

Counseling for Prevention of HCV Transmission

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

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

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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 are also coinfecting with HIV.[7,8,9,10,11] When comparing the risk among MSM with or without HIV infection, the risk is significantly higher among MSM with HIV infection.[12] Recent cohort studies have also shown a high rate of HCV reinfection among MSM living with HIV, with risk of reinfection associated with ongoing sexual practices and/or injection drug use.[13,14,15]

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]

- 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, especially ulcerative sexually transmitted diseases (lymphogranuloma venereum proctitis, syphilis)
- Multiple casual or anonymous sex partners
- Group sex
- Certain sex practices that result in rectal bleeding or damage to the rectal mucosa, including fisting and use of shared sex toys.

Prevention

The CDC has recommended that persons with HCV who have one long-term steady sex partner do not need to alter their sex practices.[16] Long-term partners should be offered the option of receiving HCV counseling and undergoing HCV testing. For HCV-discordant couples attempting to maximize reduction of 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 with their sex partners. In addition, 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 infection, 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 to 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 extremely low, 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 in the United States injection drug use is the most commonly reported risk factor for new cases of HCV.[17,18] Reported cases of acute hepatitis C infection in the United States rose annually from 2010 to 2015, with a nearly three-fold overall increase over that time period.[19] New infections occurred more often in younger person, whites, and those residing in non-urban areas, particularly in Appalachia, the Midwest, and New England.[20,21,22] Among persons who inject drugs, HCV is acquired in approximately 50% within 5 years.[23] The prevalence of HCV antibody among injection drug users increases with age, number of years injecting, intensity of injecting, and frequency of use. In a prospective study of young injection drug users from 2000 to 2007, cumulative incidence of new HCV infection was 27 per 100 person-years.[18] In this same study, among the participants who cleared their initial infection spontaneously, 26% became reinfected with HCV during follow up.[18] Reinfection with HCV has been demonstrated in other cohorts of individuals with prior HCV infection.[24]

Risk Factors for HCV Transmission in Injection Drug Use

The risk of HCV transmission among injection drug users is clearly associated with sharing of syringes and needles. In addition, multiple studies have demonstrated the role of shared equipment used to prepare and inject drugs, including filtration cottons, drug cookers, and rinse water.[25,26] Persons should receive counseling to avoid sharing needles, syringes, and any drug preparation equipment including the prepared drug itself. 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.[27,28,29] In addition, the survival of HCV in syringes depends on design of the syringe needle and the dead space volume.[30,31,32]

Prevention

The following counseling information is intended both for HCV-negative persons 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 services and opioid substitution therapy.[33,34,35,36,37] 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.[38,39,40] The following summarizes key strategies to share with persons who inject drugs to help reduce the acquisition or transmission of HCV:[16]

- Avoid the new use of injection drugs and stop current use of injection drugs
- Reduce the frequency of injecting
- Use new, sterile needles and syringes each time you inject
- Do not reuse needles or syringes, if you can avoid it
- Do not share needles or syringes
- Safely dispose of needles and syringes
- Do not reuse or share other injection materials (cookers, cottons, water, drug)
- Receive substance-use treatment and support for safe injection practices

Household HCV Transmission

Potential for Household HCV Transmission

Although hepatitis C 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.[[41](#),[42](#),[43](#)] 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 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.[[43](#)] 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. 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.[[43](#)]

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 hepatitis C infection should receive the following precautions and information regarding potential household transmission of hepatitis C:[[16](#)]

- 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
- Hepatitis C virus 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 clean up
- 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 HCV-positive persons 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 6% of women with HCV who are pregnant, a rate significantly lower than with perinatal transmission of hepatitis B or HIV.[44,45,46] The potential perinatal HCV transmission can occur at several points: intrauterine, intrapartum, and postnatal.[46] Most vertical HCV transmission occurs during pregnancy or during birth. In a systematic review of 77 studies published between 1990 and 2000, investigators calculated a 4.3% rate of mother-to-infant transmission among HCV viremic women.[47] A more recent systematic review and meta-analysis of 109 articles reported a 5.8% risk of perinatal HCV transmission among HCV-antibody positive and RNA positive women.[46]

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.[47,48,49] Based on multiple studies, coinfection with HIV approximately doubles the risk of vertical HCV transmission (10.8% versus 5.8%).[46] The pregnant woman's HCV RNA levels correlate with risk of vertical HCV transmission and women who are HCV antibody positive and HCV RNA negative have a negligible risk of vertical HCV transmission.[46] Other identified risk factors include female gender of the infant; prolonged rupture of membranes (longer than 6 hours); obstetric procedures and intrapartum events that lead to infant exposure to HCV-infected maternal blood, such as internal fetal monitoring or vaginal/perineal lacerations; and maternal injection drug use.[48,50,51] In contrast, mother-to-child HCV transmission has not been associated with mode of delivery (vaginal versus Cesarean birth) or breastfeeding.[44,48] 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.[52]

Prevention of Mother-to-Child HCV Transmission

In the United States, in recent years, there has been a significant increase in HCV infection among women of childbearing age, which has raised concerns for potential significant increases in the number of perinatal HCV infections.[22,53,54] Accordingly, it is important that women of childbearing age who have risks for HCV infection undergo HCV testing, as this could identify women who could be potential candidates for HCV treatment prior to becoming pregnant.[55] For pregnant women with HCV infection, there are no interventions or prophylaxis that have been demonstrated to prevent perinatal transmission of HCV. Currently used direct-acting antiviral medications to treat hepatitis C in adults have not been adequately studied in pregnancy, nor have they been studied in breastfeeding women. Thus treatment of HCV during pregnancy is not 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.[56,57,58] The following summary recommendations are based on guidance from recommendations from the CDC and the Association for the Study of Liver Diseases and Infectious Diseases Society of America (AASLD-IDSA):[7,55,59]

- Universal screening of all pregnant women for HCV infection is not currently recommended. Testing of pregnant women for hepatitis C should be based on CDC recommendations for risk-based and birth-cohort testing. Any woman identified as HCV-antibody positive should have a sensitive HCV RNA test to determine if she is viremic.
- For women of child-bearing 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 recommended because of inadequate efficacy and safety data.
- Pregnant women with chronic HCV should undergo evaluation of liver function and fibrosis; 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 a role of cesarean section in reducing 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 a cracked and bleeding 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. Of note, maternal HCV antibody is passively transferred to the fetus and can last up to 12 to 18 months postpartum. The CDC criteria for a confirmed case of perinatal infection consists of an infant who has a positive test for HCV RNA nucleic acid amplification test (NAAT), HCV antigen, or detectable HCV genotype at ≥ 2 months and ≤ 36 months of age and is not known to have been exposed to HCV via a mechanism other than perinatal.
- Women with HCV should have HCV RNA values performed at approximately 9 to 12 months after the 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 may result in bleeding or damage to genital mucosa; this risk is significantly higher among MSM with HIV infection.
- MSM who have HCV infection 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 reinfection can occur. Transmission can occur when sharing needles, syringes, or other equipment used to prepare and inject drugs, and through sexual contact.
- Persons with hepatitis C and injection drug use should receive counseling regarding stopping the use of injection drugs, available resources for syringe services and opioid substitution therapy, and assistance with measures to reduce the risk of transmission if they continue to inject drugs.
- Household transmission of hepatitis C (not related to sexual or injection drug transmission) can rarely occur. Household transmission may potentially result from sharing of a blood-contaminated item, such as a razor, toothbrush, or nail clipper.
- Persons living in the same 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 the delivery or by breastfeeding.
- Women with hepatitis C infection 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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