

# Sexually Transmitted Diseases in Pregnancy in Urgent Care Setting

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## Abstract

Sexually transmitted diseases (STDs) are a major public health concern in the US and around the world. Pregnant women comprise a particularly vulnerable group of patients. Some of the common STDs are human immunodeficiency virus (HIV), herpes simplex virus (HSV), chlamydia, gonorrhea, hepatitis B, trichomoniasis, syphilis, human papilloma virus (HPV), and bacterial vaginosis (BV). It is common to see patients with STDs in an urgent care setting and can be a challenge for medical personnel to recognize and treat these problems. Health care professionals in urgent care settings need to recognize the signs and symptoms of these infections to appropriately screen, diagnose, and treat these conditions in pregnant women in order to prevent both maternal and neonatal complications.

**Keywords:** Sexually transmitted diseases; Pregnancy; Human immunodeficiency virus; Herpes simplex virus; Human papilloma virus; Chlamydia; Gonorrhea; Trichomoniasis; Hepatitis B; Syphilis; Rapid plasma regain; Venereal Disease Research Laboratory

## Introduction

Sexually transmitted diseases (STDs) during pregnancy have potentially serious consequences for both mother and fetus. The aim of this article was to provide physicians in an urgent care setting information regarding common STDs in pregnancy, including presentation, diagnosis and management. Table 1 defines the incidence rates of common STDs in the United States each year.

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## Chlamydia

*Chlamydia trachomatis* is the most prevalent bacterial STD in the US with as many as 5-15% of pregnant women infected [1]. Patients with *C. trachomatis* infection may be asymptomatic with an unremarkable physical exam. Symptomatic patients commonly complain of vaginal discharge associated with poorly localized lower abdominal pain. Clinical manifestations include cervicitis with mucopurulent cervical discharge, cervical edema, and endocervical ulceration. If left untreated, pelvic inflammatory disease (PID) can develop. PID associated with *C. trachomatis* has an insidious onset and may cause subsequent infertility. Infection during pregnancy is associated with premature rupture of membranes, ophthalmia neonatorum, newborn pneumonitis, and postpartum endometritis [1] (Table 2).

The nucleic acid amplification test (NAAT) is highly sensitive and specific for detecting *C. trachomatis* in cervical or urine specimens. The DNA probe test is a second-line non-amplified non-culture option when NAAT is not available.

Treatment during pregnancy includes azithromycin (PG category B) 1 g orally once, or amoxicillin (PG category B) 500 mg orally three times daily for 7 days. Single-dose azithromycin is equally effective to 7-day amoxicillin and ensures compliance. Alternatively, erythromycin (PG category B) 500 mg orally four times daily for 7 days or 250 mg orally four times daily for 14 days can also be used (Table 3). Doxycycline (PG category D) is contraindicated during pregnancy due to possible malformations.

Repeat testing 3 weeks and 3 months after completion of antimicrobial therapy for *C. trachomatis* is recommended to ensure therapeutic cure. Partners of infected women should also be treated. Abstinence should be practiced for 7 days after a single-dose regimen or until completion of a multiple-dose regimen. High risk pregnant patients including women younger than 25 years and those with new or more than one sexual partner should be retested during the third trimester.

## Clinical practice

All pregnant women should be routinely screened for *C. trachomatis* during the first prenatal visit. Single-dose azithromy-

**Table 1.** Incidence of STDs in the US per Year

Sexually transmitted disease	Estimated number of pregnant women
Herpes simplex virus 2	880,000
Trichomoniasis	124,000
Chlamydia	100,000
Hepatitis B	16,000
Gonorrhea	13,200
HIV	6,400
Syphilis	< 1,000

Adapted from Department of Health and Human Services CDC Fact Sheet. STDs & Pregnancy. February 2012.

cin 1 g orally is an effective treatment option for *C. trachomatis*.

## Gonorrhea

*Neisseria gonorrhoea* is the second most common bacterial STD [2]. *N. gonorrhoea* and *C. trachomatis* infections present similarly with clinical manifestations of cervicitis, although *N. gonorrhoea* typically has a more acute presentation. Peripartum *N. gonorrhoea* infection is associated with spontaneous abortion, preterm delivery, ophthalmia neonatorum, neonatal sepsis, and postpartum endometritis [1] (Table 2).

NAAT is highly sensitive and specific for detecting *N. gonorrhoea* in cervical or urine specimens, although culture on Thayer-Martin media is widely available and recommended in low-prevalence populations. Culture also has the advantage of providing antimicrobial susceptibility.

Treatment is ceftriaxone (PG category B) 250 mg intramuscularly once. Cefixime (PG category B) is no longer recommended as a first-line therapy due to increased treatment failure [1]. If ceftriaxone cannot be used, cefixime 400 mg orally as a single dose can be used. In those with severe cepha-

losporin allergy, azithromycin 2 g orally once is preferred (Table 3).

Patients who have completed ceftriaxone treatment for uncomplicated gonorrhea should be retested 3 - 6 months after treatment [2]. In those treated with alternative agents or if symptoms persist after recommended therapy, repeat testing should be done 1 week after treatment [2]. Repeat testing is also recommended in the third trimester for those at continued risk.

## Clinical practice

Although ceftriaxone and cefixime have been shown to be similarly effective in treating *N. gonorrhoea*, ceftriaxone is first-line therapy [3]. When a diagnosis of *N. gonorrhoea* is made, patients should also be treated for *C. trachomatis* with azithromycin 1 g orally once due to high rates of coinfection.

## Herpes Simplex Virus (HSV)

HSV-2 is the causative agent of most HSV genital infections.

**Table 2.** Potential Complications of STDs in Pregnancy

Peripartum complications	Early onset of labor (gonorrhea, HSV, trichomoniasis) Postpartum endometritis (chlamydia, gonorrhea) Premature rupture of membranes (chlamydia, gonorrhea)
Neonatal complications	Acute hepatitis Low birth weight (HSV, trichomoniasis) Meningitis (HSV) Neonatal sepsis (chlamydia, gonorrhea, HIV, HSV, trichomoniasis, syphilis) Neurologic insult (HSV, syphilis) Ophthalmia neonatorum (chlamydia, gonorrhea) Pneumonia (chlamydia) Pneumonitis (chlamydia) Spontaneous abortion (gonorrhea, syphilis)
Chronic maternal complications	Cervical cancer (HPV serotypes 16 and 18) Chronic hepatitis Infertility (chlamydia, gonorrhea) Pelvic inflammatory disease (chlamydia, gonorrhea)

**Table 3.** STDs in Pregnancy Treatment Options

BV	
Preferred	Metronidazole 500 mg PO twice daily × 7 days Metronidazole 250 mg PO three times daily × 7 days
Alternative	Clindamycin 300 mg PO twice daily × 7 days
Chlamydia	
Preferred	Azithromycin 1 g PO once Amoxicillin 500 mg three times daily × 7 days
Alternative	Erythromycin 500 mg PO four times daily × 7 days Erythromycin 250 mg PO four times daily × 14 days
Gonorrhea	
Preferred	Ceftriaxone 250 mg IM once
Alternative	Cefixime 400 mg PO once Azithromycin 2 g PO once
HIV	Individualized highly active antiretroviral therapy (HAART)
HPV	Trichloroacetic acid
HSV	
First episode	Acyclovir 400 mg PO three times daily × 7 - 10 days Acyclovir 200 mg PO five times daily × 7 - 10 days Valacyclovir 1 g PO twice daily × 7 - 10 days
Recurrent	Acyclovir 400 mg PO three times daily × 5 days Valacyclovir 1 g PO daily × 5 days
Suppressive therapy	Acyclovir 400 mg PO twice daily Valacyclovir 500 mg PO daily
Trichomoniasis	
Preferred	Metronidazole 2 g PO once
Alternative	Metronidazole 500 mg PO twice daily × 7 days
Syphilis	
Primary	Benzathine penicillin G 2.4 million units IM × 1 dose
Asymptomatic, positive serology	Benzathine penicillin G 2.4 million units IM once weekly × 3 weeks

Clinical manifestations include painful genital ulcers, inguinal lymphadenopathy, dysuria, and myalgia. Following initial infection, HSV regresses to the dorsal nerve root ganglia where it establishes latency. Primary infection refers to the absence of preexisting antibodies to HSV-1 or HSV-2. Peripartum infection is associated with preterm labor. The risk of vertical transmission to the neonate in pregnant women who contract HSV late in pregnancy is 30-50% compared to a < 1% risk of transmission if contracted during the first half of pregnancy [1]. Rates of vertical transmission at the time of delivery are 50% for primary HSV infection, 33% for non-primary first episode (acquisition of genital HSV-1 or HSV-2 with preexisting HSV antibodies), and 0-3% for recurrent HSV infection [4]. Neonatal HSV can manifest as disseminated infection and encephalitis with long-term neurologic sequelae including seizures, spasticity, blindness, and psychomotor retardation (Table 2). Genital herpes acquired during pregnancy does not seem to increase rates of neonatal illness or congenital HSV infection as long as HSV seroconversion is completed by the time labor begins [5]. Cesarean section is indicated if active primary or secondary genital lesions are present at the time of labor.

HSV screening is routinely performed as part of patient history and assessment for lesions done on physical exam. Clinical diagnosis of HSV is confirmed by culture or polymerase chain reaction assay of an active lesion.

Treatment for a first episode of HSV is acyclovir (PG category B) 400 mg orally three times daily or 200 mg orally five times daily for 7 - 10 days [1]. Valacyclovir (PG category B) 1 g orally two times daily for 7 - 10 days is also acceptable treatment for HSV during pregnancy. Recurrent HSV is treated with acyclovir 400 mg orally three times daily for 5 days or valacyclovir 1 g once daily for 5 days. Suppressing antiviral therapy beginning at 36 weeks gestation reduces viral shedding at time of delivery in pregnant women at risk for active lesions. Suppressing therapy is acyclovir 400 mg orally twice daily or valacyclovir 500 mg orally once daily [1] (Table 3).

### Clinical practice

No screening is indicated for pregnant women who have no

history of HSV [1]. Patient with a history of recurrent HSV should receive antenatal antiviral prophylaxis with acyclovir after 36 weeks gestation. This leads to a reduction in viral shedding and recurrences at delivery and reduces the need for cesarean delivery [6]. There is insufficient evidence to determine if antiviral prophylaxis for women with a history of genital herpes reduces the incidence of neonatal herpes [6].

## Trichomoniasis

*Trichomoniasis vaginalis* is a parasitic flagellated protozoan contracted almost exclusively through sexual contact. Rare documented cases suggest fomite transmission. Symptoms of trichomoniasis commonly include a malodorous purulent vaginal discharge associated with dysuria and dyspareunia. Cervical punctuate hemorrhages producing a strawberry-like appearance of the cervix may be accompanied by papules and vesicles. Trichomoniasis is associated with premature rupture of membranes, preterm delivery and low birth weight [1] (Table 2).

A diagnosis of trichomoniasis is confirmed with the presence of motile trichomonads on wet mount. Microscopy also shows an increased number of polymorphonuclear leukocytes. A vaginal pH greater than 4.5 and a positive amine test are other findings also common to bacterial vaginosis.

Treatment for trichomoniasis is metronidazole 2 g orally once or 500 mg twice daily for 7 days. Although metronidazole is a category B drug, the manufacturer recommends use with caution in the first trimester and it is therefore common practice to wait until the second trimester to initiate treatment [1]. Intravaginal metronidazole is considerably less efficacious than oral preparations for the treatment of trichomoniasis [1] (Table 3). Oral administration achieves higher drug levels in the urethra and perivaginal glands than topical application. Tinidazole (PG category C) is contraindicated for the treatment of trichomoniasis during pregnancy.

## Clinical practice

There is no evidence to support the use of metronidazole in pregnant asymptomatic women with trichomoniasis vaginalis [7]. With limited evidence currently available, treatment of asymptomatic trichomoniasis infection does not appear to reduce preterm birth and it is unknown whether trichomoniasis treatment will have effects on pregnancy outcomes [5, 7]. Symptomatic women should be treated and current recommendations suggest treating asymptomatic women after 37 weeks gestation [1].

## Hepatitis B

Pregnant women should be routinely screened for hepatitis B during the first trimester [8]. Women who have not been screened and those who engage in high risk behavior should

be tested at the time of hospital admission for delivery [8]. Hepatitis B surface antigen (HBsAg) is the first detectable viral marker of hepatitis B infection. HBsAg detected on routine maternal screening may indicate acute or chronic infection. The presence of IgM antibody to hepatitis B core antigen (anti-HBc IgM) is diagnostic of acute or recently acquired infection. Pregnant women who test positive for HBsAg should be referred to an appropriate hepatitis B infection case-management program in addition to counseling [1, 8].

Screening and vaccination may need to be accompanied by antiviral therapy during the third trimester to reduce perinatal transmission of hepatitis B, especially in cases of high maternal viral load. Research is needed to determine the net health benefit to the mother and infant of treating pregnant women whose chronic hepatitis B infections are identified by prenatal screening [9] (Table 2). Some have suggested treating patients who have high viral load with anti-hepatitis B virus therapy during the third trimester to reduce perinatal transmission [9]. Infants of HBsAg-positive mothers should receive hepatitis B immune globulin (HBIG) in addition to the hepatitis B vaccine at birth. Breastfeeding has not shown to increase the risk of transmission to the newborn. A study looking at 147 infants born to carrier mothers who were breastfed did not demonstrate any evidence suggesting breastfeeding resulted in development of chronic hepatitis B infection in the infants [10].

## Clinical practice

Screening for HBsAg should be completed at every initial prenatal visit. Vertical transmission of hepatitis B has been known to occur despite vaccination of the child [11]. This vaccination breakthrough is attributed to high maternal viral load during pregnancy, demonstrating the importance of antiviral therapy for chronic hepatitis B in women of reproductive age [9]. There is no consensus on treating HBsAg-positive pregnant patients in the third trimester to prevent perinatal transmission but infants born to positive mothers need to receive the initial dose of hepatitis B vaccine along with HBIG.

## Human Immunodeficiency Virus (HIV)

HIV screening is recommended in all pregnant women and should be strongly encouraged in those patients initially declining. Repeat testing during the third trimester (before 36 weeks gestation) is recommended for women at risk and for those who have declined previous testing (Table 2). Screening is performed with an enzyme-linked immunoassay (ELISA) and confirmed with a Western blot. Treatment is an individualized highly active antiretroviral therapy (HAART) aimed at suppressing viral load and controlling maternal infection to prevent vertical transmission. In spite of the individualized nature of HAART management, treatment should begin immediately after diagnosis and then readjusted based upon HIV drug-resistance testing.

Based on current data, the combination of zidovudine,

lamivudine and lopinavir/ritonavir is the preferred regimen based upon safety in pregnancy [12]. Individuals previously diagnosed with HIV can continue current HAART management. Serum HIV RNA levels should be checked at 34 - 36 weeks gestation [12]. Scheduled cesarean delivery at 38 weeks gestation is recommended for women with HIV RNA levels > 1,000 copies/mL near the time of delivery. Additionally, any pregnant patient with HIV RNA levels  $\geq$  400 copies/mL should receive prophylactic intravenous zidovudine 2 mg/kg as loading dose, then 1 mg/kg every 4 h near delivery [12]. Antiretroviral treatment options and recommendations during pregnancy are available at the National Institutes of Health [12] (Table 3).

### Clinical practice

HIV testing is always recommended at prenatal visit. When HIV is diagnosed in pregnancy, short courses of antiretroviral drugs are effective for reducing mother-to-child transmission of HIV and are not associated with any short-term safety concerns [13]. HIV pregnant patients currently on HAART can continue regimens as long as HIV RNA viral load is < 400 copies/mL or undetectable. HIV RNA viral load at 34 - 36 weeks is rechecked to determine management near delivery [12].

### Syphilis

*Treponema pallidum* is the spirochete bacteria responsible for syphilis. Syphilis has four stages of disease progression. Primary syphilis manifests as a painless, usually solitary, genital ulcer appearing up to 3 weeks following exposure to *T. pallidum*. If left untreated, over several weeks to months, *T. pallidum* causes a systemic secondary syphilis characterized by generalized lymphadenopathy, fever, arthralgia, genital condyloma latum, and a generalized rash involving the palms and soles. During the latent phase, patients are asymptomatic although *T. pallidum* serology remains positive. Tertiary or late syphilis can develop years after initial exposure and may manifest as disseminated destructive granulomatous-like lesions, non-atherosclerotic coronary artery disease, or neurologic insult. Syphilis during pregnancy is associated with congenital syphilis with varying degrees of neonatal manifestations of the disease (Table 2).

If maternal syphilis is diagnosed after 20 weeks gestation, ultrasonography is recommended to evaluate for fetal syphilis [1]. Ultrasound findings of fetal syphilis are fetal hepatomegaly, ascites, hydrops, polyhydramnios, and placental thickening [1]. Screening for syphilis is performed with the rapid plasma regain (RPR) or Venereal Disease Research Laboratory (VDRL) and confirmed with a fluorescent treponemal antibody (FTA-ABS) serology. Treatment for primary syphilis is benzathine penicillin G (PG category B) 2.4 million units intramuscularly once. If the patient is asymptomatic with positive serology (latent phase), treatment is penicillin G 2.4 million units intramuscularly once weekly for a total of three

doses (Table 3). Desensitization is recommended for patients with an allergy to penicillin.

### Clinical practice

Screening for syphilis should be completed at the initial prenatal visit. Penicillin G remains the drug of choice for the treatment of maternal syphilis [14]. Women with syphilis should also be tested for HIV as it is a common co-infection.

### Human Papilloma Virus (HPV)

HPV testing is recommended in women with a Pap smear positive for atypical squamous cells of undetermined significance (ASCUS) (Table 2). Treatment is not recommended in the absence of cervical squamous intraepithelial lesions or genital warts. Weekly application of trichloroacetic acid to proliferating genital warts may be performed during pregnancy. Podophyllin, podofilox, and imiquimod should not be used during pregnancy as safety has not been established [1] (Table 3).

### Clinical practice

A Pap smear should be obtained at the first prenatal visit if one has not been documented during the preceding year [1].

### Bacterial vaginosis (BV)

BV is not an STD, but has been shown to be more prevalent in sexually active women. BV is characterized by a reduction in the number of vaginal *Lactobacillus* species followed by an overgrowth of *Gardnerella vaginalis*, *Mobiluncus* species, *Mycoplasma hominis*, or anaerobic Gram-negative rods. This disruption of the normal vaginal microflora can be secondary to multiple or new sex partners as well as antimicrobial use, douching, smoking, a preexisting STD, and pregnancy. BV during pregnancy may carry the risk of preterm birth, premature rupture of membranes, and low birth weight [1].

The diagnosis of BV can be made in the presence of three of the four Amsel criteria. Amsel criteria include a homogenous grayish-white vaginal discharge, a vaginal pH greater than 4.5, a positive amine test, and clue cells, or epithelial cells studded with adherent coccobacilli, on wet mount [1]. Treatment is recommended for all pregnant women experiencing symptoms to reduce signs and symptoms and to reduce the risk of acquiring other infections. Treatment options are metronidazole 500 mg orally twice daily for 7 days or 250 mg orally three times daily for 7 days. Clindamycin (PG category B) 300 mg orally twice daily for 7 days is another option; however, due to lack of safety evidence, the manufacturer recommends against use during the first trimester unless clearly indicated

(Table 3).

### Clinical practice

There is little evidence to show that screening and treatment in all asymptomatic pregnant women for bacterial vaginosis can prevent preterm birth [11].

### Conclusion

The article emphasizes the recognition and treatment of STDs in a timely manner especially in an urgent care setting by the health care professional to prevent both maternal and neonatal complications. All pregnant women should be screened for gonorrhea, chlamydia, syphilis, hepatitis B, and HIV. Women at risk should also be screened for hepatitis C and HSV. Screening for trichomoniasis in asymptomatic women is generally not recommended. Patients should be informed of the STDs for which they are being screened and reassured that treatment will be provided regardless of the circumstance [1].

It is also important to obtain a sexual history and effectively deliver a patient-centered risk reduction and prevention strategy. The key to prevention of STDs in pregnancy is education and counseling persons at risk such that the US Preventative Services Task Force (USPSTF) has endorsed this. Safe sex education (e.g. barrier contraception), abstinence, or reduced sexual partners have been cornerstones of preventing spread of STDs [1]. Encouraging the evaluation, treatment and counseling of pregnant patient's partners for STDs along with pre-exposure vaccination of persons at risk has also been shown to decrease the spread of STDs. By being vigilant in all these areas, the reduced incidence of STDs will only improve pregnant patient outcomes.

### Abbreviations

ASCUS: atypical squamous cells of undetermined significance; Anti-HBc IgM: IgM antibody to hepatitis B core antigen; BV: bacterial vaginosis; *C. trachomatis*: *Chlamydia trachomatis*; ELISA: enzyme-linked immunoassay; FTA-ABS: fluorescent treponemal antibody absorption test; HAART: highly active antiretroviral therapy; HBIg: hepatitis B immune globulin; HBsAg: hepatitis B surface antigen; HIV: human immunodeficiency virus; HPV: human papilloma virus; HSV: herpes simplex virus; *N. gonorrhoea*: *Neisseria gonorrhoea*; NAAT: nucleic acid amplification test; PID: pelvic inflammatory disease; RNA: ribonucleic acid; RPR: rapid plasma regain; STDs: sexually transmitted diseases; *T. pallidum*: *Treponema pallidum*; VDRL: Venereal Disease Research Laboratory

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