

Counseling for Prevention of HCV Transmission

This is a PDF version of the following document:

Module 1: [Screening and Diagnosis of Hepatitis C Infection](#)

Lesson 4: [Counseling for Prevention of HCV Transmission](#)

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<https://www.hepatitisC.uw.edu/go/screening-diagnosis/counseling-prevention/core-concept/all>.

Introduction

Hepatitis C virus (HCV) is primarily spread through blood-to-blood contact (parenteral transmission), with injection drug use being the most common risk factor for HCV acquisition. Sexual transmission and perinatal transmission of HCV can occur, but are less common. The following lesson reviews details about HCV transmission risk and emphasizes important prevention messages for persons living with and at risk for HCV.

Sexual Transmission of HCV

Persons at Risk

Transmission of hepatitis C virus (HCV) through heterosexual contact appears to be uncommon, with early studies showing transmission among long-term monogamous heterosexual partners occurring in less than 1% of couples per year.[1,2,3,4] In a more recent large cross-sectional study of persons with HCV and their partners, investigators estimated a maximum incidence rate of 0.07% per year among monogamous heterosexual couples, which corresponded to approximately one transmission per 190,000 sexual contacts.[5] This risk increases slightly among persons who have multiple sex partners.[6] Multiple reports have identified clusters of acute hepatitis C infection among men who have sex with men (MSM), primarily MSM who have HIV infection.[7,8,9,10,11] When comparing the risk of HCV acquisition among MSM with or without HIV, the risk is significantly higher among MSM who have HIV.[12] It also appears that MSM taking HIV preexposure prophylaxis (PrEP) have an increased risk of acquiring HCV.[13,14] Further, recent cohort studies have also shown a high rate of HCV reinfection among MSM living with HIV, with the risk of reinfection associated with ongoing sexual practices and/or injection drug use.[15,16,17,18]

Factors Associated with Increased Risk of Sexual Transmission

For heterosexuals, having multiple sex partners has been associated with an increased risk of HCV acquisition.[6] Investigators have identified multiple risk factors associated with sexual transmission of HCV among MSM:[12,18]

- Coinfection with HIV
- Unprotected anal intercourse, especially as the receptive partner
- Inconsistent condom use
- Use of recreational drugs, particularly use of drugs during sex
- Recent or concurrent sexually transmitted infections
- Multiple casual or anonymous sex partners
- Group sex
- Certain sex practices that result in rectal bleeding or damage to the rectal mucosa.

Prevention

The Centers for Disease Control and Prevention (CDC) recommends the following for preventing the sexual transmission of HCV.[19]

- Persons with HCV who have one long-term steady sex partner do not need to alter their sex practices. Long-term partners should be offered the option of receiving HCV counseling and undergoing HCV testing.
- For HCV-serodifferent couples attempting to minimizing the risk of HCV transmission, using latex condoms and avoiding sex practices that potentially result in bleeding should presumably further reduce the risk of sexual HCV transmission.
- Individuals with known hepatitis C should be counseled to disclose their HCV status to their sex partners.
- Persons with HCV who have multiple sex partners should consistently use condoms during sexual activity to reduce their risk of transmitting HCV to their partners and to reduce the risk of transmission or acquisition of other sexually transmitted diseases, including HIV and hepatitis B virus.
- Given the significant potential risk of sexual transmission of HCV among MSM, particularly MSM with HIV, it is important for medical providers and persons with HCV to discuss sex and drug use practices known to increase the risk of transmitting HCV. Individuals should also be counseled that reinfection with hepatitis C can occur and be offered counseling on safer sex and drug use practices that reduce the risk for reinfection.

- For persons with HIV and HCV coinfection who are taking HIV antiretroviral therapy and have consistently undetectable HIV RNA levels, their risk of HIV transmission is negligible, but they need to be reminded that HIV antiretroviral therapy will not impact their risk of transmitting HCV to others.

Injection Drug Use and HCV Transmission

HCV Infection among Persons Who Inject Drugs

Hepatitis C virus is transmitted very efficiently by the parenteral route, and injection drug use is the most commonly reported risk factor for new cases of HCV in the United States.[20,21,22] Reported cases of acute hepatitis C infection in the United States rose annually from 2010 to 2021, with an overall increase of 492% during that time period.[22,23,24] New infections occurred more often in persons aged 30 through 39 years of age, American Indian/Alaska Native or White persons, and those residing in non-urban areas, particularly in Appalachia, the Midwest, and New England.[24,25,26,27] Among persons who inject drugs (PWID), approximately 50% acquire HCV within 5 years of the first time they inject drugs.[28] The prevalence of a positive HCV antibody test among persons who inject drugs is as high as 65-80% in certain geographic locations, and has been shown to increase with age, number of years of injecting, and frequency of injecting.[29,30] After spontaneous clearance or successful treatment, PWID can experience HCV reinfection, although the rate of reinfection appears to be lower than the incident rate of infection among PWID.[31,32,33]

Risk Factors for HCV Transmission in Injection Drug Use

The risk of HCV transmission among PWID is clearly associated with the sharing of syringes and needles. In addition, multiple studies have demonstrated the role of sharing equipment used to prepare and inject drugs, including filtration cottons, drug cookers, and rinse water, in HCV acquisition.[34,35] Persons should receive counseling to avoid sharing needles, syringes, and any drug preparation equipment, including the prepared drug itself (Figure 1). Laboratory studies suggest that HCV can persist for prolonged periods of time in contaminated syringes, particularly in syringes with a larger residual volume (tuberculin syringes) versus low void volume syringes (insulin syringes). It is estimated that HCV can survive outside the body at room temperature for up to 3 weeks; the survival of HCV is longer in liquids than in dried substances, and survival is longer at lower temperatures.[36,37,38] In addition, the survival of HCV in syringes depends on the design of the syringe needle and the dead space volume.[39,40,41]

Prevention

The following counseling information is intended for persons without HCV who are at risk of acquiring hepatitis C infection and persons with HCV who are at risk of transmitting HCV to others. In addition, persons should receive counseling regarding available syringe service programs and medications for opioid use disorder (e.g., buprenorphine and methadone).[42,43,44,45,46] See the [North American Syringe Exchange Network \(NASEN\)](#) website for harm reduction locations in the United States. Individuals with HCV who have been cured of hepatitis C with treatment should also be counseled that reinfection with HCV is possible and prevention strategies should be used on a long-term basis.[47,48,49] The following summarizes key strategies to share with persons who inject drugs to help reduce the acquisition or transmission of HCV:[19]

- Reduce the frequency of injecting
- Use new, sterile needles and syringes each time you inject
- Do not share or reuse needles or syringes following use
- Safely dispose of needles and syringes
- Do not share or reuse other injection materials, including cookers, cottons, water, and drugs
- Receive substance use treatment and support for safe injection practices

Household HCV Transmission

Potential for Household HCV Transmission

Although HCV is transmitted most efficiently through the parenteral route, some epidemiologic studies have shown household contacts of HCV seropositive patients to have a slightly elevated risk of HCV infection.[[50,51,52](#)] Confounding factors include the potential for shared parenteral exposures, such as medical or dental procedures and injections; sexual exposure between partners and spouses; and vertical transmission between mother and infant. Thus it is difficult to quantify the risk associated with nonsexual, household only exposures to HCV. A systematic review of this found an increased risk for HCV infection in siblings and household contacts of persons living with chronic HCV infection.[[53](#)] The increased risk for HCV infection in families and spouses included in the controlled studies correlated with the severity of liver disease in the index patient, the number of family members infected with HCV, the duration of exposure to the index patient, and sexual contact with the index patient.[[52](#)] Additional domestic risk factors for HCV transmission identified in uncontrolled studies were sharing razors and nail clippers between family members and patients, reuse of syringes, and coinfection with HIV.[[52](#)]

Prevention

Although the risk of isolated intra-household, nonsexual transmission is very low, persons living with HCV should be counseled on strategies to reduce potential transmission to any household contact. The CDC recommends that persons with HCV infection should receive the following precautions and information regarding potential household transmission of HCV:[[19](#)]

- Avoid sharing razors, shaving equipment, toothbrushes, dental equipment, nail clippers, or other personal care items that contain any trace of blood.
- Cover cuts or sores on the skin to keep from spreading infectious blood.
- HCV can survive outside the body for at least several days, so any blood spill (including dried blood) should be cleaned up using a dilution of one part household bleach to 10 parts water by a person wearing gloves during the entire cleanup.
- HCV is not spread through food, water, eating utensils, or casual contact (such as sneezing, coughing, touching, hugging).
- Routine testing for nonsexual household contacts of persons with HCV is not recommended unless a history exists of a direct (percutaneous or mucosal) exposure to blood.

Perinatal HCV Transmission

Risk of Perinatal HCV Transmission

Perinatal (mother-to-child) transmission of hepatitis C occurs in approximately 5 to 6% of pregnant women with HCV who have viremia, a rate significantly lower than with perinatal transmission of hepatitis B or HIV.[54,55,56,57,58] The timing of perinatal HCV transmission is poorly understood, but intrauterine, intrapartum, and postnatal transmission are possible, with the majority of infants likely becoming infected late in utero (Figure 2).[57,58] In a systematic review of 77 studies published between 1990 and 2000, investigators calculated a 4.3% rate of mother-to-infant transmission among women with HCV viremia.[54] A 2014 systematic review and meta-analysis of 109 articles reported a 5.8% risk of perinatal HCV transmission among women who were HCV RNA positive, whereas a more recent 2023 study estimated a vertical transmission of HCV to be 7.2% among HIV-seronegative mothers with HCV without HIV coinfection and 12.1% among those with HCV and HIV coinfection.[57,58]

Risk Factors for Perinatal HCV Transmission

The most important risk factors associated with an increased risk of mother-to-child HCV transmission include HIV coinfection of the mother and detectable HCV viremia during pregnancy.[54,59,60] Based on multiple studies, coinfection with HIV approximately doubles the risk of vertical HCV transmission (10.8% versus 5.8%).[57,58] In general, studies suggest that the risk of vertical transmission is correlated with a higher maternal HCV viral load, and mothers who are HCV antibody-positive but RNA-negative are felt to have a negligible risk of vertical transmission.[61,62,63] Other identified risk factors include female sex of the infant; prolonged rupture of membranes (longer than 6 hours); obstetric procedures and intrapartum events that lead to infant exposure to maternal blood infected with HCV, such as internal fetal monitoring or vaginal/perineal lacerations; and maternal injection drug use.[59,61,64] In contrast, mother-to-child HCV transmission has not been associated with the mode of delivery (vaginal versus Cesarean birth) or breastfeeding.[55,59] Data from large cohorts of mothers with HCV infection and their exposed infants demonstrate that safe breastfeeding (e.g., breastfeeding in the absence of damaged, cracked, or bleeding nipples) does not increase the rate of perinatal transmission of HCV.[65]

Prevention of Mother-to-Child HCV Transmission

For pregnant women with HCV infection, there are no interventions or prophylactic measures that have been demonstrated to prevent perinatal transmission of HCV. The direct-acting antiviral medications to treat HCV in adults have not been adequately studied in pregnancy or in breastfeeding women. Thus, treatment of HCV during pregnancy is not routinely recommended as a strategy to prevent vertical HCV transmission. Pregnant women with HCV infection should be counseled on the low (approximately 6%) risk potential for HCV transmission to their baby. They should also be counseled on the need for ongoing follow-up and testing for themselves and their child; mothers with HCV also need follow-up for potential spontaneous HCV clearance, as up to 10% of women spontaneously clear HCV after childbirth.[66,67,68]

Recommendations

The following summary recommendations are based on guidance from the CDC and the Association for the Study of Liver Diseases and Infectious Diseases Society of America (AASLD-IDSA):[7,69,70,71]

- Universal screening of all pregnant women for HCV infection is recommended.
- For women of childbearing age with known HCV infection, treatment of HCV with direct-acting antiviral therapy is recommended prior to considering pregnancy, if this is practical and feasible. If HCV treatment is curative and given prior to conception, it will virtually eliminate the subsequent risk of vertical HCV transmission.
- Treatment of HCV during pregnancy is not routinely recommended at this time but can be considered

on an individualized basis.

- Pregnant women with chronic HCV should undergo evaluation of liver function and liver disease severity based on laboratory evaluation; women with cirrhosis should receive counseling about the potential complications in pregnancy for both mother and child.
- The decision to perform an elective cesarean section should not be based on the HCV infection status of the mother, as currently available data does not support performing a cesarean section to reduce perinatal HCV transmission.
- Breastfeeding in the absence of damaged, cracked, or bleeding nipples is felt to be safe for mothers with HCV infection. Most experts recommend temporarily stopping breastfeeding if the mother has cracking or bleeding in the nipple or surrounding areola. During this time, the mother should use a breast pump to express and discard her milk. Once the nipple region has healed, the mother can resume breastfeeding.
- Infants born to mothers with HCV infection should be tested for HCV infection. This should be done via HCV RNA testing of the infant at age 2 to 6 months.
- Women with HCV should have HCV RNA values performed at approximately 9 to 12 months after giving birth to assess for possible spontaneous HCV clearance.

Summary Points

- The risk of heterosexual transmission of HCV is low. Persons with HCV infection who are in long-term monogamous relationships should be advised they do not need to alter their sexual practices based on HCV infection.
- Sexual transmission of HCV can occur among MSM, and the risk may be substantial with sexual practices that result in bleeding or damage to rectal mucosal tissue; this risk is significantly higher among MSM with HIV.
- Men who have sex with men and who have HCV should receive counseling regarding the potential sexual transmission of HCV to others and should be advised to use condoms and avoid rough sex.
- Hepatitis C is transmitted efficiently via injection drug use and transmission can occur when sharing needles, syringes, or other equipment used to prepare and inject drugs, and through sexual contact.
- Persons with HCV and injection drug use should receive counseling regarding available resources for syringe services and treatment for opioid use disorder, as well as assistance with measures to reduce the risk of transmission if they continue to inject drugs.
- Reinfection of HCV infection can occur and persons who have spontaneous resolution of HCV or cure through treatment should be counseled on the risk of reinfection.
- Household transmission of HCV (not related to sexual or injection drug transmission) can rarely occur. Persons living in a household with any individual who has HCV infection should be advised not to share razors, toothbrushes, or nail clippers.
- Mother-to-child HCV transmission occurs in approximately 6% of pregnant women with HCV infection; the risk of infection is not significantly altered by the mode of delivery or by breastfeeding.
- Women with HCV do not need to avoid pregnancy, nor do they need to avoid breastfeeding.
- Infants born to mothers with HCV infection should have follow-up for evaluation of possible HCV infection.

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Figures

Figure 1 Injection Drug Works

Photograph of injection equipment courtesy of the Hepatitis Education Project



Figure 2 Timing of Vertical Hepatitis C Transmission

Source: Ades AE, Gordon F, Scott K, et al. Overall Vertical Transmission of Hepatitis C Virus, Transmission Net of Clearance, and Timing of Transmission. Clin Infect Dis. 2023;76:905-12.

