



Q/ How should you manage children born to hepatitis C-positive women?

EVIDENCE-BASED ANSWER

A / **FOR STARTERS**, don't be overly concerned with the mode of delivery; it doesn't influence the rate of transmission of hepatitis C virus (HCV), except in women who are also infected with human immunodeficiency virus (HIV) (strength of recommendation [SOR]: **B**, consistent retrospective cohort studies).

Avoid internal fetal monitoring and prolonged rupture of membranes (SOR: **B**,

single retrospective cohort study).

Advise patients that it's OK to breast-feed. Breastfeeding doesn't affect transmission (SOR: **B**, consistent prospective cohort studies).

Check HCV RNA and serum anti-HCV on 2 occasions between 2 and 6 months of age and 18 and 24 months of age (SOR: **B**, consistent prospective cohort studies).

Evidence summary

Perinatal transmission of HCV is rare. It occurs only when serum HCV RNA is detectable; transmission rates may be related to higher levels ($>10^6$ copies/mL).¹ HCV is transmitted to 2% of infants of anti-HCV seropositive women and 4% to 7% of infants born to mothers who are HCV RNA-positive at delivery.¹

Spontaneous clearance of the virus occurs in approximately 20% of infants. Most remain asymptomatic if HCV persists, but have mild elevation of liver function tests.²

Routine screening for HCV in mothers is not recommended, but pregnant women at high risk for HCV infection should be screened for anti-HCV.

Route of delivery:

Only a concern for HIV-positive mothers

The mode of delivery doesn't influence the rate of HCV transmission, except in mothers with HIV. Retrospective analysis of 503 HCV-positive mothers coinfecting with HIV showed a decreased risk of transmission during cesarean delivery (odds ratio [OR]=0.36;

$P=.01$; number needed to treat [NNT]=10).³

One study suggested an increased rate of vertical HCV transmission during vaginal delivery compared with cesarean delivery (32% vs 6%; $P<.05$). The study didn't account for the percent of mothers coinfecting with HIV, however.⁴

A meta-analysis of 11 studies showed similar rates of transmission for vaginal and cesarean delivery: adjusted rates were 4.3% and 3%, respectively.¹

Internal monitoring is an issue

Avoid internal fetal monitoring to minimize HCV transmission, based on a single retrospective cohort of 244 infants born to HCV-positive mothers (relative risk [RR]= 7.7; 95% confidence interval [CI], 1.9-31.6; number needed to harm [NNH]=6).⁷ The same study showed an increased risk with membrane rupture longer than 6 hours (RR=9.9; 95% CI, 1.2-81; NNH=13).⁵

Breastfeeding doesn't significantly affect HCV transmission. Transmission rates for breastfed and nonbreastfed infants are 3.7% and 3.9%, respectively.¹

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Perinatal transmission of HCV is rare, occurring only when serum HCV RNA is detectable.

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Routine screening for HCV isn't recommended, but screen pregnant women at high risk of HCV infection for anti-HCV.

Defer postpartum lab testing

Because about 20% of infants exposed to HCV clear the virus spontaneously, and maternal antibodies can confound laboratory results, deferring postpartum diagnostic testing is appropriate. A study of 1104 children in whom vertical transmission didn't occur after exposure to HCV showed that 95% of the children were anti-HCV antibody negative by 12 months age.⁶ A prospective study of 23 infants documented spontaneous clearance of HCV RNA by 6 months in all patients.⁷

Recommendations

The National Institutes of Health 2002 Consensus Statement recommends:⁸

- avoiding fetal scalp electrodes and prolonged rupture of membranes
- serum testing for HCV RNA at 2 months and 6 months of age
- anti-HCV antibody testing after 15 months of age.

The American College of Obstetricians

and Gynecologists supports breastfeeding, recommends against routine HCV screening, and recommends that cesarean delivery be reserved for obstetric indications.⁹

The American Association for the Study of Liver Diseases recommends serum testing and liver biopsy on the same schedule as adult patients and endorses considering treatment after 3 years of age.⁶

The US Food and Drug Administration has approved treatment after 3 years of age for children with detectable HCV RNA levels higher than 50 IU/mL and who have had a liver biopsy with portal or bridging fibrosis and at least moderate inflammation and necrosis.

The American Gastroenterological Association recommends considering treatment with PEG-interferon and ribavirin after 3 years of age.¹⁰

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References

1. Yeung LT, King SM, Roberts EA. Mother-to-infant transmission of hepatitis C virus. *Hepatology*. 2001;34:223-229.
2. European Paediatric Hepatitis C Virus Network. Three broad modalities in the natural history of vertically acquired hepatitis C virus infection. *Clin Infect Dis*. 2005;41:45-51.
3. European Paediatric Hepatitis C Virus Network. Effects of mode of delivery and infant feeding on the risk of mother-to-child transmission of hepatitis C virus. *BJOG*. 2001;108:371-377.
4. Paccagnini S, Principi N, Massironi E, et al. Perinatal transmission and manifestation of hepatitis C virus infection in a high risk population. *Pediatr Infect Dis J*. 1995;14:195-199.
5. Mast EE, Hwang LY, Seto DS, et al. Risk factors for perinatal transmission of hepatitis C virus (HCV) and the natural history of HCV infection acquired in infancy. *J Infect Dis*. 2005;192:1880-1889.
6. England K, Pembrey L, Tovo P, et al. European Paediatric Hepatitis C Virus Network. Excluding hepatitis C virus (HCV) infection by serology in young infants of HCV-infected mothers. *Acta Paediatr*. 2005;94:444-450.
7. Ketzinel-Gilad M, Colodner SL, Hadary R, et al. Transient transmission of hepatitis C virus from mothers to newborns. *Eur J Clin Microbiol Infect Dis*. 2000;19:267-274.
8. Management of Hepatitis C: 2002. National Institutes of Health Consensus Conference Statement, June 10-12, 2002. Available at: <http://consensus.nih.gov/2002/2002HepatitisC2002116html.htm>. Accessed August 23, 2009.
9. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 86. Viral hepatitis in pregnancy. *Obstet Gynecol*. 2007;110:941-956.
10. Dienstag JL, McHutchison JG. American Gastroenterological Association medical position statement on the management of hepatitis C. *Gastroenterology*. 2006;130:225-230. Available at: www.gastrojournal.org/article/PIIS0016508505022717/fulltext. Accessed on August 23, 2009.

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