Chapter 12:
SEXUALLY TRANSMITTED INFECTIONS AND CONTRACEPTION

WHAT ARE SEXUALLY TRANSMITTED INFECTIONS (STIs)?

STIs can be contracted through vaginal, anal, or oral sex acts, as well as through the sharing of sex toys and digital penetration.(134-140) Infections can be acquired from body fluids (e.g., semen) in and around the genital area. STIs can also be transmitted from mother to child during pregnancy and childbirth, as well as through blood or tissue transfer. Other sources of STI include the mouth, throat, and rectum. Occasionally, the infection can also be contracted through some non- sexual means.

WHO ARE AT RISK FOR STIs?(143)

- Persons with multiple sexual partners
- Persons with partners who have multiple sexual partners
- Persons with partners having symptoms and/or recently diagnosed with STI
- Those with sexual partners who do not always use condoms when having sex with others
- Those who are sexually active but have no long-term relationships
- Those living in a community where several people are infected with STIs
- Married or unmarried persons who are concerned about STIs or human immunodeficiency virus (HIV) in his or her partner who has sexual relationships with other partners.

The risk of STI acquisition is influenced by a person's behavior, the behavior of the person's sexual partner or partners, and the occurrence of these infections in the community.(141) Thus, the healthcare provider should be aware of the type of STIs and the sexual behavior common in a certain locality. With this knowledge, the providers can improve the provision of risk assessment for STIs among their clients and provide the appropriate treatment. Recognition of the risk for STIs by the clients will serve as their guide in selecting the appropriate steps to protect themselves and others.

WHAT ARE THE CAUSES OF STIs?

STIs are caused by more than 30 microorganisms, including bacteria, viruses, protozoan parasites, and ectoparasites.(139-141) The different types of STIs are tabulated below according to the manner of transmission, symptoms, associated diseases, and curability.

Table 26. Bacterial types of STIs

STI	Organism	Transmission	Associated diseases	Curable?
Chancroid	*Hemophilus ducreyi*	Vaginal, anal, and oral sex	Both sexes: painful genital ulcers; may be accompanied by inguinal swelling (bubo)	Yes
Chlamydia	Chlamydia trachomatis	Vaginal and anal sex Rarely from genitals to mouth From mother to child during pregnancy	Men: urethral discharge (urethritis), epididymitis, orchitis, Infertility Women: cervicitis, endometritis, salpingitis, pelvic inflammatory disease, infertility, preterm rupture of membranes, perihepatitis; commonly asymptomatic Both sexes: proctitis, pharyngitis, Reiter's syndrome Neonates: conjunctivitis, pneumonia	Yes
Gonorrhea	Neisseria gonorrhea	Vaginal and anal sex or contact between mouth and genitals From mother to child during delivery	Men: urethral discharge (urethritis), epididymitis, orchitis, Infertility Women: cervicitis, endometritis, salpingitis, pelvic inflammatory disease, infertility, preterm rupture of membranes, perihepatitis Both sexes: proctitis, pharyngitis, disseminated gonococcal infection Neonates: conjunctivitis, corneal scarring and blindness	Yes
Granuloma inguinale (Donovanosis	Klebsiella (Calymmato-bacterium) granulomati	Vaginal and anal sex Close non-sexual contact	Both sexes: nodular swellings and ulcerative lesions of the inguinal and anogenital areas	Yes

STI	Organism	Transmission	Associated diseases	Curable?
Lympho-granuloma venereum	*Chlamydia trachomatis*	Vaginal and anal sex	Both sexes: ulcer, bubo, proctitis	Yes
Non-gonococcal	Mycoplasma genitalium Ureaplasma urealyticum	Vaginal sex	Men: urethral discharge (nongonococcal urethritis) Women: bacterial vaginosis; probably pelvic inflammatory diseas	Yes
Syphilis	Treponema pallidum	Genital or oral contact with an ulcer, including vaginal and anal sex Mother to child during delivery	Both sexes: primary ulcer (chancre) with local adenopathy, skin rashes, condylomata lata; bone, cardiovascular, and neurological damage Women: pregnancy wastage (abortion, stillbirth), premature Delivery Neonates: stillbirth, congenital syphilis	Yes

Adapted from Family Planning: A Global Handbook for Providers, Global strategy for the prevention and control of sexually transmitted infections: 2006–2015 and Zenilman JM, Shahmanesh M Sexually Transmitted Infections: Diagnosis, Management,andTreatment2012

Table 27. Viral types of STIs				
STI	Organism	Transmission	Associated diseases	Curable?
Table 27. Viral types of STIs	HIV	Vaginal and anal sex; very rarely, oral sex In blood, from mother to child during pregnancy or delivery or in breast milk	Both sexes: HIV-related disease, AIDS	No
Cytomegalovirus infection	Cytomegalovirus	Vaginal sex	Both sexes: subclinical or nonspecific fever, diffuse lymph node swelling, liver disease, etc	No
Genital herpes	Herpes simplex type 2	Genital or oral contact with an ulcer, including vaginal and anal sex; also genital contact in area without ulcer	Both sexes: anogenital vesicular lesions and ulcerations Neonates: neonatal herpes (often fatal)	No
Genital warts	Human papilloma virus	Skin-to-skin and genital contact or contact between mouth and genitals From mother to child during pregnancy or delivery	Men: penile and anal warts, carcinoma of the penis Women: vulval, anal and cervical warts, cervical carcinoma, vulval carcinoma, anal carcinoma Neonates: laryngeal papillom	No
Molluscum contagiosum	Molluscum contagiosum	Vaginal sex Intimate contact	Both sexes: genital or generalized umbilicated, firm skin nodules	No
Viral hepatitis	Hepatitis B	Vaginal and anal sex, or from penis to mouth In blood, from mother to child during delivery or in breast milk	Both sexes: acute hepatitis, liver cirrhosis, liver cancer	No

Adapted from Family Planning: A Global Handbook for Providers, Global strategy for the prevention and control of sexually transmitted infections: 2006–2015 and Zenilman JM, Shahmanesh M. Sexually Transmitted Infections: Diagnosis, Management, and Treatment 2012

Table 28. Protozoan and lice-causing STIs

STI	Organism	Transmission	Associated diseases	Curable?
Trichomoniasis	*Trichomonas vaginalis*	Vaginal, anal, and oral sex From mother to child during delivery	Men: urethral discharge (nongonococcal urethritis); often asymptomatic Women: vaginosis with profuse, frothy vaginal discharge; preterm birth, low birth weight babies Neonates: low birth weight	Yes
Pubic lice	*Phthirus pubis*	Genital contact	Both sexes: itching, excoriations, papules	Direct skin-to-skin contact Yes
Scabies	*Sarcoptes scabiei*	Genital contact Fomite transmission	Both sexes: nocturnal pruritus, symmetrically distributed burrows, papules, pustules, nodules, and excoriations	Yes

Adapted from Family Planning: A Global Handbook for Providers, Global strategy for the prevention and control of sexually transmitted infections: 2006–2015 and Zenilman JM, Shahmanesh M. Sexually Transmitted Infections: Diagnosis, Management, and Treatment 2012

HOW ARE STIs DETECTED?

STIs are not commonly detected early because the majority do not immediately present with symptoms, as in cases of chlamydia and gonorrhea infection. However, early detection is important in preventing the transmission and occurrence of long-term health consequences.

The following steps should be taken to facilitate the early identification of STIs:

1. Make inquiries as to whether the client or the client's partner experiences genital sores or unusual genital discharge.
2. Be aware of the signs of STIs when doing a pelvic or genital examination.
3. Educate the client about the risks of acquiring STIs.
4. If the client currently has signs or symptoms of an STI, prompt diagnosis and immediate treatment or referral to an appropriate healthcare provider or facility must be carried out.
5. Tell the clients to watch out for genital sores, warts, or unusual genital discharge that may occur on them or on their sexual partners.

In addition to developing awareness of the risk factors, the provider should look for signs and symptoms of an STI in a client. A particular type of STI may present with a specific manifestation. With the recognition of the specific signs and symptoms, diagnosis of the corresponding STI can be achieved (Table 29).

Table 29. Common signs and symptoms according to possible causative STI

Signs and symptoms	Causative STI
Discharge from the penis or vagina: pus, clear or yellow-green	Common: Chlamydia, gonorrhea Uncommon: Trichomoniasis
Abnormal vaginal bleeding or bleeding after sex	Chlamydia, gonorrhea, pelvic inflammatory disease
Burning sensation or pain during urination Lower abdominal pain or pain during sex	Chlamydia, gonorrhea, herpes Chlamydia, gonorrhea, pelvic inflammatory disease Chlamydia, gonorrhea
Swollen and/or painful testicles Itching or tingling in the genital area	Common: Trichomoniasis Uncommon: Herpes Herpes, syphilis, chancroid
Blisters or sores on the genitals, anus, surrounding areas, or mouth Warts on the genitals, anus, or surrounding areas	
Unusual vaginal discharge—changes from normal vaginal discharge in terms of color, consistency, amount, and/or odor	Human papillomavirus Common: Trichomoniasis Uncommon: Chlamydia, gonorrhea

Adapted from Family Planning: A Global Handbook for Providers

WHAT STRATEGIES ARE ESSENTIAL IN THE TREATMENT, PREVENTION, AND CONTROL OF STIs?

Whenever an infection is diagnosed or suspected, effective treatment should be provided promptly to avoid complications and to break the chain of transmission. Prevention of transmission is the most effective strategy in the management of
STIs. It avoids exposure to the long-term consequences and complications of STI.
Family planning services must include schemes such as those below that will emphasize the prevention of transmission for client protection.(142-143)

- Promotion of safer sexual behavior
  - Education and counselling of persons at risk on how to avoid STIs through changes in sexual behavior and use of recommended preventive services
  - Introduction of prevention and care activities
- Promotion of early healthcare-seeking behavior, which will facilitate the identification of asymptomatic and symptomatic persons unlikely to seek diagnostic and treatment services
- Institution of a comprehensive approach to case management
  - Identification of the STI syndrome
  - Appropriate antimicrobial (antibiotic, antiparasitic, or antiviral) treatment for the syndrome
  - Education and counselling on method by which to avoid or reduce risk of infection with sexually transmitted pathogens, including HIV
  - Promotion of the correct and consistent use of condoms, which may be used in addition to the chosen contraceptive (dual protection)
- Notification, evaluation, treatment, and counseling of sex partners of persons who are infected with an STI
- Pre-exposure vaccination of persons at risk for vaccine-preventable STIs

WHAT IS DUAL PROTECTION?

For the prevention of STIs, a couple can use condoms consistently and correctly during every sexual act in addition to another family planning method of their choice, such as an oral contraceptive. This practice
is good for those who are at risk of acquiring STIs because it protects against pregnancy and STIs.

WHAT ARE THE EFFECTS OF CONTRACEPTION ON STIs?

Several queries on the tendency of contraceptives to increase the risk of STIs have been raised. The available literature cites the following effects of contraceptives on STIs (Table 30), as well as the effect of STIs, particularly their treatment, on contraceptives:

Table 30. Effects of contraception on STIs with corresponding recommendations

FP Method : Hormonal contraceptives (128)	
Effect on Developing STI	**Recommendation/s**
• The risk of acquiring STI is not increased for both uninfected and HIV-infected women. • The risk of HIV transmission to uninfected partners is not observed to increase. • Does not offer protection against STIs or HIV.	• No restriction should be imposed on the use of any of the hormonal contraceptives for women who are at high risk for STIs (WHO Category 1). • If a risk for STIs or HIV exists, the correct and consistent use of condoms is recommended, either alone or with another contraceptive method.

FP Method : Intrauterine device (IUD)	
Effect on Developing STI	**Recommendation/s**
• Risk of infection is higher only during the first 20 days after insertion. Such infection is most strongly related to the insertion process.(159) • The risk of pelvic inflammatory disease (PID) associated with gonococcal and chlamydial infection does not increase with IUD insertion.(138) • The absolute risk of subsequent PID is found to be lower among women who have no STI at the time of IUD insertion than among women with STI during insertion.(128) • The association of the risk for HIV acquisition with IUD use is not increased. Its use among HIV-infected women is not known to increase the risk of transmission to sexual partners.(59,128)	• Strict infection prevention practices must be followed to minimize the risk of infection and serious disease. • Removal of the IUD with the occurrence of PID is unnecessary if continued use is desired. However, continued use should be based on the client's informed choice and her current risk factors for STIs and PID.(59) • Insertion should be avoided in women at high risk for or currently infected with gonorrhea, chlamydia, purulent cervicitis, or PID.(59,128) • If STI or PID develops with or without IUD, the condition should be treated by using appropriate antibiotics to permit continued safe use of IUD. • A client with HIV can have an IUD inserted. However, the same is not recommended for a client with AIDS unless she is clinically well and on antiretroviral (ARV) therapy.(128)

FP Method : Barrier method and spermicides	
Effect on Developing STI	**Recommendation/s**
Generally, evidence has established the protective effect of barrier methods against transmitting and getting infected with STIs.(141-142)	
1. Male Condoms • Prevents transmission by 80% to 95% when used correctly.(142) • Its consistent use is estimated to reduce the likelihood of becoming infected with HIV when exposed to the virus by 10 to 20 times (compared with inconsistent or non-users).(144) • Among heterosexual relationships involving one HIV-infected and one uninfected partner, its correct and consistent use lessens the likelihood of HIV-negative partners to become infected by 80% (compared with persons in similar relationships who do not use it).(145-146) • Condoms may not prevent the acquisition of human papilloma virus (HPV), but they may protect against HPV-associated diseases such as genital warts, cervical intraepithelial neoplasia II or III and invasive cervical cancer.(147)	Use consistently and correctly to maintain its highly protective effect against STIs that spread by discharge, which include HIV, gonorrhea, and chlamydia.(59)
2. Female Condoms: may be as effective as male condoms in the prevention of chlamydia and gonorrhea transmission.(148-149)	
3. Diaphragms (150) • Its use affords protection against cervical gonorrhea, chlamydia, and trichomonias infection. • However, even if it is combined with lubricants, it is less effective in preventing STIs, particularly HIV.	Should not be relied on as the sole source of protection against HIV infection.
4. Spermicides and non-specific topical microbicides: their use has been reported to be ineffective in the prevention of HIV and STIs.(150)	Spermicides containing N-9 should not be recommended for STI/HIV prevention.(150)

FP Method : Lactation amenorrhea method on HIV transmission	
Effect on Developing STI	Recommendation/s
If HIV-infected mothers not on ARV therapy are on mixed feeding with breast milk and other foods for two years, about 10 to 20 infants of every 100 of these mothers will become infected with HIV through breast milk.(151) Administration of ARV drugs to an HIV-infected mother or HIV-exposed infant or both can significantly reduce the risk of HIV transmission through breastfeeding.(129,151)	Exclusive breastfeeding for 6 to 12 months is recommended for HIV-infected mothers receiving appropriate ARV interventions.(59,152) Breastfeeding can also serve as a form of contraception.(151) Beneficial in developing countries, where infant and child mortality rates are high.(151) In well-resourced countries with low infant and child mortality rates, avoidance of breastfeeding remains appropriate. (151).

WHAT ARE THE EFFECTS OF STI MEDICATIONS ON CONTRACEPTION?

With contraceptive use, family planning health providers should routinely ask their clients about current and previous medication use. Clients using hormonal contraception should also be informed about the potential interaction that may alter contraceptive efficacy. Particularly in cases of STIs, antimicrobial therapy is the main mode of treatment and may potentially alter hormonal contraceptive blood levels. Hence, clients should also be encouraged to seek advice before taking new medications. They should be aware of the duration of simultaneous drug intake as well as the nature of the condition for which the drug must be taken. Table 31 shows the effects of STI medications on contraceptives.

Table 31. Effect of STI medications on contraceptives	
Commonly used medications to treat STIs	**Effect on contraceptive efficacy**
Doxycycline	No change
Fluoroquinolones (Ciprofloxacin and Ofloxacin)	No change
Macrolides (Azithromycin)	Erythromycin – less potent in increasing plasma concentration of estrogen and dienogest Azithromycin - No change
Antiretrovirals	
Nucleoside Reverse Transcriptase Inhibitors (NRTIs)	No change
Non-NRTIs	Increased effect of ethinyl estradiol (EE) Decreased effect of levonorgestrel
Protease Inhibitors and Ritonavir-boosted Protease Inhibitor	
• Atazanavir/ritonavir	Increased effect of EE and norethindrone (NET)
• Darunavir/ritonar	Decreased effect of EE, no change in NET Decreased effect
• Fos-amprenavir/ ritonavir	of EE and NET
• Indinavir	No change
• Lopinavir/ritonavir	Decreased effect of EE, no change in NET Decreased effect
• Nelfinavir	of EE, no change in NET No data available
• Saquinavir	Decreased effect of EE
• Tipranavir/ritonavir	

The use of hormonal contraceptives among women infected with HIV using ritonavir-boosted protease inhibitors is categorized as MEC 3. Clients on ARV treatment should be advised to use condoms consistently and correctly if they decide to initiate or continue the use of a hormonal contraceptive.(154) This strategy will not only prevent HIV transmission but also compensate for the possible reduction in the effectiveness of the hormonal contraceptive. When a combined oral contraceptive is chosen, a preparation that contains at least 30 µg EE should be selected. This practice will offset the blood-level lowering effects of ARV agents on estradiol. A summary on the recommendations on contraceptive use among clients with STI, HIV/AIDS, and on ARVs is provided in Table 32.

Table 32. Recommendations on contraceptive use among clients with STI, HIV or AIDS, and on ARVs*

CONTRACEPTIVE METHOD	Recommendations for STI cases	
	Permissible	Not recommended
IUD (copper or levonorgestrel-containing IUDs)	HIV IUD user developing gonorrhea or chlamydia infection or PID Clinically well with AIDS and on ARV	High risk for gonorrhea and chlamydia Current gonorrhea and chlamydia infection or purulent cervicitis; PID AIDS and not clinically well and/ or not on ARV therapy
Female Sterilization	After documentation of completed treatment and cure from gonorrhea, chlamydia, purulent cervicitis, or PID HIV infection * Clinically well AIDS * While on ARV therapy *	Current AIDS-related illness Existing gonorrhea, chlamydia, purulent cervicitis, or PID
Vasectomy	After documentation of completed treatment and cure from scrotal skin infection and STI HIV infection * Clinically well AIDS * While on ARV therapy *	With active STI With scrotal skin infection Swollen, tender tip of penis, sperm ducts or testicles Current AIDS-related illness
Spermicides (including when used with diaphragm or cervical cap)	STI	High risk for HIV HIV or AIDS with or without ARV
Combined contraceptives: oral, injectables, patch, and ring	STI HIV/AIDS	HIV/AIDS on: Ritonavir treatment Ritonavir
Progestin-only pills and implants	STI HIV/AIDS	HIV/AIDS on: Ritonavir treatment Ritonavir plus protease inhibitors (darunavir, nelfinavir, fosamprenavir, lopinavir) Efavirenz Nevirapine
Progestin-only injectables	No special considerations; can be safely used	

* Precautionary measures should be practiced by the health provider performing the procedure
Source: Family Planning: A Global Handbook for Providers Faculty of Sexual and Reproductive Healthcare. Drug interactions with hormonal contraception. 2011

Clients who are taking drugs that favor the enhanced metabolism of hormonal contraceptives should use additional contraception. The consistent and correct use of condoms is the most preferred method. The advantage of this strategy is contraception promotion and protection from acquiring and transmitting STIs.

KEY POINTS

- STIs are caused by bacteria, viruses, and parasites. If not managed accordingly and appropriately, complications and adverse sequelae will set in. Healthcare providers must be aware of the causes, risk factors, signs, and symptoms of STIs.
- Early detection of STIs is important in instituting the appropriate management approach that aims to control and prevent further spread of infection.
- Healthcare providers should adequately educate and counsel their clients regarding STIs. This practice is essential in the management of STIs because the clients play an active role in controlling and preventing transmission.
- The family planning health provider and clients should be aware of the possible effects of contraception on STIs and the effects of STI treatment on contraceptives, particularly the hormonal types. This awareness and knowledge will assist healthcare providers in providing the appropriate advice and counselling on contraceptive use.
- The primary concerns for STI management include the institution of specific treatment and the prevention of transmission. The most effective method in terms of pregnancy and STI transmission prevention is the consistent and correct use of condoms as part of the dual protection strategy.
- The clients should be encouraged to familiarize themselves with the signs and symptoms of STIs for early detection. Client should also be encouraged to adhere to the recommended treatment. Referral to a specialist, whenever needed, for existing complications or sequelae should be provided.