the scrotal skin may be useful.

Key counselling messages to all patients diagnosed with HPV infection:

- Genital HPV infection is very common.
- Many types of HPV are passed on through genital contact, most often during vaginal and anal sexual contact. HPV can also be spread by oral sexual contact.
- In most cases, HPV infection clears spontaneously, nevertheless, some infections do progress to genital warts, pre-cancers, and cancers.
- The types of HPV that cause genital warts are different from the types that can cause anogenital cancers.
- Within an ongoing sexual relationship, both partners are usually infected at the time one person is diagnosed with HPV infection, even though signs of infection might not be apparent.
- Treatments are available for the conditions caused by HPV (e.g. genital warts), but not for the virus itself.
- HPV does not affect a woman's fertility or ability to carry a pregnancy to term.
- Tests for HPV are now available to help providers screen for cervical cancer in certain women.
- HPV vaccines are available, which offer protection against the HPV types that cause cervical cancer and genital warts.
- Genital warts are not life threatening. If left untreated, genital warts might go away, stay the same, or grow in size or number. Except in very rare and unusual cases, genital warts will not turn into cancer.
- It is difficult to determine how or when a person became infected with HPV; genital warts can be transmitted to others even when no visible signs of warts are present, and even after warts are treated.

- It is not known how long a person remains contagious after warts are treated.
- Genital warts commonly recur after treatment, especially in the first 3 months.
- Women should get regular Pap tests as recommended, regardless of vaccination or genital wart history. Women with genital warts do not need to get Pap tests more often than recommended.
- HPV testing is unnecessary in sexual partners of persons with genital warts.
- If one sex partner has genital warts, both sex partners benefit from getting screened for other STI.
- Persons with genital warts should refrain from sexual activity until the warts are gone or removed.
- Correct and consistent male condom use can lower the chances of giving or getting genital warts, but such use is not fully protective because HPV can infect areas that are not covered by a condom.

B. Molluscum contagiosum

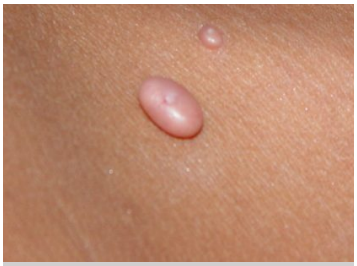


Figure 2.b: Molluscum contagiosum

Causative Organism: Pox virus

Clinical features: Multiple, smooth, glistening, globular papules of varying size from a pinhead to a split pea can appear anywhere on the body. Sexually transmitted lesions on or around genitals can be seen. The lesions are not painful except when secondary infection sets in. When the lesions are squeezed, a cheesy material comes out.

Diagnosis: Diagnosis is based on the above clinical features.

Treatment

- Individual lesions usually regress without treatment in 9-12 months.
- Each lesion should be thoroughly opened with a fine needle or scalpel. The contents should be exposed and the inner wall touched with 25% phenol solution or 30% trichloroacetic acid.

C. Ectoparasitic infections

A) Pediculosis pubis

Causative Organism: Lice - Phthirus pubis

Clinical features: There may be small red papules with a tiny central clot caused by lice irritation. General or local urticaria with skin thickening may or may not be present. Eczema and impetigo may be present.

Treatment: Recommended regimen:

- Permethrin 1% crème rinse applied to affected areas and washed off after 10 minutes.

Special instructions

- Retreatment is indicated after 7 days if lice are found or eggs observed at the hair-skin junction.
- Clothing or bed linen that may have been contaminated by the client should be washed and well dried or dry cleaned.
- Sexual partner must also be treated along the same lines.

B) Scabies

Causative Organism: Mite - Sarcoptes Scabiei.

Clinical features: Severe pruritis (itching) is experienced by the client, which becomes worse at night. Other members of family also affected (apart from sexual transmission to the partner, other members may get infected through contact with infected clothes, linen or towels).

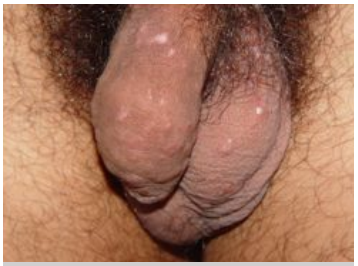


Figure 2.c: Genital scabies

Complications

- Eczematization with or without secondary infection
- Urticaria

- Glomerulonephritis
- Contact dermatitis to anti scabetic drug

Diagnosis: The burrow is the diagnostic sign. It can be seen as a slightly elevated grayish dotted line in the skin, best seen in the soft part of the skin.

Treatment: Recommended regimens:

- Permethrin cream (5%) applied to all areas of the body from the neck down and washed off after 8 - 14 hours.
- Benzyl benzoate 25% lotion, to be applied all over the body, below the neck, after a bath, for two consecutive nights. Client should bathe in the morning, and have a change of clothing. Bed linen should be disinfected.

Special instructions

- Clothing or bed linen that have been used by the client should be thoroughly washed and well dried.
- Sexual partner must also be treated along the same lines at the same time.

3 STI/RTI among Special Populations

3. STI/RTI among Special Populations

A. Pregnant Women

STI/RTI are among the most important causes of maternal morbidity and perinatal morbidity and mortality. The consequences of STI/RTI can be severe and life-threatening, such as pelvic inflammatory disease (PID), ectopic pregnancy and adverse pregnancy outcomes including abortion, stillbirth, pre term birth and congenital infections (due to syphilis, HSV, hepatitis B virus and HIV).

STI/RTI in pregnancy

The interactions between STI and pregnancy include the effects of pregnancy on STI and of the STI on pregnancy. The latter is more important because STI may affect pregnancy outcomes.

Table 3.1: Interactions between STI/RTI and pregnancy

STI /RTI	Effect of STI on pregnancy and neonate	Effect of pregnancy on STI
Gonorrhoea	Prematurity Premature rupture of membranes	Disseminated gonococcal infection is reported to be more common
Chlamydia	Chorioamnionitis Postpartum sepsis Conjunctivitis in the newborn	
Syphilis	Abortion Prematurity Intrauterine growth retardation Stillbirth Congenital syphilis	No effect
Chancroid	No adverse effects of chancroid on pregnancy outcomes have been reported	Ulcers will increase in size and become more vascular
Herpes simplex virus (HSV)	Abortion Intrauterine growth retardation Premature delivery Congenital HSV Neonatal herpes	Longer duration of symptoms Primary infection more severe Dissemination may occur
Human papilloma virus (genital warts)	Laryngeal papillomatosis (rare)	Increase in size and number of warts
Trichomoniasis	Premature rupture of membranes Pre-term labour Low birth weight	No effect

STI /RTI	Effect of STI on pregnancy and neonate	Effect of pregnancy on STI
Candidiasis	Virtually none	Increased frequency and severity of infection
Bacterial vaginosis	Premature rupture of membranes Chorioamnionitis Premature delivery Low birth weight Puerperal sepsis	No effect

Antenatal clinic visits provide opportunities for preventing and detecting STI/RTI. Therefore, women should be encouraged to attend antenatal clinics early in pregnancy.

Since most STI/RTI are asymptomatic in women, screening facilitates the identification of STI/RTI in pregnant women. HCPs should facilitate the screening of pregnant women considered to be at high risk for STI, since early detection and appropriate treatment of STI prevents mother-to-child transmission of infection during pregnancy and delivery.

Screening for syphilis

- An estimated two thirds of pregnancies among women with early untreated syphilis end in abortion, stillbirth or neonatal infection. Hence all pregnant women should be routinely screened for syphilis with RPR or rapid treponemal tests at the first antenatal visit or as early as possible.

- Re-testing in the third trimester is also recommended, if feasible, to detect infection acquired during pregnancy, particularly among women at high risk.

- Any woman who delivers a stillborn infant after 20 weeks of gestation should be tested for syphilis. No infant should leave the hospital without the maternal serologic status having been determined at least once during pregnancy.

- As biological false-positive RPR tests may occur during pregnancy, positive results should be confirmed with specific treponemal tests such as the *Treponema pallidum* haem agglutination (TPHA) or fluorescent treponemal antibody absorption (FTA-ABS) test.

- All mothers with syphilis should be treated appropriately according to the stage of syphilis. Attempts should be made to complete treatment before 36 weeks of gestation.

Screening for vaginal infections

Table 3.2: Screening for vaginal infections

When to screen	Minimal Lab Tests	Recommended approach
Asymptomatic pregnant women with a history of spontaneous abortion or pre term delivery should be screened for bacterial vaginosis (BV) and trichomoniasis	Gram-stained microscopic examination of a vaginal smear Wet mount of vaginal fluid in a drop of normal saline	Usually most HCP prefer not to treat in the first trimester of pregnancy, treatment may be given in cases where early treatment has the best chance of preventing adverse pregnancy outcomes

Pregnant women with symptomatic vaginal discharge in the second or third trimester should be treated (without screening) for BV, trichomoniasis and yeast infection.

Note: Fluconazole is not recommended for use in pregnancy.

Management of STI/RTI in pregnancy

The management of STI/RTI in pregnant women is the same as for non-pregnant women:

- Offer recommended therapy (certain drugs are contraindicated in pregnancy).
- Educate and counsel the patient.
- Encourage partner referral and management.
- Follow up the patient.
- Assess the baby as soon as possible after delivery for any effect of maternal STI/RTI.

The details of treatment for each syndrome is given under the respective syndromic management flow chart.

It is important to educate the couple regarding prevention of STI/RTI during the course of pregnancy, as STI/RTI acquired during pregnancy may lead to adverse pregnancy outcomes.

Inadequate maternal treatment is likely to transmit infection from mother to child if delivery occurs within 30 days of therapy, if clinical signs of infection are present at delivery in a new born, or if the maternal antibody titre at delivery is fourfold higher than the pre-treatment titre there is a chance of baby acquiring syphilis infection.

Note: Women treated for syphilis during the second half of pregnancy are at risk for premature labour and/or foetal distress if the treatment precipitates the Jarisch-Herxheimer reaction. These women should be advised to seek obstetric attention after treatment if they notice any fever, contractions, or decrease in foetal movements. Stillbirth is a rare complication of treatment, but concern for this complication should not delay necessary treatment. All patients who have syphilis should be offered testing for HIV infection.

B. Children and Adolescents

STI/RTI in children can be acquired through three different ways:

i transplacental (occurring in utero) or intrapartum transmission (during labour and delivery) e.g. syphilis, HIV, cytomegalo virus (CMV) and human papilloma virus infection (HPV)

ii post-natal transmission (during breast feeding, accidental and through sexual abuse)

iii due to sexual abuse or unsafe sexual practices among sexually active adolescents. The common sexual abuse encountered by girls is genital contact, masturbation, vaginal, oral or anal intercourse, while boys are subjected to fellatio or anal intercourse.

Adolescents and youth in the age group of 10-24 years contribute to about 30% of our population. The data from various Indian studies reveal that adolescents indulge in premarital sex more frequently and at an early age. The physiological risk of increased susceptibility to infections among adolescent girls is due to the presence of greater cervical ectopy which makes the cervix more susceptible to gonorrhoea, chlamydia and HPV. Adolescents face enhanced vulnerability to unwanted pregnancy and STI including HIV. Many interrelated and complex factors that put adolescents at risk of STI include poor education, unemployment and poverty. Urbanization tends to disrupt family relationships, social networks and traditional values while generating more opportunity for sexual encounters. Lack of information about sexual health, as well as STI prevention, symptoms and treatment also put both male and female adolescents at risk of STI. Even when adolescents have accurate knowledge about STI, some incorrectly perceive their risk as low either due to familiarity with a sexual partner or as relationship matures or simply because they are passing through a stage of life in which risk taking is particularly attractive especially under the strong influence of their peers, migration and displacement, multiple and concurrent sexual partnership, lack of access to effective and affordable STI services. Therefore there is an urgent need for improving the accessibility of adolescents to preventive and curative services including information and counselling.

Under RMNCH+A programme, Adolescent Reproductive and Sexual Health (ARSH) services are expected to offer a core package of promotive, preventive, curative, counselling, referral and outreach services through public health care facilities to adolescents.

Clinical presentation of STI/RTI in children and adolescents

The presenting symptoms of STI/RTI among adolescents are very peculiar as very often they present with symptoms other than those of the infection. Therefore risk assessment plays a crucial role. The increasing tendency of homosexual behaviour as reported by some studies must also be kept in mind and anogenital lesions must be looked for.

Girls

- In general, endogenous vaginitis rather than an STI/RTI is the main cause of vaginal discharge among adolescent females.
- Approximately 85% of gonococcal infection in females will be asymptomatic. However, there may be vulval itching, minor discharge, urethritis or proctitis. In prepubescent girls, a purulent vulvo vaginitis may occur.
- Similarly, *Chlamydia trachomatis* infection is asymptomatic in the majority of cases. Symptoms that may occur in the adolescents are inter menstrual bleeding, post-coital bleeding and an increase in vaginal secretions.
- *Candida albicans* is uncommon in adolescents prior to puberty. If present, the adolescent may have a discharge, vulval itching, dyspareunia, perianal soreness or a fissuring at the introitus. Attacks of candida vulvitis may be cyclical in nature and correspond to menstruation.
- Bacterial vaginosis does not produce vulvitis and the adolescent will not complain of itching or soreness.
- The signs of acquired syphilis in children present with small chancres or mucocutaneous moist lesions either on the vulva or anus. Presentation of syphilis is the same in adolescents and adults.

Boys

- Gonorrhoea among boys presents as proctitis, urethral discharge, asymptomatic pyuria, penile oedema, epididymitis and testicular swelling. Disseminated gonorrhoea presents with multiple systemic manifestations.
- Chlamydia presents as non-specific urethritis.

C. Sex Workers, MSM, TS & TG, PWID

In some groups of population with high risk practices such as sex workers, men who have sex with men, transsexuals & trans genders, and people who inject drugs, the prevalence of STI and HIV is higher than the general population. These sub groups of population are also called as 'Key Population' or 'Core Group' or 'Most at Risk Population (MARP)'.

Clinical Management of STI/RTI

High rates of STI/RTI have been observed in commercial sex settings where condom use rates are variable and access to effective STI/RTI treatment services are limited.

Effective prevention and treatment of STI/RTI among these core groups requires attention to both symptomatic and asymptomatic infections and have the following two components:

- **Treatment of Symptomatic Infections**: As per the national syndromic case management guidelines.

- **Screening and Treatment of Asymptomatic Infections**

    - Regular medical check-ups should be conducted at least once in every three months where the HCP takes history, and carries out a clinical examination including internal examination to detect presence of infection/s.

    - Presumptive treatment for asymptomatic gonococcal and chlamydial infections. This should be administered only to sex workers, MSM, TS/TG and female injecting drug users (FIDU) during their first clinic visit and should be repeated ONLY if there is no regular check-up for six months consecutively.

    - Biannual serologic screening for syphilis of sex workers, MSM, TS/TG and PWID.

Female sex workers and MSM, TS&TG should be encouraged to attend the STI clinic for periodic routine health checkups. During the visit, the clinic staff should take a detailed history and perform an examination. Regular medical check-up should include examination of oropharynx, ano-rectum and genital examination including proctoscopy for all those who have history of receptive anal intercourse.

The rationale for presumptively treating sex workers who are asymptomatic is that they are frequently exposed to STI. The presumptive treatment of asymptomatic STI treatment among sex workers will be stopped, when there is:

- Evidence of low prevalence of gonococcal and chlamydial infections (10% and below);
- High condom use among sex workers (>70%); and
- More than 80% of sex workers have access to STI/RTI services

Sex workers should be counselled at every opportunity (in the clinic and in the community) on the importance of using condoms. Peer educators, outreach workers and clinic staff should reinforce the following messages to sex workers visiting the clinic:

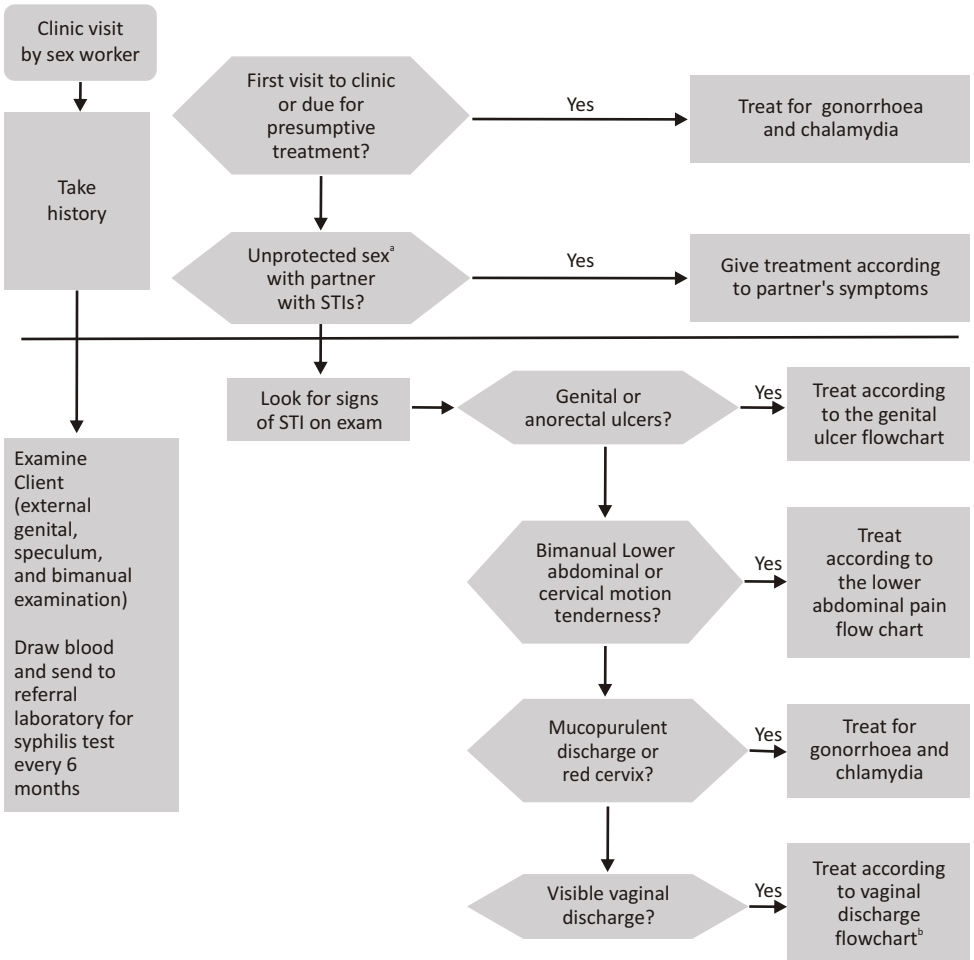
- The only reliable way to protect oneself from HIV and STI/RTI is to use condoms consistently and correctly

- Presumptive treatment is not a vaccine and will not cure all STI/RTI. Hence, it is very important to educate them on regular medical check-up and biannual syphilis screening apart from seeking care if they have any symptoms suggestive of STI/RTI.

Outreach staff should also remind sex workers about their clinic appointments and help them keep their appointments.

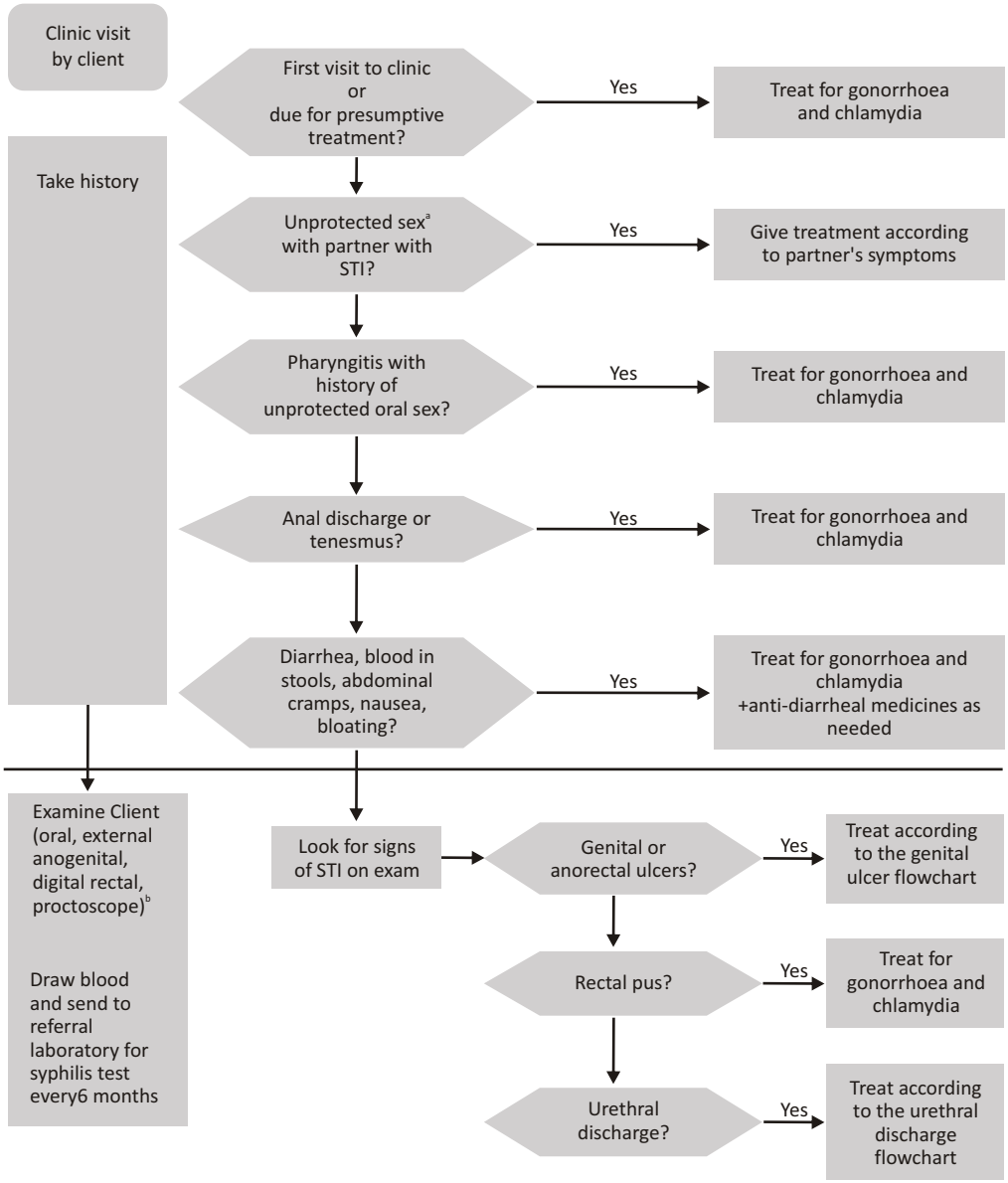
It is also important to cater for STI management needs of MSM, TS/TG population groups. Emergence of anal and oral STI is a cause for concern. Service providers should be sensitive to the needs of the MSM, TS/TG population groups and be empathetic and non- judgemental while providing services. Please refer the following flowcharts on management of STI among female sex workers and MSM, TS/TG during routine clinic visits.

Flowchart 3.1: Management of STI during routine visit by Female Sex Workers



a. Without condom or condom failure
b. All currently active sex workers have positive risk assessment and should be treated for gonococcal and chlamydial cervicitis.

Flowchart 3.2: Management of STI during routine visit by MSM & TS/TG



a. Without condom or condom failure
b. If asymptomatic, conduct digital rectal and proctoscope exam only if acceptable.

4 Management of Sexual Violence

4. Management of Sexual Violence

The World Health Organisation (WHO) defines Sexual Violence as "any sexual act, attempt to obtain a sexual act, unwanted sexual comments/ advances and acts to traffic, or other wise directed against a person's sexuality, using coercion, threats of harm, or physical force, by any person regardless of relationship to the victim in any setting, including but not limited to home and work." Sexual assault, a form of sexual violence, is a term often used synonymously with rape. However, sexual assault could include anything from touching another person's body in a sexual way without the person's consent to forced sexual intercourse, including oral and anal sexual acts, child molestation, fondling and attempted rape. Forms of Sexual Violence include:

- Coerced/forced sex in marriage or live in relationships or dating relationships.
- Rape by strangers.
- Systematic rape during armed conflict, sexual slavery.
- Unwanted sexual advances or sexual harassment.
- Sexual abuse of children.
- Sexual abuse of people with mental and physical disabilities.
- Forced prostitution and trafficking for the purpose of sexual exploitation.
- Child and forced marriage.
- Denial of the right to use contraception or to adopt other measures to protect against STIs.
- Forced abortion and forced sterilization.
- Female genital cutting.
- Inspections for virginity.
- Forced exposure to pornography.
- Forcibly disrobing and parading naked any person.

The Criminal Law Amendment Act (CLA) 2013 has expanded the definition of rape to include all forms of sexual violence-penetrative (oral, anal, vaginal) including by objects/weapons/fingers and non-penetrative (touching, fondling, stalking, etc.) and recognised right to treatment for all survivors/victims/victims of sexual violence by the public and private health care facilities. Failure to treat is now an offence under the law. The law further disallows any reference to past

sexual practices of the survivor. Health professionals need to respond comprehensively to the needs of survivors. The components of a comprehensive response include*:

- Providing necessary medical support to the survivor of sexual violence.
- Establishing a uniform method of examination and evidence collection by following the recommended protocols.
- Informed consent for examination, evidence collection and informing the police.
- First contact for psychological support and validation.
- Maintaining a clear and fool-proof chain of custody of medical evidence collected.
- Referring to appropriate agencies for further assistance (e.g. legal support services, shelter services, etc.)

Section 164 (A) of the Criminal Procedure Code lays out the following legal obligations of the health worker in cases of sexual violence:

- Examination of a case of rape shall be conducted by a registered medical practitioner (RMP) employed in a hospital run by the government or a local authority and in the absence of such a practitioner, by any other RMP.
- Examination to be conducted without delay and a reasoned report to be prepared by the RMP.
- Record consent obtained specifically for this examination.
- Exact time of start and close of examination to be recorded.
- RMP to forward report without delay to Investigating Officer (IO), and in turn IO to Magistrate.

Health professionals play a dual role in responding to the survivors of sexual assault. The first is to provide the required medical treatment and psychological support. The second is to assist survivors in their medico-legal proceedings by collecting evidence and ensuring good quality documentation. Often, because the victims feel uncomfortable talking about sexual violence, they may come to the clinic with other nonspecific complaints or request a check-up, assuming

** For further details, please refer "Guidelines & Protocols: Medico-legal care for survivors/ victims of sexual violence". Available at http://mohfw.nic.in/showfile.php?lid=2737, accessed 15th June 2014.*

that the healthcare provider will notice anything abnormal that needs treatment. Therefore, healthcare workers should maintain a high index of suspicion and ask about any experience of sexual violence or abuse.

A model format of management of sexual violence is given at the end of this chapter for reference and includes the various components of a comprehensive health care response to sexual violence and must be carried out in all cases. Examinations should be conducted by an experienced clinician in a way that minimizes further trauma to the survivor.

Trichomoniasis, BV, gonorrhoea, and chlamydial infection are the most frequently diagnosed infections among women who have been sexually assaulted. Post assault examination presents an important opportunity to identify or prevent STI. Chlamydial and gonococcal infections in women are of particular concern because of the possibility of ascending infection. In addition, HBV infection can be prevented by post exposure administration of hepatitis B vaccine and immunoglobulin. Female survivors of reproductive age should be evaluated for pregnancy, if necessary.

A comprehensive response to the survivor of sexual violence should include the following services:

a. Initial resuscitation/ first aid

b. Informed consent: Consent should be taken for the following purposes: examination, sample collection for clinical and forensic examination, treatment and police intimation. Doctors shall inform the person being examined about the nature and purpose of examination and in case of child to the child's parent/guardian/ or a person in whom the child reposes trust.

c. Detailed history taking including:

- Menstrual history. If the survivor is menstruating at the time of examination then a second examination is required on a later date in order to record the injuries clearly.
- Details of prior vaccination especially with regard to tetanus and hepatitis B, in order to ascertain if prophylaxis is required.
- Sexual violence history- present and previous episode(s)
- Relevant medical history in relation to STIs (gonorrhoea, HIV, HBV etc.). If there is vaginal discharge, record its type, i.e., texture, colour, odour, etc.

- Relevant surgical history in relation to treatment of fissures/injuries/scars of ano-genital area should be noted.

d. Medical examination: Should include a general physical examination, examination of injuries, and local examination of genital parts/other orifices as per the recommended protocol.

It is important to remember that presence of injuries is only observed in one third cases of forced sexual intercourse. Absence of injuries does not mean the survivor has consented to sexual activity. As per the law, if resistance was not offered that does not mean the person has consented.

e. Age estimation (physical/dental/radiological) – if requested by the investigating agency.

f. Evidence collection as per the protocol: If a survivor reports within 96 hours (4 days) of the assault, all evidence including swabs must be collected, based on the nature of assault that has occurred. The likelihood of finding evidence after 72 hours (3 days) is greatly reduced; however it is better to collect evidence up to 96 hours in case the survivor may be unsure of the number of hours lapsed since the assault. Evidence on the outside of the body and on materials such as clothing can be collected even after 96 hours.

g. Documentation, packing, sealing and handing over the collected evidence: After the examination the medical practitioner should document the report, formulate opinion, sign the report and handover the report and sealed samples to police under due acknowledgment.

h. Treatment of injuries: Clean lacerations with antiseptic or soap and water. If the survivor is already immunized with Tetanus Toxoid or if no injuries, TT not required. If there are injuries and survivor is not immunized, administer 0.5 ml TT IM. If lacerations require repair and suturing, which is often the case in minor girls, refer to the nearest centre offering surgical treatment.

i. Testing/prophylaxis for STIs, HIV, Hepatitis B and Pregnancy: If facilities permit, swabs must be collected from various sites for wet mount examination or culture of a number of causative organisms. Blood should be collected for VDRL/RPR, HIV and HbsAg tests. Urine may be tested to rule out pregnancy. The wet mount should be examined for evidence of *T. vaginalis*, BV and candidiasis and culture of a vaginal-swab specimen for *T. vaginalis* infection.

***Note**: It is important to obtain informed consent for any examination, treatment or referral in a case of a victim of sexual assault.*

Compliance with follow-up visits is poor among survivors of sexual assault. As a result, the following routine preventive therapy after a sexual assault should be encouraged:

(a) Prevention of unwanted pregnancy: Emergency Contraception (EC) to prevent unwanted pregnancy should be given within 72 hrs of unprotected sexual intercourse. The preferred choice of treatment is 2 tablets of Levonorgestrel 750 mg, within 72 hours. If vomiting occurs, repeat within 3 hours (or 2 tablets COCs Mala D - 2 tablets stat repeated 12 hours within 72 hours).

Although emergency contraception is most efficacious if given within the first 72 hours, it can be given for up to 5 days after the assault. Pregnancy assessment must be done on follow up and the survivor must be advised to get tested for pregnancy in case she misses her next period.

(b) Post-exposure prophylaxis of STI: STI prophylaxis should be started as early as possible, although the doses should be spread out (and taken with food) to reduce side-effects such as nausea.

Table 4.1: Post-exposure prophylaxis of STI for adults and older children and adolescents weighing more than 45 kg

For protection against	Drug
Gonorrhoea Chlamydia	Tab. Azithromycin 1 gm orally, single dose under supervision **PLUS** Tab. Cefixime 400 mg orally single dose
Trichomonas Bacterial Vaginosis	Tab. Metronidazole 2 gm single dose **OR** Tab. Tinidazole 2 gm single dose

Post-exposure prophylaxis of STI in children: The identification of sexually transmissible agents in children beyond the neonatal period suggests sexual abuse. The significance of the identification of a sexually transmitted agent in such children as evidence of possible child sexual abuse varies by pathogen. Post-natally acquired gonorrhoea, syphilis, and non-transfusion, non-perinatally acquired HIV is usually diagnostic of sexual abuse[†]. Sexual abuse should be suspected when genital herpes is diagnosed.

[†]*The general rule that sexually transmissible infections beyond the neonatal period are evidence of sexual abuse has exceptions. For example, rectal or genital infection with C. trachomatis among young children might be the result of perinatally acquired infection and has, in some cases, persisted for as long as 2–3 years. Genital warts have been diagnosed in children who have been sexually abused, but also in children who have no other evidence of sexual abuse. BV has been diagnosed in children who have been abused, but its presence alone does not prove sexual abuse. In addition, most HBV infections in children result from household exposure to persons who have chronic HBV infection.*

Examinations of children for sexual assault or abuse should be conducted in a manner designed to minimize pain and trauma to the child. The scheduling of an examination should depend on the history of assault or abuse.

During the initial examination and 2-week follow-up examination (if indicated), the following should be performed:

- Visual inspection of the genital, peri-anal, and oral areas for genital discharge, odour, bleeding, irritation, warts, and ulcerative lesions. The clinical manifestations of some STI are different in children than in adults.

- Specimen collection for *N. gonorrhoeae* culture from the pharynx and anus in boys and girls, the vagina in girls, and the urethra in boys.

- Cultures for *C. trachomatis* from specimens collected from the anus in both boys and girls and from the vagina in girls. Culture and wet mount of a vaginal swab specimen for *T. vaginalis* infection and BV.

- Collection of serum samples to be evaluated immediately, preserved for subsequent analysis, and used as a baseline for comparison with follow-up serologic tests. Sera should be tested immediately for antibodies to sexually transmitted agents like *T. pallidum*, HIV, and HBV.

Follow-up examination:

- In circumstances in which transmission of syphilis, HIV, or hepatitis B is a concern but baseline tests are negative, it is recommended to conduct follow-up examinations at approximately 6 weeks, 3 months, and 6 months after the last suspected sexual exposure to allow time for antibodies to infectious agents to develop. In addition, results of HBs Ag testing must be interpreted carefully, because HBV can also be transmitted non-sexually.

Table 4.2: Post-exposure prophylaxis of STI in children

For protection against	Drug
Gonorrhoea	Cefixime 8 mg/kg of body weight as a single dose OR Ceftriaxone 125 mg by intramuscular injection
Chlamydia	Erythromycin 12.5 mg/kg body weight orally 4 times a day for 14 days OR Azithromycin 20 mg/kg body weight orally once a day for 3 days
Trichomonas	Metronidazole 5 mg/kg body weight orally 3 times a day for 7 days

(c) Post-exposure prophylaxis of HIV: Refer to district hospital and follow DAC guidelines for the same.

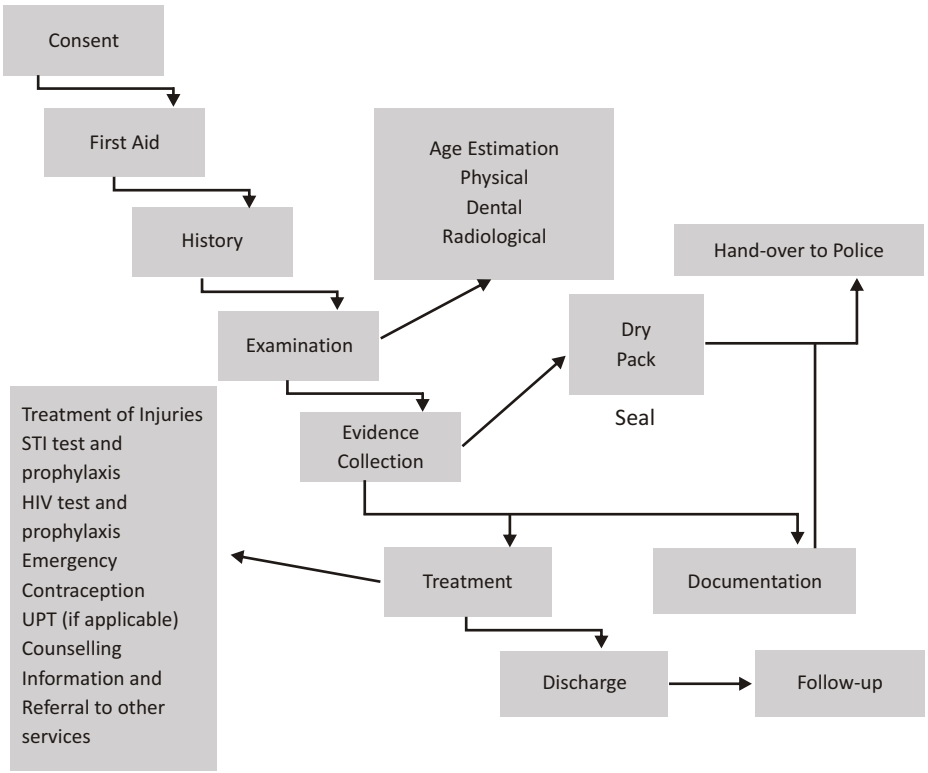
(d) Post-exposure prophylaxis against Hepatitis B is recommended if the sexual assault survivor has not been vaccinated earlier. Draw a sample of blood for HBsAg and administer 0.06 ml/kg HB immune globulin immediately (anytime up to 72 hours after the sexual act). In addition, administer the first dose of the hepatitis B vaccine at the time of the initial examination. Follow-up doses of vaccine should be administered 1–2 and 4–6 months after the first dose. If vaccine is not available, refer to the centre where Hepatitis B vaccination facilities are available.

(e) Follow-up services: It is essential to explain the importance of follow-up appointments and services during the first visit itself. Sexual assault survivors should be clearly told whom to contact if they have other questions or subsequent physical or emotional problems related to the incident. Follow-up examinations provide an opportunity to:

- detect new infections acquired during or after the assault,
- complete hepatitis B vaccination, if indicated,
- complete counselling and treatment for other STI, and
- monitor side effects and adherence to post exposure prophylactic medication, if prescribed.

j. **Psychological support (both at time of crisis and long-term)**: Psychosocial management includes counselling and supportive services, which should be available onsite or by referral. Women or children who have been sexually abused may need shelter and legal protection. Adolescents in particular may need crisis support, as they may not be able or willing to disclose the assault to parents or caretakers. An evaluation of the sexual assault survivor's personal safety should be made by a protective services agency or shelter, if available, and arrangements made for protection if needed.

Flowchart 4.1: Algorithm for management of Sexual Violence



5 Elimination of Parent-to-Child Transmission of Syphilis

5. Elimination of Parent-to-Child Transmission of Syphilis

Progress towards "Elimination of Parent to Child Transmission of Syphilis" is one of the new strategies launched by the STI/RTI control and prevention programme under the Department of AIDS Control (DAC) in collaboration with the Reproductive Maternal Newborn Child Health and Adolescent (RMNCH+A) programme of the National Health Mission.

Maternal syphilis leads to serious adverse outcomes of pregnancy in more than 50% of cases such as still birth, spontaneous abortion, low birth weight babies and birth of congenital syphilitic neonates who are at an increased risk of perinatal death. Detection and treatment of syphilis has been identified as being one of the most efficient and cost effective interventions to prevent congenital syphilis and improve child health. Thus, the strategy towards elimination of parent-to-child transmission of syphilis will contribute to the achievement of Millennium Development Goals (MDG) 4 (reduce child mortality), 5 (improve maternal health) and 6 (combat HIV/AIDS, malaria and other diseases).

To prevent congenital syphilis, increased awareness is needed at all levels among policy-makers, public health officials, health-care providers, communities, and pregnant women, regarding the extent and seriousness of syphilitic outcomes. Elimination of parent to child transmission (e-PTCT) of syphilis is a feasible strategy for India, primarily because of very low prevalence of the infection and consequently of transmission.

Goal & Objectives

Goal: To eliminate "Parent-to-Child" Transmission of Syphilis by 2017.

Target: To reduce the incidence of congenital syphilis to less than 0.3 cases per 1000 live births by 2017.

Objectives:

1. To ensure universal registration of pregnant women at first ANC visit in first trimester;
2. To ensure screening of pregnant women for syphilis at least once during the pregnancy;
3. To identify and provide prompt treatment to all sero-reactive pregnant women;

Readers are advised to refer the full text of the subject at www.naco.gov.in under STI component.

4. To ensure treatment of all infants born to sero-reactive women;

5. To reach partners of sero-reactive pregnant women, promotion of condom use, education and counselling on risk reduction and safer sex practices to prevent infection/re-infection;

6. To monitor core indicators of e-PTCT.

The *programmatic targets* to achieve the e-PTCT goal are:

1. ANC coverage (pregnant women having at least one ANC visit) of ≥95%;

2. Coverage of syphilis testing of ANC attendees of ≥95%;

3. Treatment of syphilis-seropositive ANC attendees of ≥95%;

4. Confirmation, treatment and follow-up of 100% of suspected cases of congenital syphilis.

As the potential for parent to child transmission of syphilis remains high as long as syphilis is prevalent among High Risk Group populations, screening and treatment of syphilis among these groups also requires an emphasis on sustaining the gains achieved .

Burden of Congenital Syphilis

Global Scenario

As per the WHO global estimates for 2008, there were 1,360,485 (range 1,160,195-1,560,776) pregnant women with probable active syphilis infections, and of these women, 1,085,637 (79 8%) attended ANC .Considering the current screening and treatment scenario, it is estimated that globally there were 520,905 adverse outcomes associated with syphilis in pregnancy, which included 212,327 stillbirths or early foetal deaths, 91,764 neonatal deaths, 65,267 pre term or low birth weight infants, and 151,547 infected newborns .

Indian Scenario

In India, there is a paucity of data on adverse outcomes due to untreated syphilis in pregnancy and congenital syphilis. The average sero-prevalence of syphilis among ANC women during the 2010-11 round of HIV Sentinel Surveillance was 0.38%. Arunachal Pradesh (2.86%) showed the highest prevalence of syphilis among ANC women, followed by West Bengal (1.91%), Rajasthan (1.17%), Tripura (0.6%), West Bengal (0.6%) and the rest of the states had prevalence of less than 0.5%.

WHO estimates the burden of maternal syphilis and its adverse outcomes, including congenital syphilis, using sero-reactivity of syphilis as per HSS 2010-11. Of the estimated 29,681,000 pregnancies in India during 2010-11, using these data sources, the estimated burden of syphilis among pregnant women in India is 102,806 (range 98,640-107,276). With the assumption that 52% of pregnant women infected with syphilis would experience some adverse event (including birth of newborn with congenital syphilis), the estimated number of adverse outcomes due to syphilis among pregnant women in India for year 2010-11, is given in *Table 5.1.*

Table 5.1: Estimated proportion and number of adverse outcomes in untreated pregnancies affected by syphilis, India, 2010-11 (based on WHO tool for estimation)

Outcome	Estimated % of adverse outcomes in untreated pregnancies affected by syphilis	Estimated number of adverse outcomes in India for year 2010-11
Early foetal loss/ stillbirth	21%	21,248
Neonatal death	9%	9,111
Prematurity or low birth weight	6%	6,093
Clinical evidence of syphilis in newborn	16%	16,144
Any adverse outcome	52%	52,595

Impact of Maternal Syphilis on Pregnancy Outcomes

Although pregnant women can transmit the infection to their foetus as early as nine weeks of gestation, transmission usually takes place between 16-28 weeks of pregnancy. The likelihood of transmission is directly related to the stage of maternal syphilis during pregnancy, or the stage of pregnancy when infection is acquired. In early maternal syphilis, the maternal–foetal transmission rate can be as high as 80%, whereas in late syphilis infectivity decreases.

The course of maternal infection does not seem to be altered by pregnancy. Pregnant women who are at a higher risk for developing STI and found negative in the first screening should be screened again later in the pregnancy or at delivery.

***Note**: Pregnant women at high risk for developing STI are those with current or past history of STI, repeated abortions, stillbirth, past history of delivery of premature baby and neonatal death; women with more than one sexual partner; sex worker and injecting drug users.*

Signs and symptoms of Congenital Syphilis

Congenital syphilis may be asymptomatic, especially in the first weeks of life, in about 50% of cases. Usually, symptoms appear in the first months but the clinical manifestations may be delayed until the second year of life.

The most frequent clinical signs of congenital syphilis at birth are hepato-splenomegaly (33%–100%), bone changes seen on X-ray (75%–100%), blistering skin rash especially on palms and soles (40%), fever (16%), low birth weight (10%–40%), bleeding (10%), swelling of the joints, abnormal facies, snuffles, oedema, abdominal distension, pallor, respiratory distress and pseudo paralysis.

Screening Tests for Syphilis

Following infection with syphilis, blood tests can take 10–45 days to become reactive, depending on the type of the test. The health care provider should ensure that every pregnant woman is tested for syphilis at least once during the antenatal period.

A number of serological tests are available for screening of syphilis. A non-treponemal screening test (such as RPR or VDRL test) is done to detect reaginic antibody. Treponemal test is done as a confirmatory test for syphilis infection. A reactive serum with non-treponemal test is retested with treponemal test to confirm syphilis infection.

New rapid treponemal tests (Point of Care Test)

Rapid, simple treponemal tests called Point of care tests (POC) are used for screening syphilis infection especially for those who are hard to reach and where even basic laboratory facilities are not available. They are suitable to screen pregnant women and high risk groups. Examples of POC tests are immuno chromatography strip (ICS) test.

Advantages

- Do not need equipment or special storage conditions and require minimal training.
- Are now available and can be used on-site including in peripheral and hard to reach areas.
- Have sensitivities ranging from 85%–98%, which is higher than that of RPR.
- Have comparable specificity to RPR ranging from of 92%–98%.

- Although these tests are more expensive than the VDRL and RPR tests, they are more cost-effective because they enable reaching out to a larger population with little effort; hence more pregnant women can be tested and treated in a timely manner, thus preventing cases of congenital syphilis.

Disadvantage

- Low sensitivity in low-titre syphilis (e.g. RPR titre<1:8).

All pregnant women found sero-reactive for syphilis should be encouraged to undergo testing for HIV as well, because the risk factors for HIV and syphilis are the same. Spouses of reactive pregnant women should be motivated to receive testing and treatment for syphilis and HIV.

Diagnosis of congenital syphilis

Suspected case of congenital syphilis:

"A still or live born baby of syphilis sero-reactive mother"

Confirmed case of congenital syphilis:

"A stillbirth, live-birth, or child aged <2 years with microbiological evidence of syphilis infection. Microbiological evidence includes anyone of the following:

- Demonstration of *T. pallidum* by dark field microscopy **OR**

- Fluorescent antibody detection of *T. pallidum* specific IgM in the umbilical cord or placenta, or nasal discharge or skin lesion material.

OR

A child within first 2 years of life with clinical evidence* of syphilis and reactive syphilis serology irrespective of the mother's serology

*At least 2 of the following: Swelling of joints, snuffles, bullous skin lesions, hepato splenomegaly, jaundice, anaemia, radiological changes in the long bones".

Management of Maternal Syphilis

- All pregnant women who test reactive for syphilis (POC test or RPR/VDRL) should be treated to avoid any case of congenital syphilis, although it may result in some over

treatment because of false-positive results. The risk of over treatment, i.e. treatment of women with false-positive results, does exist but is outweighed by the benefits of expanded screening coverage.

- Pregnant mother may be provided with treatment at any titre, i.e. even at lower titre, as the benefit of treatment outweighs the drawbacks by reducing maternal morbidity and preventing transmission of the infection to the foetus.

- Treatment should be provided early in pregnancy, preferably during the first trimester but definitely before the third trimester.

- A simple rule is to treat as soon as the test for syphilis is found to be reactive. The earlier the result of the test is available and treatment started, the better it is.

- Pregnant women should be retested during the third trimester where indicated and closer to delivery in order to detect re-infection.

- Partners of sero-reactive women should also be treated in order to prevent re-infection.

- Patients and partners should be educated and counselled.

    - Risk reduction counselling and condom provision enables modification of risk behaviour and is important for preventing re-infection.

    - Sero-reactive women should be educated and counselled on how to prevent transmission to foetus and re-infection, including the use of condoms and the need to get their partners and newborn babies screened and treated.

Treatment of maternal syphilis depends on the stage of the infection:

i. In early stage syphilis (<2 years duration), a single intramuscular injection of 2.4 million IU benzathine penicillin is sufficient. Allergy to penicillin should be excluded before giving the full dose.

ii. In the late stage (>2 years), weekly intramuscular injections of 2.4 million IU benzathine penicillin are required for three weeks.

Whatever the stage of infection, even a single dose of penicillin will prevent infection in the foetus. Adequate treatment with penicillin will end infectivity within 24–48 hours. The RPR/VDRL titre is expected to decrease by fourfold in six months after treatment. The rate of sero-reversion depends on the pre-treatment titre and the stage of the disease.

Alternative regimens for penicillin allergic pregnant patients

Regimen 1:

a. Early stage syphilis: Erythromycin, 500 mg orally, 4 times daily for 15 days

b. Late stage of syphilis: Erythromycin, 500 mg orally, 4 times daily for 30 days

OR

Regimen 2: Azithromycin 2 gm orally as a single dose.

Note:

- *For the treatment of syphilis during pregnancy, no proven alternates to penicillin exist.*
- *Alternative to penicillin should be considered for pregnant women who have a history of penicillin allergy.*
- *Erythromycin estolate is contraindicated because of drug-related hepatotoxicity. Only Erythromycin base or Erythromycin ethyl succinate should be used.*

Follow up of pregnant woman treated for syphilis and her partner

- Following treatment, quantitative non-treponemal serological tests should be performed again at late pregnancy and re-treatment should be undertaken if there is serological evidence of re-infection or relapse.
- Pregnant woman should be followed up at 3, 6, 12 and 24 months after delivery and during every follow up visit, clinical examination, qualitative and quantitative non-treponemal test (RPR) should be performed. Her partner also followed similarly.
- To ensure that results are comparable, follow up test should be performed by using the same non-treponemal test (RPR/ VDRL) that was used initially.

Management of Congenital Syphilis

Regimen 1 (Prophylactic Treatment)

All asymptomatic babies who have no serological evidence of syphilis and are born to mothers who were adequately treated for maternal syphilis with penicillin during the current pregnancy

prior to 4 weeks of delivery according to guidelines should be treated with a single dose of prophylactic penicillin: benzathine penicillin G 50,000 units/kg given as a single intra muscular injection.

Regimen 2 (Curative Treatment)

This should be given to:

1. All symptomatic babies
2. All asymptomatic babies

   For newborns

   i. Born to mothers who were treated with penicillin < 4 weeks before delivery,

   ii. Born to mothers who were treated with non-penicillin regimens (erythromycin or azithromycin) during pregnancy

   iii. Born to mothers whose treatment status is unknown or undocumented

   For infants:

   i. Whose RPR/ VDRL titre is 4 fold higher than that of the mother at delivery

   ii. With a reactive syphilis IgM antibody test

   iii. Born to mothers who did not complete the recommended course of penicillin during pregnancy

   iv. Born to mothers whose non-treponemal titre had not dropped four fold

Intravenous treatment regimen: Aqueous crystalline penicillin G 100,000-150,000 million units/kg/day intravenously. It could be given as 50,000 units /kg /dose IV every 12 hours during the first 7 days of life and thereafter every 8 hours for 3 days to complete a total of 10 days of treatment.

OR

Intramuscular treatment regimen: Benzathine penicillin G or procaine penicillin 50,000 units/kg body weight intramuscularly daily for 10 days.

Hospitalization of the infant should be considered in order to ensure the full course of treatment. **If more than one day of treatment is missed, the entire course of treatment should be restarted.**

Follow up: With appropriate treatment of symptomatic infants, clinical features such as hepato-splenomegaly, jaundice and bone changes on X-ray usually resolve within three months of birth, and serological markers such as IgM disappear within six months. Therefore, infants should be followed up at 3, 6, 12 and 24 months. During each follow up visit, a clinical examination, qualitative and quantitative non treponemal test (RPR/VDRL) should be performed. To ensure that results are comparable, follow up test should be performed by using the same non treponemal test (RPR/ VDRL) that was used initially.

Treatment outcomes of syphilis treatment

Treatment outcomes may either be treatment success, treatment failure, re-infection or relapse of syphilis.

- Treatment Success: Treatment success is determined by a fourfold decrease in RPR or VDRL titre by 6-12 months (for early and late syphilis) or 12-24 months (for latent syphilis) of treatment.

- Treatment failure: Patients whose titres do not decrease appropriately probably either experienced treatment failure or were re-infected.

- Any patient with apparent treatment failure should be referred to a higher centre for further evaluation and management

- If at any time symptoms develop or non-treponemal test titres increase fourfold, the patient should be referred to a higher centre for further evaluation and management.

- All HIV-infected patients treated for syphilis should be evaluated clinically and serologically at 3, 6, 9, 12, and 24 months (at 6, 12, 18, and 24 months for latent syphilis) to rule out treatment failure.

Some patients retain reactive (low-titre) non-treponemal test results even after successful treatment for syphilis. In these "sero fast" individuals, reinfection with syphilis is indicated by a rise in test titre by at least fourfold.

Recommended treatment for treatment failure and relapse cases: These patients should be retreated with weekly injections of benzathine penicillin G 2.4 million IU given intramuscularly for 3 weeks.

Surveillance, Monitoring & Evaluation of e-PTCT of Syphilis

The e-PTCT of syphilis strategy envisages a focused monitoring and evaluation system with specific indicators to monitor the progress of programmatic goals across states.

Surveillance for e-PTCT of Syphilis

1. Prevalence of sero-syphilis among pregnant women: The Department of AIDS Control and RMNCH+A will monitor on a monthly basis the number of pregnant women accessing ANC services and the numbers subjected for syphilis screening and treated from all health facilities. This data will be collected by the programme passively every month from all health facilities.

2. Incidence of congenital syphilis in newborns: The Department of AIDS Control and RMNCH+A will monitor the incidence of congenital syphilis among the newborns as per the standardized surveillance definition from all facilities once a year.

The data for both of these indicators will be collected by strengthening the existing recording and reporting systems.

The following indicators will be used to monitor e-PTCT of syphilis:

Table 5.2: e-PTCT of Syphilis: Monitoring Indicators

Indicator	Numerator	Denominator	Method of measurement	Periodicity
Programme Indicators				
Percentage of pregnant women visiting ANC clinic at least once	No. of pregnant women visiting ANC at least once	Estimated number of pregnant women	RCH register and Mother and Child Tracking System (MCTS)	Monthly
Percentage of ANC attendees reactive for syphilis	No. of ANC women found reactive for syphilis	Number of ANC attendees screened for syphilis at least once	National programme data for ANC (HMIS/MCTS and SIMS)	Monthly
Percentage of women reactive for syphilis during first visit testing	No. of ANC women screened for syphilis at first visit	Number of ANC attendees at first visit	National programme data for ANC (HMIS/MCTS and SIMS)	Monthly

Indicator	Numerator	Denominator	Method of measurement	Periodicity
Programme Indicators				
Percentage syphilis seroreactive ANC attendees who received treatment	Number of ANC attendees seroreactive for syphilis who received treatment	Number of ANC attendees reactive for syphilis	National programme data for ANC (HMIS/MCTS and SIMS)	Monthly
Percentage of syphilis seroreactive ANC attendees whose partners were appropriately treated	Number of Syphilis seroreactive ANC attendees whose partners were appropriately treated	Number of ANC attendees reactive for syphilis	National programme data for ANC (HMIS/MCTS and SIMS)	Monthly
Status of Syphilis test kits	Number of antenatal clinics reporting stock out of syphilis test kits for last 6 months	Total number of antenatal clinics providing screening for pregnant women	National programme data for ANC (HMIS and SIMS)	Monthly
Status of drugs recommended by programme for treatment of Syphilis	Number of antenatal clinics reporting stock out of benzathine penicillin in last 6 months	Total number of antenatal clinics providing screening for pregnant women	National programme data for ANC (HMIS and SIMS)	Monthly
Number of suspected cases of congenital syphilis	No. of reported suspected cases of congenital syphilis (as per case definition)	Total number of live births and stillbirths among syphilis seroreactive mothers	RCH register/ MCTS	Monthly
Treatment of infants born to syphilis sero reactive mothers	Number of infants born to syphilis seroreactive mothers who received treatment	Number of babies born to syphilis seroreactive mothers	RCH register/ MCTS	Monthly
Impact Indicators				
Incidence of confirmed cases of congenital syphilis	No. of reported confirmed cases of congenital syphilis (as per case definition)	Total number of live births and stillbirths among syphilis seroreactive mothers	Line-listing available at ICTC and Regional and State STI Training and Reference labs	Annual

Indicator	Numerator	Denominator	Method of measurement	Periodicity
Stillbirth rate	Number of pregnant women who had still births	Total number of pregnant women registered with ANC	RCH register/ MCTS	Monthly
Percentage of stillbirths attributable to syphilis	Number of syphilis seroreactive pregnant women who had still births	Total number of pregnant women registered with ANC	RCH register/ MCTS	Monthly
*Details available in the Implementation Plan for e-PTCT				

Further reading:

1. Towards Elimination of Parent to Child Transmission of Syphilis: National Strategy for India

2. Implementation Plan: Elimination of Parent to Child Transmission of Syphilis In India

6 STI Surveillance

6. STI Surveillance

STI Surveillance is the systematic collection, collation, analysis and interpretation of STI data with prompt dissemination to those who need to know, for relevant action to be taken. A well-functioning STI/RTI surveillance system provides information for planning, implementation, monitoring and evaluation of STI/RTI control and prevention programme.

Objectives of STI/RTI Surveillance

- To measure the magnitude of STI/RTI and their distribution across time, place and persons;
- To monitor trends of STI /RTI over years;
- To guide STI/RTI programme planning, management;
- To generate evidence based information for advocacy to formulate appropriate policy;
- To provide data to monitor and evaluate the impact of interventions;
- To help define needed resources for prevention and control of STI/RTI;
- To determine aetiologies of common STI/RTI syndromes and anti-microbial susceptibilities [including anti-microbial resistance studies of gonococci as part of Gonococcal Antimicrobial Surveillance Programme (GASP)] in order to improve patient care.

Components of STI surveillance in India

A. *Passive Syndromic case reporting*: The 1131 Designated STI/RTI Clinics and 1873 TI NGOs spread all over India submit monthly reports on syndromes diagnosed and treated among the general and key populations.

B. *STI/RTI aetiological reporting*: The seven regional STI Training, Research and Reference Laboratories submit quarterly reports on the aetiologies of common STI/RTI syndromes apart from reports on biannual Syphilis EQAS and GASP activities from the patients or the samples received from linked DSRCs and TI NGOs.

C. *HIV sentinel surveillance*: Prevalence of sero-syphilis is also reported as part of annual HIV sentinel surveillance covering different sub populations as per the HSS protocol.

The reporting units adhere to standardized Syndromic case definitions as defined in STI/RTI operational guidelines enabling comparability over time and across regions.

Similarly the aetiologic case definitions as defined in STI diagnostics standard operating procedures manual are followed by the Regional STI Training, Research and Reference laboratories for reporting.

The STI/RTI surveillance data is unlinked and kept confidential following the principle of medical confidentiality that prevents unauthorized disclosure of personal identifying information of patients and ensures the protection of human rights. In order to interpret data meaningfully and compare across time and place, uniform case definitions and standardized reporting forms and consistent reporting procedures are followed. Every year the surveillance data is analysed and shared with all SACS in the annual report apart from providing regular feedback to the states for timely action. Data from STI surveillance can also be used as an early warning sign of risky sexual behaviours for HIV infection. Acute and treatable STI are markers of high risk behaviours such as Urethral discharge/ Genital ulcer disease syndromes and high titre syphilis. The prevalence of these STI suggest early warning of the emergence of HIV among MSM, FSW, ANC attendees; Populations and geographic areas in need of focussed HIV prevention programmes.

Scale up plan of STI surveillance

As the aetiological data from the existing seven Regional STI Training, Research and Reference Laboratories is not representative of the country, it is proposed to establish 3 additional Regional and 45 State STI Training and Reference Laboratories covering all regions, States and Union Territories of India. These centres have already been identified as additional sentinel sites to report aetiological data (the list is annexed). The Apex Regional STI Training, Research and Reference Laboratory at Safdarjung hospital, New Delhi will closely monitor the quality of laboratory testing procedures at these centres to ensure accurate data under the STI surveillance programme. SACS will ensure effective linkages between these STI aetiological reporting surveillance centres with public health facilities, private health sector and TI NGOs providing services to core and bridge group populations.

Further Reading:

1. Operational Guidelines for Regional STI Training, Research and Reference Laboratories.

2. Operational Manual for State STI Training and Reference Laboratories at www.naco.gov.in

7 Education & Counselling in STI Programme

7. Education & Counselling in STI Programme

Effective communication of information on prevention, especially on behaviour change, linked with effective treatment is key to the control of STI/RTI. Prevention information and condoms are to be provided at all levels of the health care system. Effective communication can be done in the following ways:

Interpersonal communication: The face-to-face process of giving and receiving information between two or more people. This involves both verbal and nonverbal communication.

- Verbal communication: The way we talk with clients, the words we use, and their meanings.

- Non verbal communication: The way we behave with clients, including actions, behaviours, gestures and facial expressions.

Counselling: Face-to-face, personal, confidential communication in which one person helps another to make decisions and then to act on them. Good counselling has two major elements: mutual trust between client and provider and the giving and receiving of relevant, accurate and complete information that enables the client to make a decision. It requires conversational and listening skills.

Client counselling on STI/RTI: During the counselling session, provider should talk about causation, transmission, recommended treatment, adherence to treatment, prevention, risk reduction, behaviour change, condom demonstration and provision and partner referral. Patient educatory information brochures in easy to read local language with illustrations to reinforce messages should be made available at STI/RTI service providing facilities. The five "P"s approach –can be used to elicit key information relating to five aspects –Partners; Prevention of pregnancy, Protection from STI/RTI, unsafe sexual Practices, and Past history of STI/RTI.

Goals of client education and counselling

- Primary prevention or preventing infection in uninfected clients. This is the most effective strategy to reduce the spread of STI/RTI and can be easily integrated in all health care settings.

- Secondary prevention, which prevents further transmission of that infection in the community and prevents complications and reinfection in the client.

What the client needs to know

Prevention of STI/RTI

- Risk reduction
- Safer sex practices.
- Using condoms, correctly and consistently. Dual protection from STI and HIV and Pregnancy. Condom negotiation skills
- Limiting the number of sex partners
- Alternatives to penetrative sex

Information about STI/RTI

- How they are spread between people
- Consequences of STI/RTI
- Links between STI/RTI and HIV
- STI/RTI symptoms-what to look for and what the symptoms mean

STI/RTI treatment

- How to take medications
- Signs that call for a return visit to the clinic
- Follow up schedule
- Importance of partner referral and treatment
- Motivating male partners to come forward to seek services

In STI/RTI service delivery settings, the following is recommended

- HIV testing should be recommended for all DSRC clients after pre-test counselling and informed consent. As per the National AIDS Prevention and Control Policy, all HIV tests are voluntary, based on the client's consent, accompanied by counselling and confidentiality of the test results. Ensure and assure confidentiality. The clients should be referred to the nearest ICTC and ensured that they have reached the ICTC.

- All STI attendees should be screened for syphilis. Both Syphilis and HIV test can be done at ICTC.

- PLHIV with STI may need prolonged treatment and are to be followed up regularly for a longer duration.

- Practice DOTS-STI. Administer the single dose STI drugs in the clinic setting to ensure complete adherence to the regimen. Educate the client against usage of self/ peer and over the counter medication.

8 Brief Introduction to STI/RTI

8. Brief Introduction to STI/RTI

1. **Genital /Oro-anal Ulcer Diseases**: Syphilis, Chancroid, Herpes, GI and LGV
2. **Genital/Anal Discharges & Oro Pharyngeal infections**: Gonorrhoea, Chlamydia, CV, BV, TV
3. **Painful Scrotal swelling**: Gonorrhoea, Chlamydia
4. **Lower Abdominal Pain**: Gonorrhoea, Chlamydia, gram negative microbes
5. **Inguinal Bubo**: LGV, Chancroid
6. **Genital /Oro-anal Growth**s: Warts
7. **Other STI**: Pediculosis Pubis, Scabies, Molluscum contagiosum, Hepatitis B

8.1 Syphilis

Syphilis is a systemic disease caused by *Treponema pallidum*. On the basis of clinical findings; the disease has been divided into a series of overlapping stages, which are used to help guide treatment and follow-up.

- Primary infection– ulcer or chancre at the infection site.
- Secondary infection - manifestations that include, but are not limited to, skin rash, muco-cutaneous lesions, and lymphadenopathy.
- Tertiary infection - cardiac or gummatous lesions/Neurologic infection e.g. cranial nerve dysfunction, meningitis, stroke, acute or chronic altered mental status, loss of vibration sense, and auditory or ophthalmic abnormalities, which might occur through the natural history of untreated infection.
- Latent infections - those lacking clinical manifestations are detected by serologic testing.

Treatment for both late latent syphilis and tertiary syphilis might require a longer duration of therapy.

Diagnosis: Dark-field examination and tests to detect *T. pallidum* in lesion exudate or tissue are the definitive methods for diagnosing early syphilis. A presumptive diagnosis of syphilis is possible with the use of two types of serologic tests: (i) non-treponemal tests [e.g. Venereal

Disease Research Laboratory (VDRL) and RPR] and (ii) treponemal tests [e.g. fluorescent treponemal antibody absorption (FTA-ABS) tests, *T. pallidum* particle agglutination (TPPA) assay, chemiluminescence immunoassays, etc].

False-positive non-treponemal test results can be associated with various medical conditions unrelated to syphilis, including autoimmune conditions, older age, and injecting-drug use; therefore, persons with a reactive non-treponemal test should receive a treponemal test to confirm the diagnosis of syphilis.

Non-treponemal test antibody titres may correlate with disease activity, and results should be reported quantitatively. A fourfold change in titre, equivalent to a change of two dilutions (e.g. from 1:16 to 1:4 or from 1:8 to 1:32), is considered necessary to demonstrate a clinically significant difference between two non-treponemal test results that were obtained using the same serologic test. Non-treponemal test titres usually decline after treatment and might become non reactive with time; however, in some persons, non-treponemal antibodies can persist for a long period of time — a response referred to as the "serofast reaction."

Most patients who have reactive treponemal tests will have reactive tests for the remainder of their lives, regardless of treatment or disease activity. However, 15%–25% of patients treated during the primary stage revert to being serologically nonreactive after 2–3 years. Treponemal test antibody titres should not be used to assess treatment response.

For most HIV-infected persons, serologic tests are accurate and reliable for the diagnosis of syphilis and for following a patient's response to treatment. However, atypical syphilis serologic test results (i.e., unusually high, unusually low, or fluctuating titres) can occur in HIV-infected persons.

The VDRL in cerebrospinal fluid (CSF-VDRL), which is highly specific but insensitive, is the standard serologic test for CSF. The laboratory diagnosis of neurosyphilis usually depends on various combinations of reactive serologic test results, CSF cell count or protein, and a reactive CSF-VDRL with or without clinical manifestations.

Management of Sex Partners: Persons who were exposed within the 90 days preceding the diagnosis of primary, secondary, or early latent syphilis in a sexual partner might be infected even if sero-negative; therefore, such persons should be treated presumptively.

Follow-Up: Clinical and serologic evaluation should be performed as per the GUD-NH flow chart. Patients who have signs or symptoms that persist or recur or who have a sustained fourfold increase in non-treponemal test titre (i.e., compared with the maximum or baseline titre at the time of treatment) probably failed treatment or were re-infected. These patients should be retreated and re-evaluated for HIV infection.

Penicillin Allergy

Azithromycin as a single 2 gm oral dose is effective for treating early syphilis. However, *T. pallidum* chromosomal mutations associated with azithromycin resistance and treatment failures have been documented. As such, the use of azithromycin should be used with caution only when treatment with penicillin or doxycycline is not feasible. *Azithromycin should not be used in MSM*. Please refer *Chapter 5* for alternative regimens for penicillin allergic pregnant patients. Close follow-up of persons receiving any alternative therapies is essential.

Persons with a penicillin allergy whose compliance with therapy or follow-up cannot be ensured should be desensitized and treated with benzathine penicillin.

Management of Persons Who Have a History of Penicillin Allergy

No proven alternatives to penicillin are available for treating neurosyphilis, congenital syphilis, or syphilis in pregnant women. Penicillin also is recommended for use, whenever possible, in HIV infected patients. Because anaphylactic reactions to penicillin can be fatal, every effort should be made to avoid administering penicillin to penicillin-allergic patients, unless they undergo acute desensitization to eliminate anaphylactic sensitivity. The review of literature suggests that anaphylactic reactions to Benzathine penicillin are extremely rare events and in fact there are hardly any cases published in literature. Nevertheless every facility which is administering penicillin should have the basic anaphylaxis management protocol in place.

Penicillin skin testing with benzyl penicilloyl poly-L-lysine (the major determinant) and penicillin G can identify an estimated 90%–97% of the currently allergic patients. Patients who have positive test results should be desensitized. As these are not available in India, most of the providers practice skin testing with the benzathine penicillin only.

Syphilis among HIV Infected Persons

Although they are uncommon, unusual serologic responses have been observed among HIV infected persons who have syphilis. Neurosyphilis should be considered in the differential diagnosis of neurologic disease in HIV infected persons.

HIV infected persons should be evaluated clinically and serologically for treatment failure at 3, 6, 9, 12, and 24 months after therapy.

CSF examination and retreatment also should be strongly considered for persons whose non-treponemal test titres do not decrease fourfold within 6–12 months of therapy. If CSF examination is normal, treatment with benzathine penicillin G administered as 2.4 million units IM each at weekly intervals for 3 weeks is recommended.

8.2 Chancroid

Causative organism: *Haemophilus ducreyi*, a gram negative bacilli.

The combination of a painful genital ulcer and tender suppurative inguinal adenopathy is suggestive of chancroid.

The diagnosis of chancroid can be made by (i) demonstrating the organism in the Gram stain by taking the smears from the surface of the ulcer, and (ii) culture.

Note:

- *Men who are uncircumcised and patients with HIV infection do not respond as well to treatment as persons who are circumcised or HIV negative. If the initial syphilis and HIV test results were negative, repeat screening for syphilis and HIV infection 3 months after the diagnosis of GUD-NH.*

- *The time required for complete healing depends on the size of the ulcer; large ulcers might require >2 weeks.*

- *Clinical resolution of fluctuant lymphadenopathy is slower than that of ulcers and might require needle aspiration or incision and drainage, despite otherwise successful therapy.*

- *HIV infected patients who have chancroid should be monitored closely as they are more likely to experience treatment failure and to have ulcers that heal more slowly. HIV infected patients might require repeated or longer courses of therapy than those recommended for HIV negative patients.*

- *Different morphological forms of chancroid have been described. One variety known as transient chancroid manifests with inguinal bubo without genital ulceration.*

8.3 Genital HSV Infections

Genital herpes is a chronic, life-long viral infection. Both HSV-1 and HSV-2 have been identified as causing genital herpes. Most cases of recurrent genital herpes are caused by HSV-2.

Majority of genital herpes infections are transmitted by persons unaware that they have the infection or who are asymptomatic when transmission occurs.

Cell culture and PCR are the preferred tests for diagnosing HSV. Failure to detect HSV by culture or PCR does not indicate an absence of HSV infection, because viral shedding is intermittent.

Both type-specific and non-type-specific antibodies to HSV develop during the first several weeks after infection and persist indefinitely. Accurate type-specific HSV serologic assays are based on the HSV-specific glycoprotein G2 (HSV-2) and glycoprotein G1 (HSV-1). IgM testing for HSV is not useful, because the IgM tests are not type-specific and might be positive during recurrent episodes of herpes. Screening for HSV-1 and HSV-2 in the general population is not indicated.

Counselling regarding the natural history of genital herpes, sexual and peri-natal transmission, and methods to reduce transmission is integral to clinical management. Topical therapy with antiviral drugs offers minimal clinical benefit, and its use is discouraged.

Suppressive Therapy for Recurrent Genital Herpes: Suppressive therapy reduces the frequency of genital herpes recurrences by 70%–80% in patients who have frequent recurrences. Suppressive antiviral therapy also is likely to reduce transmission when used by persons who have multiple partners (including MSM) and by those who are HSV-2 seropositive without a history of genital herpes and in discordant, heterosexual couples in whom the source partner has a history of genital HSV-2 infection. The individuals should also be counselled for consistent condom use and avoidance of sexual activity during recurrences.

Note:

- *Sexual transmission of HSV can occur during asymptomatic periods. Asymptomatic viral shedding is more frequent during the first 12 months after acquiring HSV-2.*

- *Infected persons should be informed that male latex condoms, when used consistently and correctly, might reduce the risk of transmission of genital herpes.*

- *Sexual partners of infected persons should be advised that they might be infected even if they have no symptoms. Type-specific serologic testing of the asymptomatic partners of persons with genital herpes is recommended to determine whether such partners are already HSV seropositive or whether risk for acquiring HSV exists.*

- *The risk for neonatal HSV infection should be explained to all persons, including men. Pregnant women and women of childbearing age who have genital herpes should inform their providers who care for them during pregnancy and those who will care for their newborn infant about their infection.*

- *Symptomatic sexual partners should be evaluated and treated in the same manner as patients who have genital lesions.*

- *Immuno-compromised patients can have prolonged or severe episodes of genital, perianal, or oral herpes. HSV shedding is increased in HIV infected persons. Clinical manifestations of genital herpes might worsen during immune reconstitution after initiation of anti retroviral therapy.*

- *Suppressive or episodic therapy with oral antiviral agents is effective in decreasing the clinical manifestations of HSV among HIV positive persons.*

- *All acyclovir-resistant strains are resistant to valacyclovir, and the majority are resistant to famciclovir. Foscarnet 40 mg/kg IV every 8 hours until clinical resolution is attained, is frequently effective for treatment of acyclovir-resistant genital herpes. Intravenous cidofovir 5 mg/kg once weekly might also be effective. Imiquimod is a topical alternative and should be applied to the lesions once daily for 5 consecutive days.*

8.4 Granuloma Inguinale (Donovanosis)

Causative organism: *Klebsiella granulomatis*, an intracellular gram-negative bacterium.

Clinically, the disease is commonly characterized by painless, slowly progressive ulcerative lesions on the genitals or perineum without regional lymphadenopathy; subcutaneous granulomas (pseudo-buboes) might also occur. The lesions are highly vascular (i.e. beefy red appearance) and bleed easily on contact.

The clinical presentation also can include hypertrophic, necrotic, or sclerotic variants. The lesions also can develop secondary bacterial infection and can coexist with other sexually transmitted pathogens.

The causative organism is difficult to culture, and diagnosis requires visualization of dark-staining Donovan bodies on tissue crush preparation or biopsy.

Note:

- *Pregnant and lactating women should be treated with the erythromycin regimen, and consideration should be given to the addition of a parenteral aminoglycoside (e.g. gentamicin).*

- *Persons with both granuloma inguinale and HIV infection should receive the same regimens as those who are HIV negative; however, the addition of a parenteral aminoglycoside (e.g. gentamicin) can also be considered.*

8.5 Lymphogranuloma Venereum

Causative organism: *Chlamydia trachomatis serovars* L1, L2, or L3.

The most common feature is tender inguinal and/or femoral lymphadenopathy that is typically unilateral. A self-limited genital ulcer or papule sometimes occurs at the site of inoculation. However, by the time patients seek care, the lesions have often disappeared.

Rectal exposure in women or MSM can result in proctocolitis, including mucoid and/or haemorrhagic rectal discharge, anal pain, constipation, fever, and/or tenesmus.

Genital and colorectal LGV lesions can also develop secondary bacterial infection or can be co-infected with other sexually and non-sexually transmitted pathogens.

Genital and lymph node specimens (i.e. lesion swab or bubo aspirate) can be tested for *C. trachomatis* by culture, direct immunofluorescence, or nucleic acid detection.

Buboes might require aspiration through intact skin or incision and drainage to prevent the formation of inguinal/femoral ulcerations.

8.6 Urethritis

Urethritis, as characterized by urethral inflammation, can result from infectious and non-infectious conditions.

N. gonorrhoeae and *C. trachomatis* are clinically important infectious causes of urethritis. Non-gonoccocal urethritis (NGU), which is diagnosed when examination findings or microscopy indicate inflammation without gonococci, is caused by *C. trachomatis* in 15%–40% of cases. *M. genitalium*, which appears to be sexually transmitted, is associated with both symptoms of urethritis and urethral inflammation and accounts for 15%–25% of NGU. *T. vaginalis*, HSV, enteric bacteria and adeno virus also can cause NGU.

Note:

- *Symptoms alone, without documentation of signs or laboratory evidence of urethral inflammation, are not a sufficient basis for retreatment.*

- ***Recurrent and Persistent Urethritis**- Objective signs of urethritis should be present before the initiation of antimicrobial therapy.*

8.7 Cervicitis

Causative organisms: *C. trachomatis, N. gonorrhoeae*, *T. vaginalis* and genital herpes (especially primary HSV-2 infection).

Cervicitis frequently is asymptomatic, but some women complain of an abnormal vaginal discharge and intermenstrual vaginal bleeding (e.g. after sexual intercourse).

Two major diagnostic signs characterize cervicitis: (i) a purulent or mucopurulent endocervical exudate visible in the endocervical canal or on an endocervical swab specimen (commonly referred to as mucopurulent cervicitis or cervicitis); and (ii) sustained endocervical bleeding easily induced by gentle passage of a cotton swab through the cervical os. Either or both signs might be present.

Gram stain of endocervical fluid is specific for the diagnosis of gonococcal cervical infection; however it is not a sensitive indicator, because it is observed in only 50% of women with this infection.

8.8 Gonorrhoea

Causative organism: *Neisseria gonorrhoeae.*

Because of its high specificity (>99%) and sensitivity (>95%), a Gram stain of a male urethral specimen that demonstrates polymorphonuclear leucocytes with intracellular Gram-negative diplococci can be considered diagnostic for infection with *N. gonorrhoeae* in symptomatic men. Gram stain of endocervical specimens, pharyngeal, or rectal specimens are not sufficient to detect infection.

Note:

- ***Suspected Cephalosporin Treatment Failure or Resistance****: Conduct culture and susceptibility testing of relevant clinical specimens at State reference centres or at Regional STI Training Research & Reference Laboratories. If compliance is in doubt then retreat and ensure partner treatment.*

- ***Disseminated Gonococcal Infection (DGI)****: frequently results in petechial or pustular acral skin lesions, asymmetrical arthralgia, tenosynovitis, or septic arthritis. The infection is complicated occasionally by perihepatitis and rarely by endocarditis or meningitis. Hospitalization is recommended for therapy.*

- ***Ophthalmia Neonatorum caused by N. gonorrhoeae****: Gonococcal infection among infants usually is caused by exposure to infected cervical exudate at birth. It is usually an acute illness that manifests 2–5 days after birth and in some cases upto 21 days. The most severe manifestations of N. gonorrhoeae infection in newborns are ophthalmia neonatorum and sepsis, which can include arthritis and meningitis. Less severe manifestations include rhinitis, vaginitis, urethritis, and reinfection at sites of foetal monitoring. Infants who have gonococcal ophthalmia should be hospitalized and evaluated for signs of disseminated infection (e.g. sepsis, arthritis, and meningitis).*

8.9 Chlamydial Infections

Causative organism: *Chlamydia trachomatis*

Asymptomatic infection is common among both men and women.

C. trachomatis urogenital infection in women can be diagnosed by testing urine or by collecting swab specimens from the endo-cervix or vagina. Diagnosis of urethral infection in men can be made by testing a urethral swab or urine specimen. Rectal *C. trachomatis* infections can be diagnosed by testing a rectal swab specimen.

Direct fluorescent antibody technique (DFA), ELISA to detect antigen and for antibody detection Micro immuno-fluorescence (MIF) and ELISA tests are available apart from cultures.

Chlamydial Infections among Infants: *C. trachomatis* infection of neonates results from perinatal exposure to the mother's infected cervix. A chlamydial aetiology should be considered for all infants aged ≥30 days who have conjunctivitis, especially if the mother has a history of untreated chlamydia infection.

8 10 Bacterial Vaginosis

BV is a polymicrobial clinical syndrome resulting from replacement of the normal hydrogen peroxide producing *Lactobacillus sp*. in the vagina with high concentrations of anaerobic bacteria (e.g., *Prevotella sp*. and *Mobiluncus sp*.), *G. vaginalis, Ureaplasma, Mycoplasma*, and numerous fastidious or uncultivated anaerobes.

Women with BV are at increased risk for the acquisition of some STI (e.g. HIV, *N. gonorrhoeae, C. trachomatis*, and HSV-2), complications after gynaecologic surgery, complications of pregnancy, and recurrence of BV. Treatment of male sexual partners has not been beneficial in preventing the recurrence of BV.

BV can be diagnosed by the use of clinical criteria or Gram stain .

Note :

- *Routine treatment of sex partners is not recommended.*
- *Treatment is recommended for all pregnant women with symptoms.*
- *BV appears to recur with higher frequency in HIV positive women. Patients who have BV and also are infected with HIV should receive the same treatment regimen as those who are HIV negative.*

8.11 Trichomoniasis

Causative organism: *Trichomonas vaginalis* (protozoa)

Diagnosis of vaginal trichomoniasis is usually performed by microscopy of vaginal secretions.

Note:

- *Because of the high rate of reinfection among patients in whom trichomoniasis was diagnosed (17% were reinfected within 3 months in one study), re screening for T. vaginalis at 3 months following initial infection can be considered for sexually active women with trichomoniasis.*
- *Sexual partners of patients with T. vaginalis should be treated. Patients should be instructed to abstain from sex until they and their sexual partners are cured.*
- *T. vaginalis infection in HIV infected women might enhance HIV transmission by increasing genital shedding of the virus; and treatment for T. vaginalis has been shown to reduce HIV shedding. For sexually active women who are HIV positive, screening for trichomoniasis at entry into care with subsequent screening performed at least annually is recommended. Re screening 3 months after completion of therapy should be considered among HIV-positive women with trichomoniasis.*

8.12 Vulvovaginal Candidiasis

Causative organism: *Candida albicans,* occasionally other *Candida sp.* or yeasts.

The diagnosis can be made in a woman who has signs and symptoms of vaginitis when either (i) a wet preparation (saline, 10% KOH) or Gram stain of vaginal discharge demonstrates yeasts, hyphae, or pseudohyphae; or (ii) a culture or other test yields a yeast species.

Note:

- *Identifying Candida by culture in the absence of symptoms or signs is not an indication for treatment.*
- *VVC is not usually acquired through sexual intercourse; no data supports the treatment of sexual partners.*
- *Recurrent Vulvo-vaginal Candidiasis (RVVC): usually defined as four or more episodes of symptomatic VVC in 1 year. Vaginal cultures should be obtained from patients with RVVC to confirm the clinical diagnosis.*
- *Therapy for VVC in HIV infected women should not differ from that for sero-negative women.*

8.13 Lower abdominal pain (Pelvic Inflammatory Disease)

This syndrome comprises a spectrum of inflammatory disorders of the upper female genital tract, including any combination of endometritis, salpingitis, tubo-ovarian abscess, and pelvic peritonitis. *N. gonorrhoeae* and *C. trachomatis* are implicated in many cases; however, microorganisms that comprise the vaginal flora (e.g., anaerobes, *G. vaginalis*, *Haemophilus influenzae,* enteric Gram-negative rods, and *Streptococcus agalactiae*) also have been associated.

Diagnosis usually is based on clinical findings in sexually active young women at risk for STI if they are experiencing pelvic or lower abdominal pain, if no cause for the illness other than LAP/PID can be identified, and if one or more of the following minimum criteria are present on pelvic examination:

- cervical motion tenderness

OR

- uterine tenderness

OR

- adnexal tenderness

In addition to one of the three minimum criteria, one or more of the following additional criteria can be used to enhance the specificity of the minimum criteria and support the diagnosis:

- Abnormal cervical or vaginal mucopurulent discharge
- Oral temperature >101° F (>38.3° C)
- Presence of signs of lower genital tract inflammation (predominance of leucocytes in vaginal secretions, cervical exudates, or cervical friability)
- Elevated erythrocyte sedimentation rate
- Elevated C-reactive protein
- Laboratory documentation of cervical infection with N. gonorrhoeae or C. trachomatis

Note:

- *Patients should demonstrate substantial clinical improvement within 3 days after initiation of therapy.*
- *Patients who do not improve within this period usually require hospitalization, additional diagnostic tests, and surgical intervention.*
- *Because of the high risk for maternal morbidity and pre term delivery, pregnant women who have suspected LAP/PID should be hospitalized and treated with parenteral antibiotics.*
- *The risk for PID associated with Intrauterine Device (IUD) use is primarily confined to the first 3 weeks after insertion and is uncommon thereafter.*

8.14 Epididymo-orchitis

Painful scrotal swelling is a clinical syndrome consisting of pain, swelling, and inflammation of the epididymis and testis that lasts <6 weeks.

Most frequently caused by *C. trachomatis or N. gonorrhoeae* or by sexually transmitted enteric organisms *(e.g. Escherichia coli and Pseudomonas sp.)*

Men who have acute epididymitis typically have unilateral testicular pain and tenderness; hydrocele and palpable swelling of the epididymis usually are present. The spermatic cord is usually tender and swollen.

8.15 Human Papillomavirus (HPV) Infection

Asymptomatic genital HPV infection is common.

Diagnosis of genital warts is usually clinical, made by visual inspection. Genital warts can be confirmed by biopsy.

Non-oncogenic, or low-risk HPV types (e.g. HPV types 6 and 11), are the cause of genital warts and recurrent respiratory papillomatosis. HPV types 16 and 18 are the cause of cervical cancers. These HPV types are also associated with other anogenital cancers in men and women, including penile, vulvar, vaginal, and anal cancer, as well as a subset of oropharyngeal cancers.

Two types of vaccine are available for prevention of HPV infections: bivalent vaccine containing HPV types 16 and 18 and a quadrivalent vaccine containing HPV types 6, 11, 16, and 18. Both vaccines offer protection against the HPV types that cause 70% of cervical cancers (i.e. types 16 and 18), and the quadrivalent HPV vaccine also protects against the types that cause 90% of genital warts (i.e. types 6 and 11).

Both HPV vaccines are administered as a 3-dose series of IM injections over a 6-month period, with the second and third doses given 1–2 months and 6 months respectively after the first dose. Ideally, the same vaccine product should be used for the entire 3-dose series.

Women who have received HPV vaccine should continue routine cervical cancer screening because 30% of cervical cancers are caused by HPV types other than 16 or 18.

Note:

- *Imiquimod, podophyllin, and podofilox should not be used during pregnancy.*
- *Caesarean delivery should not be performed solely to prevent transmission of HPV infection to the newborn.*
- *Persons who are HIV infected are more likely to develop genital warts than persons who are not HIV infected; moreover, lesions are more recalcitrant to treatment due to depressed cell-mediated immunity.*

Cervical Cancer Screening for Women who attend DSRCs or have a history of STI

- Cervical cytology (i.e. Pap test or VILI test) is an effective, low-cost screening test for preventing invasive cervical cancer. If the results of the Pap test are abnormal, follow-up care should be provided.

- These tests should not be considered a screening test for STI.
- If a woman is menstruating, a conventional cytology Pap test should be postponed, and the woman should be advised to have a Pap test at the earliest opportunity.
- The presence of a mucopurulent discharge should not delay the Pap test. The test can be performed after careful removal of the discharge with a saline-soaked cotton swab.
- Women who have had a total hysterectomy do not require a routine Pap test unless the hysterectomy was performed because of cervical cancer or its precursor lesions.
- Pregnant women should be screened at the same frequency as non-pregnant women. A swab and an Ayre's spatula can be used for obtaining Pap tests in pregnant women, but cyto brushes are not recommended.
- HIV positive women should be provided cervical cytology screening twice (every 6 months) within the first year after initial HIV diagnosis and, if both tests are normal, annual screening can be resumed thereafter.

8.16 Other Sexually Transmitted Infections

Pediculosis Pubis

The Pthirus pubis (the crab louse), also known as the pubic louse, is an insect that is an obligate ectoparasite of humans. It is typically found in the pubic hair, but may also live on other areas with coarse hair, including the eyelashes.

Persons who have pediculosis pubis (i.e. pubic lice) usually seek medical attention because of pruritus or because they notice lice or nits on their pubic hair. Pediculosis pubis is usually transmitted by sexual contact.

Note:

- *Bedding and clothing should be decontaminated or removed from body contact for at least 72 hours. Fumigation of living areas is not necessary.*
- *Patients with pediculosis pubis should be evaluated for other STI.*
- *Patients should be evaluated after 1 week if symptoms persist. Retreatment might be necessary if lice are found or if eggs are observed at the hair-skin junction.*

- *Sexual partners that have had sexual contact with the patient within the previous month should be treated.*

- *Pregnant and lactating women should be treated with either permethrin or pyrethrins with piperonyl butoxide; lindane and ivermectin are contraindicated in pregnancy and lactation.*

- *Patients who have pediculosis pubis and also are infected with HIV should receive the same treatment regimen as those who are HIV negative.*

Genital Scabies

Scabies is a contagious skin infection caused by the mite Sarcoptes scabiei. The mite is tiny and usually not directly visible. This parasite burrows under the host's skin, causing intense allergic itching. The disease most often transmitted by direct skin-to-skin contact, with higher risk with prolonged contact. Initial infections require four to six weeks to become symptomatic. Re-infection, however, may manifest symptoms within as few as 24 hours. Because the symptoms are allergic, their delay in onset is often mirrored by a significant delay in relief after the parasites have been eradicated. Crusted scabies (Norwegian scabies), is a more severe form of the infection often seen in persons with immuno-suppression, debilitation, or malnourishment. Scabies in adults frequently is sexually acquired. Genital scabies manifest with red-brown pruritic nodules primarily on the lower trunk, scrotum, and thighs as well as burrows on penis. The nodular form represents a delayed hypersensitivity reaction to the scabies mite.

Note:

- *Bedding and clothing should be decontaminated or removed from body contact for at least 72 hours.*

- *Fumigation of living areas is unnecessary.*

Molluscum Contagiosum

Molluscum contagiosum (MC) is a viral infection of the skin. It is caused by a DNA pox virus called the *molluscum contagiosum virus* (MCV). MCV infects only humans. The virus commonly spreads through skin-to-skin contact. This includes sexual contact or touching or scratching the bumps and then touching uninfected skin. Handling objects that have the virus on them (fomites), such as a towel, clothing or toys can also result in infection. The virus can spread from one part of the body to another or to other people. This common viral disease has a higher incidence in children (especially children aged one to ten years), sexually active adults, and

those who are immuno deficient. MC can affect any area of the skin but is most common on the trunk of the body, arms, groin, and legs. MC is a self-limited infection and the lesions tend to routinely disappear without treatment. MC remains contagious until all the lesions are gone.

MC is characterized by small pearly papules with a central depression whose core may be expressed, producing a white cheesy material. The lesions average 2 to 5 mm in size and are usually painless, but may become inflamed, red, and swollen.

Patients with HIV infection and other immuno compromising conditions can develop "giant" lesions (≥15 mm in diameter), larger numbers of lesions, and lesions that are more resistant to standard therapy.

Diagnosis is generally made clinically based on the appearance of the lesion .

Hepatitis B Virus Infection

Hepatitis B is caused by infection with the hepatitis B virus (HBV) .The incubation period from the time of exposure to onset of symptoms is 6 weeks to 6 months .

Transmission :Hepatitis B viruses (HBV), which predominantly transmit through the parenteral route .HBV is efficiently transmitted by percutaneous or mucous membrane exposure to blood or body fluids that contain blood .

The primary risk factors associated with infection among adolescents and adults are unprotected sex with an infected partner, unprotected sex with more than one partner, MSM, history of other STI, and illegal injection-drug use. Transmission through unsafe sexual intercourse and transmission from mothers to infants is well-established. Infections also occur as a result of iatrogenic exposures (transfusion/ transplantation/dialysis of infected blood/ blood products or organs/tissues), and use of contaminated injections/equipment.

Treatment

No specific therapy is available for persons with acute hepatitis B ;treatment is supportive . Persons with chronic HBV infection should be referred for evaluation to a physician experienced in the management of Chronic Liver Disease .

Prevention and control :Prevention and control can be achieved through safe and effective HBV vaccines .

Two products have been approved for hepatitis B prevention: hepatitis B immune globulin (HBIG) and hepatitis B vaccine. HBIG provides temporary (i.e., 3-6 months) protection from HBV

infection and is typically used as PEP either as an adjunct to hepatitis B vaccination in previously unvaccinated persons or alone in persons who have not responded to vaccination . The recommended dose of HBIG is 0.06 mL/kg.

Pre exposure Vaccination

Hepatitis B vaccination is recommended for all unvaccinated adolescents, all unvaccinated adults at risk for HBV infection, and all adults seeking protection from HBV infection .

Post-exposure Prophylaxis

Both passive active PEP (the administration of HBIG and hepatitis B vaccine at separate sites) and active PEP (the administration of hepatitis B vaccination alone) have been demonstrated to be highly effective in preventing transmission after exposure to HBV .

Exposure to HBsAg-Positive Source

Unvaccinated persons or persons known not to have responded to a complete hepatitis B vaccine series should receive both HBIG and hepatitis vaccine as soon as possible (preferably ≥ 24 hours)

Exposure to Source with Unknown HBsAg Status

Unvaccinated persons who have a discrete, identifiable exposure to blood or body fluids containing blood from a source with unknown HBsAg status should receive the hepatitis B vaccine series, with the first dose initiated as soon as possible after exposure (preferably within 24 hours) and the series completed by using the age-appropriate dose and schedule .

Pregnancy

All HBsAg positive pregnant women should be reported to higher centres .

National Centre for Disease Control under DGHS, MOHFW, Government of India, initiated surveillance for hepatitis .

ANNEXURES

A1. Laboratory Tests for STI/RTI

A1. Laboratory Tests for STI/RTI[1]

Laboratory tests improve the diagnostic sensitivity and specificity of STI/RTI syndromes, and particularly in women, help to differentiate serious infections (e.g. cervicitis) from milder but more common infections (e.g. vaginitis). The tests also help in detection of infections in asymptomatic individuals. Laboratory testing is even more important in pregnant women to prevent the adverse consequences of syphilis, gonococcal and chlamydial infection in newborns.

Laboratory diagnosis of STI/RTI includes three major equally important steps, i.e. collection of specimen, its transport and use of a sensitive and specific test.

Laboratory procedures should include microscopic examination of fresh and stained specimens. The minimal laboratory tests recommended under the programme are:

1. RPR test for syphilis testing (qualitative and quantitative) for STI/RTI attendees and ANC attendees.

2. Wet-mount slide preparations for microscopic examination:

   a. Normal saline slide preparation for detection of motile trichomonads.

   b. KOH slide preparation for detection of Candida spores and pseudohyphae, and "Whiff test" for detection of amines indicative of bacterial vaginosis (Whiff test to be performed by the examining clinician).

3. Determination of pH level of vaginal secretions (to be performed by the examining clinician).

4. Gram stain of cervical/rectal specimen for white blood cell (WBC) and gram-negative intracellular diplococci.

5. Gram stain of slides prepared from vaginal smears to diagnose bacterial vaginosis.

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[1]*Please refer Laboratory Manual for Diagnosis of Sexually Transmitted and Reproductive Tract Infections, February 2014.*

Vaginal pH

The pH of vaginal fluid should be measured using pH paper of appropriate range (3.8 to 6.0). The vaginal fluid sample is collected with a swab from the lateral and posterior fornices of the vagina and the swab is then touched directly on to the paper strip. Alternatively, the pH paper can be touched to the tip of the speculum after it has been withdrawn from the vagina.

Care must be taken not to use any jelly (e.g. KY jelly) or disinfectant (e.g. savlon) before doing the pH test. Contact with cervical mucus must be avoided since it has a higher pH. The normal vaginal pH is 4.0.

In BV, the pH is generally elevated to more than 4.5. The vaginal pH test has the highest sensitivity (true negative) of the four characteristics used for identification of BV (Refer Table A1.1), but the lowest specificity (true positive). An elevated pH is also observed if the vaginal fluid is contaminated with menstrual blood, cervical mucus or semen, and in women with a *T. vaginalis* infection. In simple words it means that if the pH test is negative the result can be taken as it is but if it is positive one has to rule out other factors contaminating the sample such as menstrual blood, cervical mucus, semen or presence of *T. vaginalis* infection.

BV can be diagnosed using simple clinical criteria with or with out the aid of a microscope as shown in the table below:

Table A1.1: Clinical criteria for Bacterial Vaginosis (BV)

Collect specimen	Note colour and consistency of discharge. Take a specimen of discharge from the sidewalls or deep in the vagina where discharge pools (or use discharge remaining on speculum). Touch pH paper to discharge on swab or speculum and note pH
Prepare slide	• Place specimen on a glass slide. Add a drop of 10% potassium hydroxide (KOH) and note for any fishy smell. • Make a wet smear with 0.9% normal saline, cover with cover slip and see under microscope for clue cells.

What to look for	The diagnosis of BV is based on the presence of at least 3 of the 4 following characteristics a. Homogeneous white-grey discharge that sticks to the vaginal walls b. Vaginal fluid pH>4.5 c. Release of fishy amine odour from the vaginal fluid when mixed with 10% potassium hydroxide (positive whiff test)· d. "Clue cells" visible on microscopy on wet preparation
Important	Look for evidence of other vaginal or cervical infections as multiple infections are common.

Wet mount microscopy

Wet mount microscopy is the direct microscopic examination of vaginal discharge for the diagnosis of trichomoniasis, candidiasis and BV.

Table A1.2: Wet mount microscopy examination of vaginal discharge

Collect specimen	Take a specimen of discharge with a spatula from the sidewalls or deep in the vagina where the discharge accumulates.
Prepare slide	Mix specimen with 1 or 2 drops of saline on a glass slide and cover with a cover slip.
What to look for	• Examine at 100X magnification and look for typical jerky movement of motile trichomonads (ovoid, globular, pear shaped flagellated protozoan). • Examine at 400X magnification to look for yeast cells (round to ovoid cells with typical budding) and trichomonads. • To make identification of yeast cells easier in wet mount slides, mix the vaginal swab in another drop of saline and add a drop of 10% potassium hydroxide to dissolve other cells and note any fishy odour. • Presence of clue cells (squamous epithelial cells covered with many small coccobacillary organisms). Wet mount shows stippled granular cells without clearly defined edges because of the large numbers of adherent bacteria present and an apparent disintegration of the cells. (The adhering bacteria are predominantly *G.vaginalis*, sometimes mixed with anaerobes).
Important	Look for evidence of other vaginal or cervical infections as multiple infections are common.

Fig A1.a: Potassium hydroxide preparation of vaginal fluid showing budding yeast and mycelia

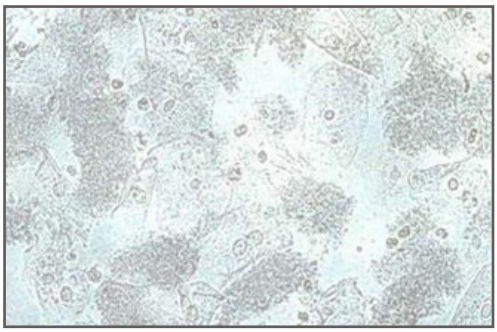


Fig A1.b: "Clue cells" in vaginal wet mount (400X)

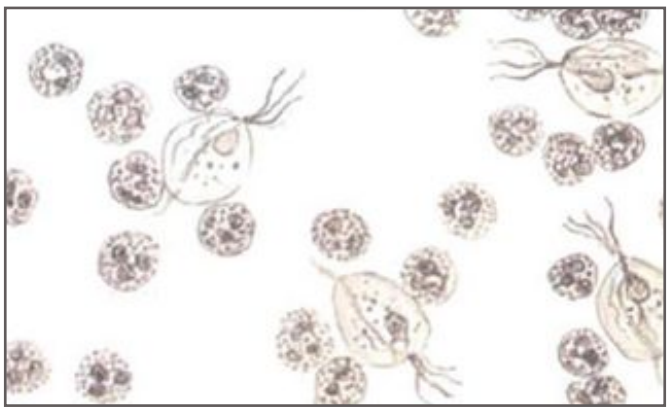


Fig A1.c: Trichomonas vaginalis in a wet mount of vaginal discharge (400X)

Whiff test

Women with BV often complain of a foul vaginal smell. This odour is due to the release of amines, produced by decarboxylation of the aminoacids lysine and arginine by an aerobic bacteria. When potassium hydroxide is added to the vaginal fluid, these amines immediately become volatile, producing the typical fishy odour.

Place a drop of vaginal fluid on a glass slide and add a drop of 10% potassium hydroxide. Hold the slide close to nose to detect the amine odour. After a positive reaction, upon standing, the specimen will quickly become odourless because the amines will be rapidly and completely volatilized.

Gram stain microscopy

A gram stain of a vaginal smear has a higher specificity for the detection of clue cells than a wet mount preparation. Moreover, a Gram stain allows good evaluation of the vaginal bacterial flora. Normal vaginal fluid contains predominantly *Lactobacillus species* and exceedingly low numbers of streptococci and coryneform bacteria. In BV, lactobacilli are replaced by a mixed flora of anaerobic bacterial morphotypes and *G.vaginalis*. However, gram stain microscopy has a very low sensitivity for detecting gonorrhoea among women; culture remains the method of choice.

For men, gram stain microscopy of urethral discharge smear will show gram-negative intracellular diplococci in case of gonorrhoea. In case of non-gonococcal urethritis more than 5 neutrophils per oil immersion field (1000X) in the urethral smear or more than10 neutrophils per high powerfield in the sediment of the first void urine are observed.

Table A1.3: Gram stain microscopy of vaginal smears

Collect specimen Prepare slide	A Gram stain slide can be prepared at the same time as the wet mount by rolling the spatula/swab on a separate slide. 1) Heat fix. 2) Stain with crystal violet (60 seconds) and rinse. 3) Stain with iodine (60seconds) and rinse. 4) Decolourise with acetone-ethanol for few seconds (until the liquid runs clear). 5) Stain with safranin (60 seconds) and rinse. 6) Gently blot dry and examine under oil immersion (1000X) and count each type of organism.
What to look for	• Lactobacilli only: Normal. • Mixed flora, mainly lactobacilli with a few short rods (coccobacilli): Considered normal. • Presence of clue cells; mixed flora, mainly Gardnerella and anaerobic bacteria with a few lactobacilli: Diagnose as BV. • Presence of clue cells, mixed flora of Gram-positive, Gram-negative and Gram-variable rods; no lactobacilli: Diagnose as BV.
Important	Look for evidence of other vaginal or cervical infections as multiple infections are common.

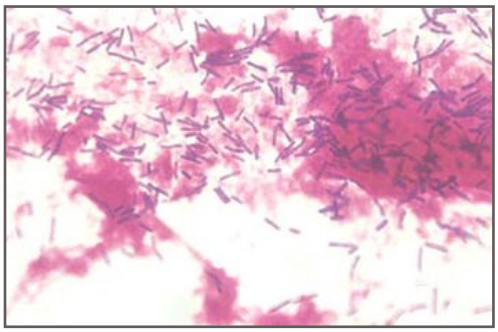


Fig A1.d: Gram stained vaginal smearshowing a normal flora of lactobacilli (1000X)

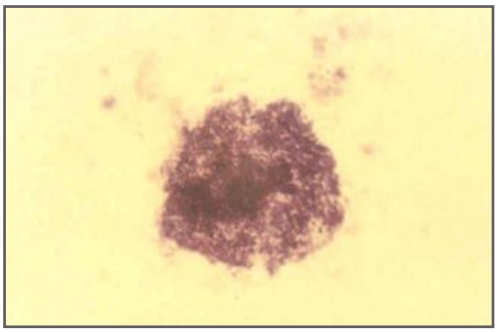


Fig A1.e: Gram stained vaginal smear with typical "clue cell" (1000X)

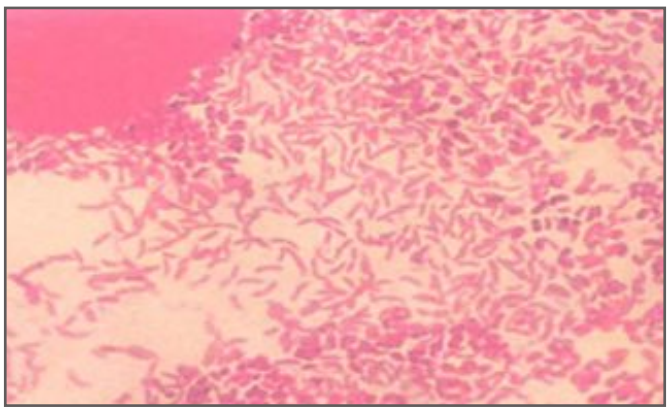


Fig A1.f: Gram stained vaginal smear showing large Gram-negative rods (Mobilincus mulieris) (1000X)

Use of gram stain for diagnosis of cervical infection

1. The Gram stain method in female does not provide conclusive evidence of the presence of Gonococcal infection. Presence of gram-negative diplococci indicates infection but their absence does not rule out infection.

2. The costs associated with the method, including the cost of maintaining microscopes, outweigh the benefits in terms of improved quality of care.

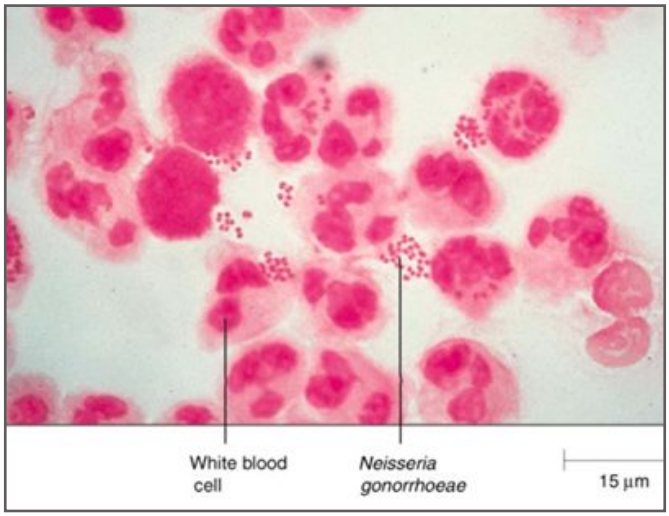


Fig A1.g: Gram stain smear: Gram-negative diplococci of Neisseria gonorrhoeae

Rapid Plasma Reagin (RPR) test for Syphilis screening

The programme recommends the use of a non-treponemal test – Rapid Plasma Reagin (RPR) test for routine screening for syphilis.

Table A1.4: Procedure of RPR test

- Inform about the procedure of the test to be conducted.
- Seek consent.
- Use a sterile needle and syringe. Draw 5ml of blood from a vein. Put in a plain test tube.
- Let the test tube stand for 20 minutes to allow serum to separate (or centrifuge for 3–5 minutes at 2000–3000 rpm). In the separated sample, serum will be on top.
- Use a sampling pipette to transfer the serum. Take care not to include any red blood cells from the lower part of the separated sample.

- Hold the pipette vertically over a test card circle. Squeeze it to allow one drop (50µl) of serum to fall onto a circle. Spread the drop to fill the circle using a toothpick or other clean spreader.

Important: Several samples may be done on one test card. Be careful not to contaminate the remaining test circles. Use new tip and spreader for each sample. Carefully label each sample with a Client name or number.

- Attach dispensing needle to a syringe. Shake antigen. *Draw up enough antigen for the number of tests done (one drop per test).

- Holding the syringe vertically, allow exactly one drop of antigen to fall onto each test sample. Do not stir.

- Rotate the test card smoothly on the palm of the hand for 8 minutes (or rotate on a mechanical rotator).

**Make sure antigen was refrigerated (not frozen) and has not expired.*

Interpreting results

After 8 minutes rotation, inspect the card in good light. Turn or tilt the card to see whether there is clumping (reactive result). Test cards include negative and positive control circles for comparison.

Report as follows :

1. Non-reactive (no clumping or only slight roughness): Negative for syphilis

2. Reactive (highly visible clumping): Positive for syphilis

3. Weakly reactive (minimal clumping): Positive for syphilis

Note: Weakly reactive can also be more finely granulated and difficult to see than the illustration (see below).

Fig A1.h: Test serum is mixed with antigen and the card is placed on appropriate rotator

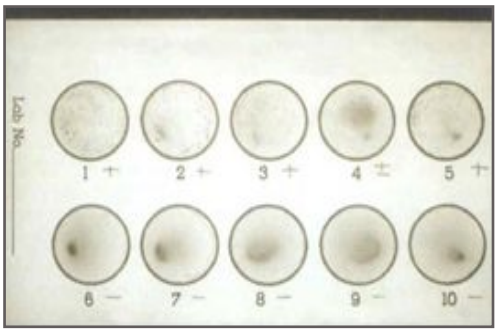


Fig A1.i: Reading RPR results for 10 undiluted sera showing reactive and non-reactive samples. The presence of small to large flocculated clumps indicates reactivity, whereas no clumping or a very slight roughness indicates non-reactivity

Correlation and confirmation of test results

- Syphilis tests detect antibodies, which are evidence of current or past infection.
- Non-treponemal tests such as RPR test detect almost all cases of early syphilis, but false positives are possible. RPR can be performed without a microscope.
- Treponemal tests, such as *Treponema pallidum* haemagglutination test (TPHA), Fluorescent Treponema antibody absorption test (FTA-ABS), if available, can be used to confirm non-treponemal test results.
- Quantitative RPR titres can help evaluate the response to treatment. The following table can be used to interpret syphilis test results.

Table A1.5: Interpreting serological test results for syphilis

	RPR	RPR titre	TPHA
Active infection	+	>1:8	+
Latent syphilis	+	Often <1:4	+
False positive	+	Usually <1:4	-
Successful treatment	+or-	2 titres decrease (e.g. from 1:16 to 1:4)	+

Note: where additional tests are not available, all clients with reactive RPR should be treated.

A2. Syphilis Screening using Rapid Point of Care Tests (POC)

Syphilis testing

Laboratory diagnosis traditionally follows initial screening of serum by a non-treponemal test (VDRL/RPR) confirmed by a specific treponemal test (TPHA/FTA-ABS).

However, operational requirements for RPR/VDRL testing are not available at most primary care sites (available at only 2.9% PHCs and 24% CHCs in India[2]). Delay in obtaining test results through referrals to offsite laboratories can delay or result in missed opportunities for treatment. Very often patients may not return for follow-up particularly if they are asymptomatic.

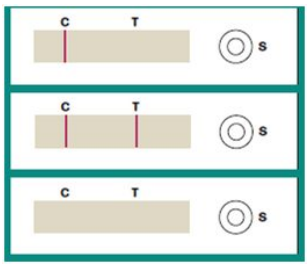
Rapid point of care syphilis testing

- Developed with an aim to integrate rapid, simple and technologically appropriate syphilis testing at venues with limited resources.
- Six test kits validated by WHO
  - Sensitivity 84.5%, and
  - Specificity 97.7% by serum specimens. (Recommended for further field trials using whole blood).
- Rapid POC kits can be stored at 4^0C-30^0C for up to a year; the test does not require other equipment, or electricity, and can be performed by a trained para-medic.

Immuno-chromatographic strip test performance using whole blood

Put a drop of blood in the well of the test kit, wait for 8-10 minutes or as recommended by the manufacture of the kit and read the test result as given in figure A2.a.

Fig A2.a: Strip test with interpretation of results



Negative: Only one line below C (control line)

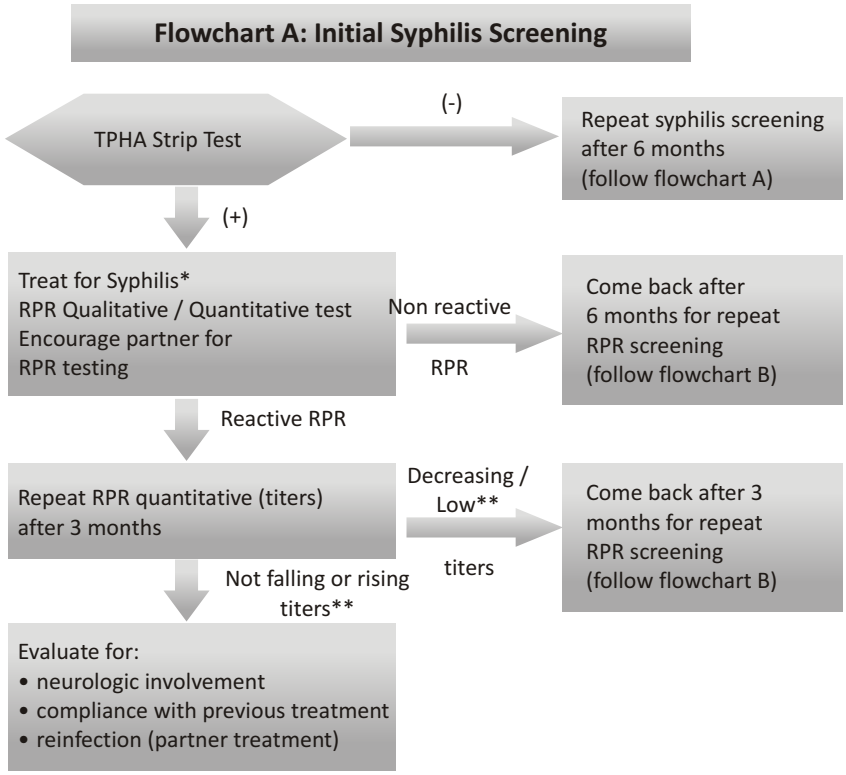
Positive: Lines below C (control) and T (test line)

Indeterminate: No lines below C or T

[2] *NIRRH. Rapid Assessment Survey, 2005-2006.*

Suggested guidelines for syphilis screening and treatment using point of care tests

- Since it is a specific treponemal test, it cannot distinguish between a new infection and a prior infection which has been successfully treated.
- However, all individuals testing positive at first clinic visit with POC tests should be treated.
- Referral systems with the nearest Designated STI/RTI clinic or local laboratories need to be set up for RPR testing for prognostic purposes and subsequent testing of POC positive individuals.



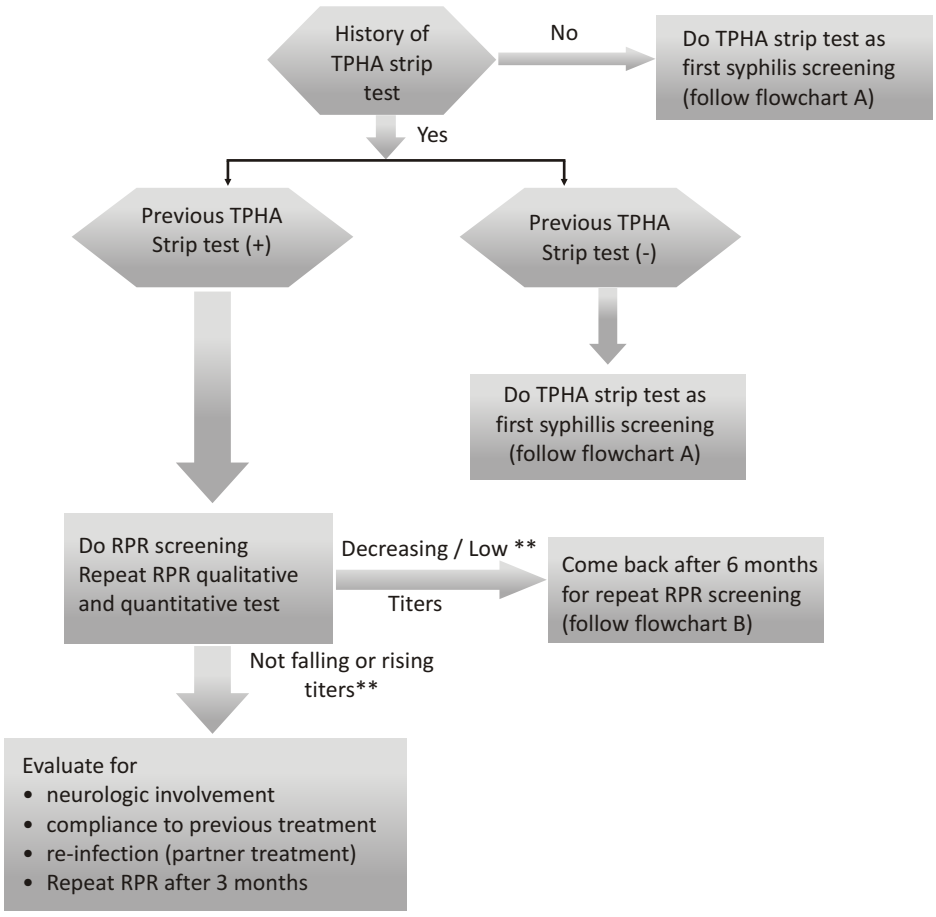
*Syphilis treatment

-History of genital ulcer, maculo-papular rash or in early latent syphilis (within 1 year) : treat with Benzathine PCN 2.4 M unit, 1 dose

- If documentation of previous negative serology is not available or unknown stage or late latent syphilis : treat with Benz athine PCN 2.4 M units IM, 3 doses at weekly interval

**Expect two dilution lower titer at 6 months. If initial titers was low (<1:8), it may be serofast and not decrease overtime.

Flowchart B: Repeat Syphilis Screening (every 6 months)



**Expect two dilution lower titer at 6 months. If initial titers was low (<1:8), it may be serofast and not decrease overtime

A3. Disinfection and Standard Precautions

Standard precautions require that healthcare workers assume that the blood and body substances of all patients are potential sources of infection, regardless of the diagnosis or presumed infectious status. Additional (transmission-based) precautions are needed for diseases transmitted by air, droplets and contact.

A number of infections can be spread from the patient to the healthcare provider or to other patients if basic precautions are not followed. Hepatitis B and C viruses and HIV are easily transmitted by reuse of contaminated sharps. Because most infections are often asymptomatic; it is not possible to know which patients have an infection. For this reason, standard precautions should be followed by all the healthcare workers.

Standard Precautions

Standard precautions include the following:

1. Hand washing and antisepsis (hand hygiene)
2. Use of personal protective equipment when handling blood, body substances, excretions and secretions
3. Appropriate handling of patient equipment and soiled linen
4. Prevention of needle-stick/sharp injuries
5. Management of healthcare waste

1. Hand washing and antisepsis (hand hygiene)

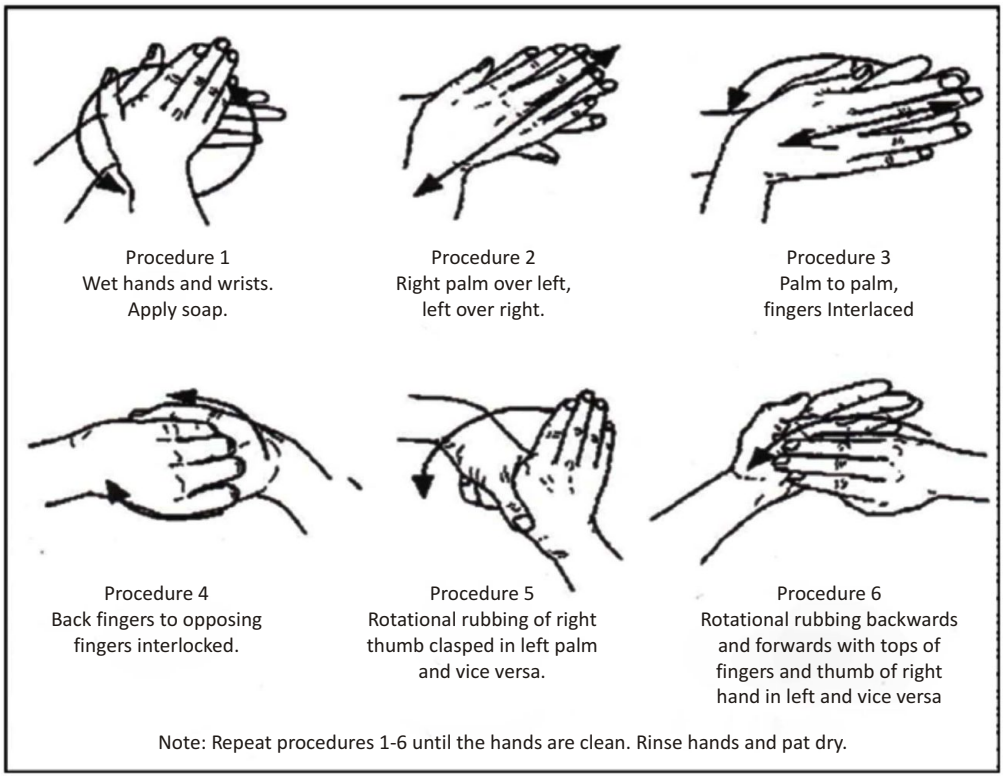
Hand washing breaks the chain of infection transmission and reduces person-to-person transmission. It is the most important way to kill germs on the skin. Hands should be washed even more thoroughly and for a longer time in the following situations:

- Before and after helping someone give birth
- Before and after touching a wound or broken skin
- Before and after giving an injection, or cutting or piercing a body part
- After touching blood, urine, stool, mucus, or fluid from the vagina

- After removing gloves
- Between contact with different patients

Hands must be washed for a minimum of 10 - 15 seconds, count to 30 as you scrub your hands all over with the soapy lather. Use soap or other disinfectant to remove dirt and germs. Use a brush or soft stick to clean under the nails, then rinse, using running water. Do not reuse the same water. Immersion of hands in bowls of antiseptics is not recommended. Common towels must not be used as they facilitate transmission of infection. If there is no clean dry towel, it is best to air-dry the hands.

Fig A3.a: Hand washing procedures



Source: World Health Organization. Regional Office for Western Pacific. Interim guidelines for national SARS preparedness. Manila: WHO, 2003, Page 45

- Hand washing is the simplest and most cost-effective way of preventing transmission of infection.
- Hands must be washed for a minimum of 10-15 seconds with soap or other disinfectant.
- Common towels must not be used as they facilitate transmission of infection.

2. Use of personal protective equipment when handling blood, body substances, excretions and secretions

Using personal protective equipment offers protection by helping to prevent microorganisms from:

- Contamination of hands, eyes, clothing, hair;
- Being transmitted to other patients and staff.

Personal protective equipment includes:

- Gloves
- Masks
- Aprons
- Gowns
- Caps/hair covers

Gloves

- Use gloves (clean, non-sterile) or a piece of plastic for handling dirty bandages, clothes, blood, vomit or stool.
- Disposable gloves should not be reused.
- Gloves must be changed not only between contacts with different patients but between tasks/procedures on the same patient to prevent cross-contamination between different body sites.

Personal protective equipment must be used effectively, correctly and at all times whenever contact with patient's blood, body fluids, excretions and secretions may occur.

3. Appropriate handling of patient equipment and soiled linen

Ensure that all reusable equipment is cleaned and reprocessed appropriately before being used on another patient.

Keep bedding and clothing lean. This helps in keeping sick people comfortable and helps in preventing skin problems. Handle clothing and/or sheets carefully, which are stained with blood, urine, stool or other body fluids. Separate from other laundry for washing. Dry laundry thoroughly in the sun if possible or iron after drying.

4. Prevention of needle-stick/sharp injuries

All the used disposable syringes and needles, scalpel blades and other sharp items should be placed in a puncture resistant container having a proper lid. These containers must be located close to the procedure area. Never recap or bend needles.

5. Management of health-care waste

Daily collection of waste must be encouraged and storage of uncollected, long stored waste or waste within the premises must be avoided.

There are four main components of a waste disposal plan: Segregation, Disinfection, Proper storage and transportation, and Safe disposal.

I. Segregation is separating waste by type at the place where it is generated/at source. Always segregate waste into infectious and non-infectious waste at the source of generation. The bio-medical waste should be segregated into containers/bags at the point of its generation into colour coded containers/bags as per the following guidelines:

Table A3.1: Colour coding and type of container for disposal of biomedical waste

Colour coding	Type of container to be used	Type of waste
Yellow	Non-chlorinated plastic bag	• Anatomical waste- human & animal • Discarded medicines and cytotoxic drugs • Soiled waste *(items contaminated with blood and body fluids)*

Colour coding	Type of container tobe used	Type of waste
Red	Non-chlorinated plastic bag/ puncture proof container for sharps	• Laboratory waste *(wastes from clinical samples, pathology, biochemistry, haematology, blood bank, etc)* • Waste sharps *(needles, syringes, scalpels, blades, glass, etc, that may cause puncture and cuts. This includes both used and unused sharps)* • Infectious solid waste *(Waste generated from disposable items other than the waste sharps such as tubings, catheters, intravenous sets etc)*
Blue	Non-chlorinated plastic bag / container	Chemical waste *(chemicals used in production of biologicals, chemicals used in disinfection, as insecticides, etc)*
Black	Non-chlorinated plastic bag	Municipal waste

Source: Bio Medical Waste (Management and Handling) Rules, 2011

Never mix infectious and non-infectious waste at the source of generation or during the collection, storage, transportation or final disposal of waste.

II. Disinfection: Disinfection of waste at source can be carried out either by chemical treatment, autoclaving, or microwaving. Chemical treatment should be carried out using at least 1% hypochlorite solution or any other equivalent chemical reagent to ensure disinfection. While autoclaving, the autoclave should be dedicated for the purposes of disinfecting and treating biomedical waste. Medical waste should not be considered properly treated unless the indicators indicate that the prescribed time, temperature and pressure were reached during the autoclave process. If these are not reached for any reason, then the entire load of medical waste should be autoclaved again. Microwave treatment should not be used for cytotoxic, hazardous or radioactive wastes, body parts, and large metal items.

III. Proper storage and transportation:

- Always collect the waste in covered bins.
- Fill the bin up to the three-quarter level.
- Clean the bin regularly with soap and water.
- Never overfill bins.
- Never mix infectious and non-infectious waste in the same bin.
- Never store waste beyond 48 hours.

While carrying or transporting waste from the source of generation to the site of final disposal, always carry it in closed containers. Use dedicated waste collection bins for transporting waste. Never transport waste in open containers or bags as it may spill and cause spread of infections. Never transport waste with sterile equipment.

IV. Safe disposal: Always remember to disinfect and shred the waste before its final disposal. Remember the following while disposing waste:

- Anatomical waste should be disposed of by incineration or deep burial[3] in a secured area. There should be no chemical pre-treatment before incineration. Chlorinated plastics/ bags should not be incinerated.
- All sharps including cut needles should be decontaminated and then put in a puncture-proof box before disposal. Once this container is 3/4 filled, it should be buried or incinerated.
- Syringes are to be cut (with hub cutters) and chemically disinfected at the source of generation before they are finally disposed of in the sharps pit located at the health facility. Chemical disinfection should be ensured using 1% hypochlorite solution or any other equivalent chemical reagent. Recent guidelines recommend mutilation/ shredding prior to disposal in order to prevent unauthorised reuse.

[3] *Disposal of biomedical waste by deep burial is prohibited in towns and cities, and permitted only in rural areas where there is no access to common bio-medical waste treatment facility, with prior approval from the prescribed authority. The deep burial facility should be located as per provisions and guidelines issued by Central Pollution Control Board.*

- Infectious solid waste (Waste generated from disposable items other than the waste sharps such as tubings, catheters, intravenous sets etc): Disinfection by chemical treatment/ autoclaving/ microwaving followed by mutilation or shredding and after treatment final disposal through registered or authorized recyclers.

- Liquid medical waste (LMW) should be poured down a sink/drain/ flushable toilet or buried in a pit. Rinse sink/drain/ toilet with water after pouring LMW. Pour disinfectant solution in used sink/drain/ toilet at end of each day. Decontaminate LMW container with 0.5% bleaching solution for 10 minutes before final washing.

- Discarded medicines and Cytotoxic drugs (wastes comprising of outdated, contaminated and discarded medicines) should be disposed in secured landfill or by incineration.

- Chemical waste that is potentially toxic or poisonous, including cleaning products, disinfectants etc. should be thrown in toilets/drains after appropriate chemical treatment. Solids should be disposed in secured landfills.

- Never throw infectious waste into general waste without any pre-treatment and shredding.

Disinfection of Instruments

Disinfect or sterilize equipment and instruments. Instruments must first be washed and then disinfected if they are to be used to:

- Cut or pierce skin,

- Give an injection,

- Cut the cord during childbirth,

- Examine the vagina, especially during or after childbirth, a miscarriage, or an induced abortion,

- Perform any trans-cervical procedure.

These procedures include the following:

- **Decontamination** makes inanimate objects safer to handle before cleaning and involves soaking soiled items in 0.5% chlorine solution for 10 minutes and wiping soiled surfaces

such as examination tables with a 0.5% chlorine solution. Soaking instruments in bleach solution will help protect against acquiring infection while cleaning them.

- **Cleaning**: After instruments and other reusable items have been decontaminated, they need to be cleaned to remove visible dirt and debris, including blood and body fluids. Cleaning is the most effective way to reduce the number of microorganisms on soiled instruments and equipment. All instruments should be washed with soapy water and a brush until each one looks very clean, and thereafter rinse with clean water. Care should be taken not to cut or injure oneself on sharp edges or points. Gloves should be worn while washing instruments; if possible, heavy gloves should be used.

- **Sterilization** destroys all microorganisms, including bacterial endospores, which are present on instruments or equipment. Instruments, surgical gloves, and other items that come in contact with the blood stream or other sterile tissue should be sterilized. Sterilization can be achieved using an autoclave, dry heat, or a chemical.

- **High-Level Disinfection** (HLD) destroys all microorganisms except some bacterial endospores on instruments or objects. It is the only acceptable alternative to sterilization and can be achieved by boiling, steaming, or soaking items in a chemical solution.

  The instruments should be steamed or boiled for 20 minutes. To steam them, a pot with a lid is needed. The water does not need to cover the instruments, but enough water should be used to ensure steam coming out of the sides of the lid for 20 minutes. Do not overload with instruments. No instruments should protrude above the rim of the pot. To boil them, it is not necessary to fill the whole pot with water. But make sure the water covers all the instruments in the pot for the entire time. Put a lid on the pot. For both steaming and boiling, start timing 20 minutes after the water with the instruments comes to a full boil. Do not add any new instrument to the pot once counting has started.

The following table shows how to make a disinfection solution of 0.5%, 1% and 2% available chlorine.

Table A 3.2: Hypochlorite solution of 0.5%, 1% and 2% available chlorine

Product	Chlorine available	How to dilute to 0.5%	How to dilute to 1%	How to dilute to 2%
Sodium hypochlorite-liquid bleach	3.5%	1 part bleach to 6 parts water	1 part bleach to 2.5 parts water	1 part bleach to 0.7 parts water
Sodium hypochlorite liquid	5%	1 part bleach to 9 parts water	1 part bleach to 4 parts water	1 part bleach to 1.5 parts water
NaDCC (sodium dichlor-oisocyanurate) powder	60%	8.5 grams to 1 litre water	17 grams to 1 litre water	34 grams to 1 litre water
NaDCC (1.5g/ tablet) - tablets	60%	6 tablets to 1 litre water	11 tablets to 1 litre water	23 tablets to 1 litre water
Chloramine-powder	25%	20 grams to 1 litre water	40 grams to 1 litre water	80 grams to 1 litre water

***Note**: Bleach solution becomes unstable rapidly, hence it needs to be freshly prepared daily or changed on becoming dirty/turbid. Chlorine bleach can be corrosive. Protect metal instruments by thoroughly rinsing them with water after soaking for 10 minutes.*

Cleaning of the Health Facility

Patient care areas must be cleaned by wet mopping. Only dry sweeping is not recommended. Any areas visibly contaminated with blood or body fluids should be cleaned immediately with detergent and water.

Table A3.3: Common disinfectants used for environmental cleaning in health centres

Disinfectants	Recommended use	Precautions
Sodium hypochlorite 1% In-use dilution, 5% solution to diluted 1:5 in clean water	Disinfections of material contaminated with blood and body fluids	• Should be used in well-ventilated areas • Protective clothing required while handling and using undiluted solutions • Do not mix with strong acids to avoid release of chlorine gas • Corrosive to metals

Disinfectants	Recommended use	Precautions
Bleaching powder 7g/litre with 70% available chlorine (Table shows dilutions for bleach)	Toilets / bathrooms-if liquid bleach is not available, this may be used	Same as above
Alcohol (70%) Isopropyl, ethyl alcohol, methylated spirit	Smooth metal surfaces, tabletops and other surfaces on which bleach cannot be used	• Flammable, toxic, to be used in well-ventilated area, avoid inhalation • Kept away from heat source, electrical equipment, flames, hot surfaces • Allow it to dry completely, particularly when using diathermy as it can cause diathermy burns

***Note**: A neutral detergent and warm water solution should be used for all routine and general cleaning. When a disinfectant is required for surface cleaning, e.g. after spillage or contamination with blood or body fluids, the manufacturer's recommendation for use and occupational health and safety instruction should be followed.*

A4. Treatment Failure, Recurrence, Relapse & Persistence of STI/RTI

Treatment failure: If progression of disease continues following initiation of an effective regimen or if no clinical improvement occurs following the effective regimen.

Relapse: Reappearance of the same symptoms/signs within the estimated period of their disappearance following an effective treatment regimen, as per its natural history, and if the patient denies further sexual contact during the post-treatment period.

Recurrence: A return of the symptoms, after a symptom free interval, as a phenomenon of the natural history of the disease. Recurrence may be due to relapse or due to reinfection.

Persistence: Persistent infections are characterized as those in which the infectious agent is not cleared but remains in specific cells of infected individuals. Persistent infections may involve stages of both silent and productive infection without rapidly killing or even producing excessive damage of the host cells.

Suspected Treatment Failure

- The health care provider should explore the following from the suspected case to ascertain the cause for treatment failure:
    - Where the medications prescribed and how many tablets were taken? (review to see whether DOT-STI followed)
    - Were the medicines shared with anyone, or was the medication stopped after the patient felt some improvement?
- Review the prescription (if available) to verify whether treatment given is in accordance to the national treatment guidelines.
- Consider the possibility of drug resistance if cases of treatment failure are showing an increasing trend.

***Note**: However, what may first appear to be clinical treatment failure may actually be due to circumstances other than antibiotic resistance, most commonly reinfection following successful treatment. Failure to comply with treatment, especially where multi-dose treatments are employed; inadequate dosing; use of low-quality antimicrobials; or cases where only an unsatisfactory clinical history is available are other examples of sources of possible confusion in defining the presence of a "true" treatment failure, i.e. one that is due to antimicrobial resistance.*

Suspected Reinfection / Relapse / Recurrence / Persistence

The HCP should explore the following from the suspected case to ascertain the cause for reinfection/relapse/recurrence/persistence:

- Did your partner(s) get treated?
- Did you use condoms or abstain from sex after starting treatment?
- Did you have sex without condom after treatment?
- Did you have complete disappearance of symptoms after treatment?
- Have you got similar lesions in the past; if yes, how many times and how frequently did they occur?

***Note**: Recurrence of RTI is common with endogenous vaginal infections, especially when underlying reasons (such as douching, usage of vaginal drying agents, diabetes mellitus, usage of hormonal contraceptives, chronic malnutrition, anaemia) are not addressed.*

Management of treatment failure and relapse / persistent infections

Treatment failure

All cases of treatment failures should be referred to the health facility where a concerned specialist is available. After receiving the individual patient, the specialist should review the case records, and after ruling out errors in diagnosis and management, advise necessary laboratory testing. Laboratory testing can be done either by transporting samples collected as per the national STI diagnostics manual SOP or if willing, patient can be referred to the state or regional STI Training and Reference Laboratories after explaining to the patient and providing a proper covering letter. List of state and regional STI laboratories are annexed.

Reinfection/relapse/ persistence

- Consider retreatment with the same antibiotics.
- Refer to higher health facility where concerned specialist is available especially if symptoms persist.

Criteria for treatment failure/ recurrence/persistence for individual STI/RTI

Primary and Secondary Syphilis

- Patients who have signs or symptoms that persist or recur or who have a sustained fourfold increase in non-treponemal test titre (i.e. compared with the maximum or baseline titre at the time of treatment) probably failed treatment or were reinfected. These patients should be retreated and re-evaluated for HIV infection.

- HIV infected persons should be evaluated clinically and serologically for treatment failure at 3, 6, 9, 12, and 24 months after therapy.

- For retreatment, weekly injections of benzathine penicillin G 2.4 million units IM for 3 weeks are recommended.

- *T. pallidum* chromosomal mutations associated with azithromycin resistance and treatment failures have been documented. As such, the use of azithromycin should be used with caution *only* when treatment with penicillin or doxycycline is not feasible. Azithromycin should not be used in MSM or general population. Close follow-up of persons receiving any alternative therapies is essential.

Gonorrhoea

- Most infections result from reinfection rather than treatment failure, indicating a need for improved patient education and referral of sex partners.

- Clinicians should advise patients with gonorrhoea to be retested 3 months after treatment.

Gonorrhoea treatment failure should be suspected if:

- Symptoms remain for more than 7 days after initial antibiotic treatment with Kit 1 regimen (Cefixime 400 mg + Azithromycin 1 gm)

- The patient remains positive for one of the following tests for *N. gonorrhoeae*:

    1. Presence of intracellular Gram-negative diplococci on microscopy taken at least 72 hours after completion of treatment;

       OR

2. Isolation of *N. gonorrhoeae* by culture taken at least 72 hours after completion of treatment;

   AND

3. Denies sexual contact during the post-treatment follow-up period.

Persistent urethritis: Depending on the original site of infection, symptoms may include:

- Persistent urethral discharge, dysuria, and/or pyuria (positive leucocyte esterase on urine dipstick)
- Persistent pharyngitis or odynophagia
- Persistent rectal discharge, pain, bleeding, pruritis, tenesmus, or painful defecation.
- Persistent vaginal discharge, dysuria, or post-coital spotting.

Note: If decreased susceptibility to Cefixime or Ceftriaxone is suspected, it is important to refer the patient to either the state or regional STI laboratory where facilities are available to culture (N. gonorrhoeae) and perform antimicrobial susceptibility testing. Concerned SACS should facilitate the sample transfer or patient referral to the nearest functional centre.

Recommendation for Performing Tests-of-Cure

Tests-of-cure after treatment (i.e. repeat testing 3–4 weeks after completing therapy) are recommended only for the following groups:

- Pregnant women,
- Cases where an antibiotic other than a recommended or alternate regimen was used,
- Cases of suspected treatment failure.

A5. List of Drugs

(A) Essential STI/RTI Drugs

1. Tab. Cefixime 200 mg or 400 mg.
2. Tab. Azithromycin 500 mg or 1 g.
3. Tab. Acyclovir 200 mg or 400 mg.
4. Cap. Doxycycline 100 mg.
5. Benzyl benzoate 25% lotion.
6. Tab. Erythromycin 250 mg or 500 mg.
7. Tab. Metronidazole 400 mg.
8. Podophyllin tincture 20%.
9. Cap. Amoxicillin 500 mg.
10. Tab. Secnidazole 1 g or 2 g.
11. Inj. Benzathine Penicillin 2.4 MU.
12. Inj. Distilled water ampoules/glass phials 10 ml.
13. Tab/Cap. fluconazole 150 mg.

(B) List of Additional STI/RTI Drugs

1 Clotrimazole 500 mg vaginal pessary
2. Tab. Tinidazole 500 mg.
3. Gamma benzene hexachloride 1% lotion or cream
4. Tab. Ciprofloxacin 500 mg.
5. Trichloroacetic acid 30%
6. Vaseline or white petrolatum jelly
7. Applicators (wooden)

(C) Essential General Medicines

1. Tab. Ranitidine 150 mg.
2. Tab. Metoclopramide
3. Tab. Ibuprofen 400 mg.
4. Tab. Paracetamol 500 mg.
5. Inj. Adrenaline (epinephrine) 1:1000 dilution
6. Antihistramines for injection and oral administration (e.g. Diphenhydramine and Chlorpheniramine)
7. Inj. Hydrocortisone

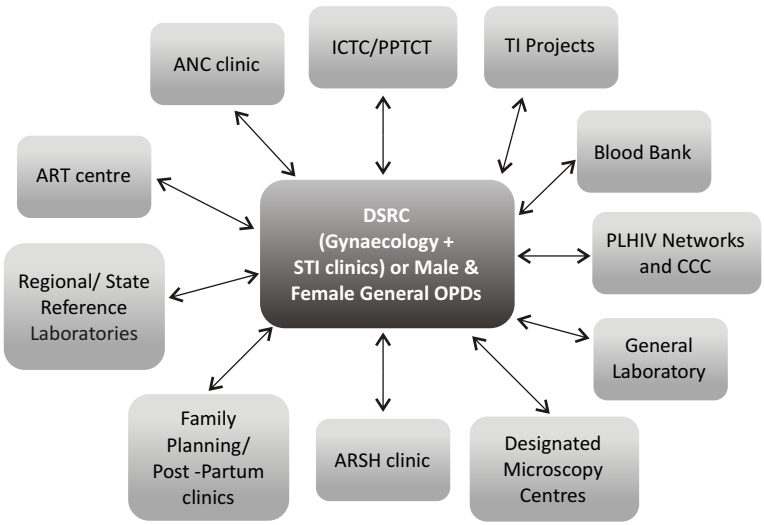
A6. Cross Referral Linkages between DSRC and Other Facilities

Patients with suspected STI/RTI may primarily attend either (A) Skin & STI clinic or (B) Gynaecology clinic or (C) General OPD clinic. These service delivery points are expected to have cross referral linkages with other providers, facilities both within the hospital as well as those which are located beyond the hospital such as Targeted Intervention NGOs (TI NGO). The counsellor at DSRC plays a crucial role in these linkages.

Counsellor at DSRC and DSRC in-charges should ensure minimal loss of referees; this can be achieved by effective counselling, by accompanied referral, by usage of line list to track the referred patients and by communicating with other facilities. All HIV positive clients detected at ICTC out of DSRC referrals are to be linked with ART centres and the pre-ART registration number should be documented on the patient wise card without compromising their confidentiality. This is the responsibility of counsellor at DSRC and ICTC. No additional signs or symbols should be used on patient wise cards to identify the HIV status. The DSRC in-charge should ensure that counsellors adhere to the guidelines. The records are to be reviewed periodically by the District HIV/AIDS Nodal Officer or DPM wherever the DAPCU is present.

Through effective referral linkages, it is expected that each DSRC should receive a minimum of 14 clients a day. The STI focal persons at SACS/TSU and Mentors should actively monitor these linkages during their field visits and address any gaps. Similarly the District RCH Officer should monitor the linkages at sub-district level health facilities, and address any gaps.

Fig A6.a: Linkages between DSRC/ General OPD and other facilities



A7. Integration of STI/RTI Prevention and Management in RMNCH+A Programme

There is increasing recognition of integration of STI/RTI prevention interventions in larger Reproductive Health Programmes. An attempt has been made to organise key reproductive health interventions which would support STI/RTI and HIV prevention.

Promoting awareness, counselling and behaviour change

Essential steps in the prevention of STI/RTI transmission are promoting a community norm of STI/RTI prevention and educating people about STI/RTI and how to protect themselves. It is important that counselling sessions in reproductive health settings include discussions on STI/RTI as a consequence of risky sexual behaviour. Ignorance amongst providers is widespread and women themselves are often powerless to assess their STI/RTI risk, even with the best of counselling.

Promotion of condoms as a method of dual protection

Condoms are being made easily available through ASHAs, community-based distribution programmes, social marketing and health institutions and other settings. Distributing condoms freely in settings where there are people at high risk of transmitting infection (such as in STI clinics, trucker halt points, red light areas, migrant workers' sites) could be an important intervention.

Counselling for contraceptive choices

STI/RTI risk-assessment is a principal aspect of contraceptive choice. Intra Uterine Devices (IUDs) are not recommended for women who are at appreciably increased risk of STI/RTI, because IUD use among such women increases their risk of pelvic inflammatory disease. However, experience shows that the incidence of pelvic inflammatory disease is quite low when women are screened for their history and IUDs are inserted with aseptic technique.

Higher STI risk in a population makes condom use more attractive because it offers "triple protection" against STI, HIV and pregnancy. However, in typical use, condoms are not as effective in preventing pregnancy as are many other contraceptive methods. This dilemma has led to increased interest in promoting dual method use—i.e. the use of condoms along with other, more effective contraceptive methods.

Linkage between contraceptive choices and STI/RTI

People with STIs, HIV, AIDS, or on antiretroviral (ARV) therapy can start and continue to use most contraceptive methods safely. In general, contraceptives and ARV medications do not interfere with each other. There are a few limitations, however. See the table below.

Table A7.1:Contraceptives for Clients with STIs, HIV and AIDS

Method	Has STI	Has HIV or AIDS	On Antiretroviral (ARV) Therapy
Intrauterine device (copper-bearing or hormonal IUDs)	Do not insert an IUD in a woman who is at very high individual risk for gonorrhoea and chlamydia, or who currently has gonorrhoea, chlamydia, purulent cervicitis, or PID. (A current IUD user who becomes infected with gonorrhoea or chlamydia or develops PID can safely continue using an IUD during and after treatment.)	A woman with HIV can have an IUD inserted. A woman with AIDS should not have an IUD inserted unless she is clinically well on ARV therapy. (A woman who develops AIDS while using an IUD can safely continue using the IUD.)	Do not insert an IUD if client is not clinically well.
Female sterilization	If client has gonorrhoea, chlamydia, purulent cervicitis, or PID, delay sterilization until the condition is treated and cured.	Women who are infected with HIV, have AIDS, or are on antiretroviral therapy can safely undergo female sterilization. Special arrangements are needed to perform female sterilization on a woman with AIDS. Delay the procedure if she is currently ill with AIDS-related illness.	

Method	Has STIs	Has HIV or AIDS	On Antiretroviral (ARV) Therapy
Vasectomy	If client has scrotal skin infection, active STI, swollen, tender tip of penis, sperm ducts, or testicles, delay sterilization until the condition is treated and cured.	Men who are infected with HIV, have AIDS, or are on antiretroviral therapy can safely undergo vasectomy. Special arrangements are needed to perform vasectomy on a man with AIDS. Delay the procedure if he is currently ill with AIDS-related illness.	
Spermicides (including when used with diaphragm or cervical cap)	Can safely use spermicides.	Should not use spermicides if at high risk of HIV, infected with HIV, or has AIDS.	Should not use spermicides.
Combined oral contraceptives, combined injectables, combined patch, combined ring	Can safely use combined hormonal methods.	Can safely use combined hormonal methods.	A woman can use combined hormonal methods while taking ARVs unless her treatment includes ritonavir.
Progestin-only pills	Can safely use progestin-only pills.	Can safely use progestin-only pills.	A woman can use progestin-only pills while taking ARVs unless her treatment includes ritonavir.
Progestin-only injectables and implants	No special considerations. Can safely use progestin-only injectables or implants.		

Addressing Young People

Family planning and maternal and child health programmes are increasingly rising to the challenge of reaching young adults and adolescents—an especially important group for STI and HIV prevention. A range of programmes such as ARSH interventions both in instructional and outreach settings should include information on STI prevention, use of condoms and management. Special attention should be given to reach out to adolescent boys. Innovative interventions for adolescents can support this kind of behaviour change, including efforts at education, empowerment and delay of sexual intercourse.

Antenatal Testing, Counselling and Treatment

Antenatal screening and treatment for syphilis appear to be highly cost-effective: both screening and treatment are reasonably inexpensive, while morbidity and mortality from untreated syphilis in pregnant woman with varied adverse outcomes including birth of a congenital syphilitic infant are high. Interestingly, identifying and treating male partners may be feasible in the antenatal context, perhaps because fathers will have a strong concern about preventing infection in their offspring.

Advocacy and Policy

The National Health Mission has strong policy and advocacy components. Large numbers of civil society organisations are deeply engaged with implementation at different levels. FP and MH programmes have many links with nongovernmental organizations and other potential advocates who can help form a constituency to act effectively against STI and HIV.

Current barrier methods are still unpopular with many people, and women have little that they can use directly to protect themselves. Also, simple, quick inexpensive diagnostic tests for various STI would overcome some of the deficiencies of the treatment approach.

To sum up, there is no single magic bullet to control HIV or STI. The dynamics of STI transmission support a three-pronged prevention strategy aimed at high transmitters, men and the general population. While ultimate success will require support from a number of other segments of the health community and from broader society, family planning and related health efforts can contribute, especially by building onto ongoing prevention activities.

A8. Condom and Its Proper Usage Technique

Condom is one of the barrier methods of contraception. Condoms are made of either natural rubber latex or polyurethane, which cannot be penetrated by sperm, STI microbes or by HIV. Condom offers dual protection, helps in avoiding unwanted pregnancies and gives protection against STI including HIV. Therefore promotion of the use of condoms and ready accessibility of condoms is important for the control of STI and HIV. Management of STI includes counselling on preventive measures and use of condoms. All health facilities providing STI services must always have in stock the essential drugs and condoms.

Condom education and provision is an integral part of STI syndromic case management

General Instructions for Condom Use

Remember:

- The condom does not include spermicide.
- Latex condoms cannot be used by persons with latex sensitivity or allergy, and are not compatible with oil-based lubricants or medications.
- Oil based lubricants can be used for condoms made from polyurethane.
- Use a new condom each time you have sex.
- Use a condom only once.
- For best results, store condoms in a cool, dry place.

Do not use a condom if:

- The package is broken.
- The condom is brittle or dried out.
- The colour is uneven or has changed.
- The condom is unusually sticky, old or damaged.

Male Condom

Most male condoms are made of natural rubber latex, while some are made of polyurethane. Male condoms are of two types: Non lubricated and lubricated.

Fig A8.a: How to use a male condom

Step 1: Open Package

- Use a new condom each time you have sex.
- Check that it has not expired and that the packaging has no holes by pressing the pack between your fingers.
- Push condom to one side of package to allow room to tear open other side.
- Remove condom carefully.
- DO NOT use finger nails, teeth or sharp objects to open package or remove condom.

Step 2: Put it on

- Squeeze closed top end of condom to make sure no air is inside (can make it break).
- Place condom over top of erect penis.
- With other hand, unroll condom gently down the full length of the penis (one hand still squeezing top end).

Step 3: During sex

- Make sure condom stays in place.
- If it comes off, withdraw the penis and put on a new condom before intercourse continues.
- Once sperm has been released into the condom (ejaculation), withdraw the erect penis and HOLD the condom in place on penis.

Step 4: Dispose off condom

- Remove condom ONLY when penis is fully withdrawn.
- Keep both penis and condom clear from contact with your partner's body.
- Knot the end of the used condom.

- Place in tissue or bag before throwing it in dustbin
- DO NOT flush condoms down the toilet. It will block the system.

Female Condom

Female condoms are made of polyurethane. One advantage of it over the male condom is that its size and shape enables it to cover a wider surface area including some of the external genitalia, thus it may offer additional protection against infections that can be transmitted by contact with skin normally not covered by a male condom.

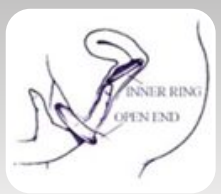
Fig A8.b: How to use a female condom

Before Intercourse Step 1: Open Package

- Remove the female condom from the package, and rub it between two fingers to be sure the lubricant is evenly spread inside the sheath. If you need more lubrication, squeeze two drops of the extra lubricant included in the package into the condom sheath.

Step 2: Put it in

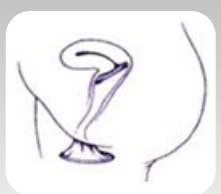
- The closed end of the female condom will go inside your vagina. Squeeze the inner ring between your thumb and middle finger.



Step 3:Assure right position

- Insert the ring into your vagina. Using your index finger, push the sheath all the way into your vagina as far as it will go. It is in the right place when you cannot feel it. Do not worry, it can't go too far.

Note: The lubrication on the female condom will make it slippery, so take your time to insert it.



Step 4: During sex

- The ring at the open end of the female condom should stay outside your vagina and rest against your labia (the outer lip of the vagina). Be sure the condom is not twisted.
- Once you begin to engage in intercourse, you may have to guide the penis into the female condom. If you do not, be aware that the penis could enter the vagina outside of the condom's sheath. If this happens, you will not be protected.

After Intercourse Step 5: Disposal of condom

- You can safely remove the female condom at any time after intercourse. If you are lying down, remove the condom before you stand to avoid spillage.
- Place in tissue or bag before throwing it in dustbin.
- DO NOT flush condoms down the toilet. It will block the system.
- Do not reuse it.

Note: During intercourse remember to remove and insert a new female condom if the condom rips or tears during insertion or use, the outer ring is pushed inside, the penis enters outside the pouch, the condom bunches inside the vagina, or you have sex again.

A9. List of Regional STI Training, Research & Referral Laboratories

Sr. no	Name of the RSTRRL	State	Name of the linked State STI Training & Reference Laboratory (Dept. of Microbiology)
1	Safdarjung Hospital, Delhi	Uttar Pradesh	Chhatrapati Shahuji Maharaj Medical University (CSMMU), Lucknow
			Institute of Medical Sciences (IMS) BHU, Varanasi
			JN Medical College, AMU, Aligarh
		Punjab	Government Medical College, Amritsar
		Delhi	University College of Medical Sciences, Delhi
2	Post Graduate Institute of Medical Education and Research PGIMER, Chandigarh	Uttarakhand	Himalayan Institute of Medical Sciences, HIHT, Dehradun
		Himachal Pradesh	Dr RP Government Medical College, Tanda Kangra District
3	Maulana Azad Medical College, New Delhi	Haryana	Pt. BD Sharma Post Graduate Institute of Medical Sciences, Rohtak
		J&K	Government Medical College, Jammu
4	Osmania Medical College, Hyderabad.	Telangana	Kakatiya Government Medical College, Warangal
		Andhra Pradesh	Sri Venkateswara Medical College (SVMC), Tirupati
			Andhra Medical College, Vishakhapatnam
			Guntur Medical College, Guntur
		Karnataka	Bangalore Medical College & Research Institute, Bangalore
			Karnataka Institute of Medical Sciences (KIMS), Hubli
		Andaman & Nicobar Islands	

Sr. no	Name of the RSTRRL	State	Name of the linked State STI Training & Reference Laboratory (Dept. of Microbiology)
5	Government Medical College, Nagpur, Maharashtra	Goa	Goa Medical College & Hospital, Bambolim
		Chhattisgarh	Pt. JN Memorial Medical College, Raipur
		MP	Gandhi Medical College, Bhopal
			Mahatma Gandhi Memorial Medical College, Indore
6	Topiwala National Medical College & BY Nair Hospital, Mumbai, Maharashtra	Maharashtra	B J Medical College, Pune
			Government Medical College, Aurangabad
7	Medical College Baroda & Sir Sayajirao General Hospital, Vadodara, Gujarat	Gujarat	Government Medical College & New Civil Hospital, Surat
			B J Medical College, Ahmedabad
		Rajasthan	RN Tagore Medical College, Udaipur
			Sawai Man Singh (SMS) Medical College, Jaipur
		Diu & Daman	
		Dadra & Nagar Haveli	
8	Institute of Venereology, Chennai, TN	Tamil Nadu	Tirunelveli Medical College (TVMC), Tirunelveli
			Madurai Medical College & Rajaji Hospital, Madurai
			Coimbatore Medical College, Coimbatore
			Kilpauk Medical College, Chennai
		Kerala	Trivandrum Medical College, Thiruvananthapuram
		Pondicherry	PGIMER, Pondicherry
		Lakshadweep	

Sr. no	Name of the RSTRRL	State	Name of the linked State STI Training & Reference Laboratory (Dept. of Microbiology)
9	Institute of Serology, Kolkata, WB	West Bengal	RG Kar Medical College& Hospital, Kolkata
			North Bengal Medical College, Siliguri, Darjeeling
		Jharkhand	Rajendra Institute of Medical Sciences (RIMS), Ranchi
		Bihar	Patna Medical College, Patna
			SK Medical College, Muzaffarpur
		Orissa	Shri Ram Chandra Bhanj Medical College (RCB), Cuttack
10	Government Medical College, Guwahati, Assam	Arunachal Pradesh	General Hospital, Naharlagun
		Assam	Silchar Medical College, Silchar
		Manipur	Regional Institute of Medical Sciences (RIMS), Imphal
		Meghalaya	North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS), Shillong
		Mizoram	Civil Hospital, Aizwal
		Nagaland	Naga Hospital Authority, Kohima (NHAK)
		Sikkim	Sikkim Manipal Institute of Medical Sciences (SMIMS) & STNM Hospital, Gangtok
		Tripura	Agartala Government Medical College, Agartala

A10.Technical Resource Group on Sexually Transmitted Infection Services

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5	Dr. Sanjay Chauhan, Scientist F, NIRRH, Mumbai	ICMR representative
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7	Dr. Rajesh Mehta, National Programme Officer, Adolescent Reproductive and Sexual Health, WHO, New Delhi	WHO representative
8	Dr. Vanita Gupta, Project Director, Chandigarh SACS	SACS Representative
9	Dr.Lalita Umraskar, Deputy Director STI, Goa SACS	SACS Representative
10	Dr. Raman Gangakhedkar, Scientist E, NARI, Pune	Microbiology Expert
11	Dr. Seema Sood, Additional Professor of Microbiology, AIIMS, New Delhi	Microbiology Expert
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13	Dr. Shashi Kant, Professor of Community Medicine, AIIMS, New Delhi	Public Health Expert and IAPSM representative
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	Name & Designation	Organisation
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17	Dr. Rekha Dawar, Professor and Head of Department of ObGyn, Grant Medical College and JJ hospital, Mumbai	Obstetrics and Gynaecology expert
18	Dr. Sushena Reza Paul, Director, ASHODAYA, Mysore	NGO representative
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