

# Perinatal Hepatitis C Surveillance Tool Kit

A Summary of Clinical Guidelines and Public Health Case  
Investigation in Michigan



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*Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected*

## PERINATAL HEPATITIS C BACKGROUND

Hepatitis C virus (HCV) is a blood-borne pathogen transmitted primarily through exposure to infected blood. Examples of methods of transmission of this virus include sharing infected injection drug use equipment, receipt of blood or blood products before the availability of standard screening tests in 1992, accidental needle sticks, and inadequate infection control in healthcare settings. In some circumstances HCV transmission can occur among infants born to HCV-infected mothers.

The Centers for Disease Control and Prevention (CDC) published a [MMWR](#) regarding the increasing prevalence of HCV in women of childbearing age and the potential public health consequences. From 2007-2016, the number of women of childbearing age (15-44 years) reported with HCV infection in Michigan more than doubled from 817 diagnoses in 2007 to 2,114 new diagnoses in 2016. This is most likely due to the rise of HCV infections in the young adult population as a byproduct of the concurrent opioid epidemic. Approximately 50 percent of the new HCV diagnoses in young adults have been among females and a substantial proportion have reported injecting drugs. With the rise in HCV infection among women of child-bearing age, there is an increasing concern of the risk of mother to child transmission.

Perinatal HCV occurs when the mother passes HCV to the child in utero or during childbirth (also known as vertical transmission). Perinatal HCV occurs in approximately 5-15 percent of children born to mothers infected with the virus.

### Factors Associated with Increased Risk of Perinatal Transmission:

- HIV Co-Infection
- High Viral Load
- Prolonged/ Premature Membrane Rupture
- Maternal Blood Exposure

Approximately 15-40 percent of children who receive HCV from their mother will clear the virus without treatment. Unlike other viruses like Hepatitis B Virus and HIV, there are currently no known methods to prevent transmission of HCV from the mother to the child. There is no vaccine or prophylaxis for HCV and the method of delivery (such as Cesarean Section) has not been shown to decrease mother to child transmission.

Historically, there has been no national standard for surveillance of perinatal HCV infections. With the passing of the [CSTE proposal to make perinatal HCV nationally notifiable](#), surveillance of this condition can be standardized across the country to better measure and raise awareness of this emerging public health issue. Below are guidelines to assist local health department investigators on classification and investigation of these cases. We also included potential Frequently Asked Questions and messages that can be shared with clinicians to raise awareness of the increasingly important public health issue.



## HEPATITIS C IN PREGNANCY





*Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected*

## HEPATITIS C TESTING IN PREGNANCY

As of 2018, the American Association for the Study of Liver Diseases (AASLD) recommends universal testing of pregnant persons for HCV infection. As of 2020, the CDC recommends universal testing of all pregnant persons during each pregnancy, regardless of age. In addition, any patients with HCV risk factors should be tested periodically according to clinical recommendations from CDC and AASLD. Common risk factors of HCV infection include injection drug use, long-term hemodialysis, and receiving blood products or organ transplants prior to 1992. A risk assessment screening tool, such as the one on the following page, could be used to assess pregnant patients for HCV risk factors.

If a patient reports any risk factor associated with HCV infection, both the CDC and the AASLD recommend testing for the presence of HCV antibody. If the antibody test is positive/reactive, an HCV nucleic acid test should be performed to confirm infection and differentiate past versus current or active infection. The Testing Guidance for HCV in Adults (pg. 7) shows the testing sequence recommended by the CDC for adults who are determined to be at risk for HCV infection. Women who are confirmed to be HCV-infected should be linked to clinical care for their infection and other health issues as needed. Recommendations from AASLD for clinical management of Hepatitis C in pregnant women can be found [here](#).

We are interested in raising both clinical and public health awareness of the emerging health impact of HCV infections among pregnant persons and newborns. A letter targeted at healthcare providers discussing the importance of screening for risk factors and ordering HCV testing if needed can be found on page 8 of this guide. This letter is designed to be sent to OB/GYNs or other healthcare providers by LHDs to help raise awareness of recommendations for HCV testing and management among pregnant persons. Raising awareness of HCV risk screening and testing recommendations can help to ensure that all pregnant persons are tested for HCV and their children can be closely monitored for perinatal HCV infection after birth.

**Annual HCV diagnoses have increased by over 3,000% in young adults since 2000 (47% are female)**

**5 to 15 % of babies born to HCV positive mothers will be infected with HCV**

**Over 60% of infected newborns become chronically infected with HCV**

**Childhood HCV is the leading cause of liver transplant in the US, and increases risk of liver related death by 26 times**



*Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected*

## HEPATITIS C VIRUS (HCV) RISK ASSESSMENT SCREENING

### Should your patient be tested for Hepatitis C Virus (HCV)?

The Centers for Disease Control and Prevention (CDC) and the American Association for the Study of Liver Diseases (AASLD) recommend HCV testing for patients with certain risk factors. If your patient has any of the following they should be tested for HCV.

#### Do you report 'Yes' to **ANY** of the following?

- Are you 18 years of age and older?
- Have you received clotting factor concentrates produced before 1987?
- Did you have a blood transfusion or organ transplant before 1992?
- Have you ever been on long-term hemodialysis?
- Have you ever received a tattoo or piercing outside of a regulated body art facility (at a party or friend's house)?
- Have you ever used intravenous or injectable drugs for non-medical purposes? (even if only once)
- Have you ever used intranasal or snorted drugs (even if only once)?
- Have you ever been incarcerated?
- Have you been told that you have elevated liver enzymes?
- Are you infected with HIV?
- Have you worked in a medical, dental, or public safety field where you may have been exposed to another person's blood? (e.g., needle sticks, sharps, mucosal exposures)
- Are you pregnant?
- Were you born to an HCV-infected mother?

If you reported **yes** to any of the questions above, it is **recommended that you be tested for HCV** in accordance with CDC's HCV testing Algorithm (see next page). If you did not report yes to any of the questions above, you do not need to be tested for HCV at this time.

## Resources

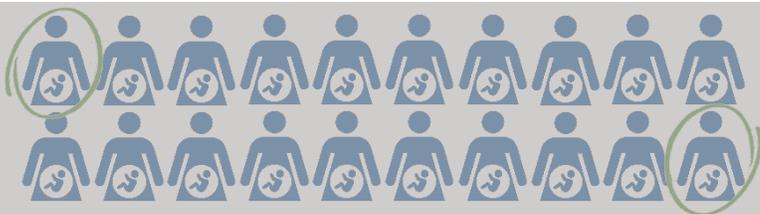
HCV testing should be conducted in accordance with CDC's HCV testing algorithm, which can be found [here](#).

Patient education materials can be found on CDC's website [here](#) and using the following links:

HCV General Information: <http://www.cdc.gov/hepatitis/HCV/PDFs/HepCGeneralFactSheet.pdf>

HCV and What to Expect When Getting Tested: <http://www.cdc.gov/hepatitis/hcv/pdfs/hepcgettingtested.pdf>

HCV Information on Testing: <https://www.cdc.gov/hepatitis/hcv/pdfs/HepCGettingTested.pdf>



Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected

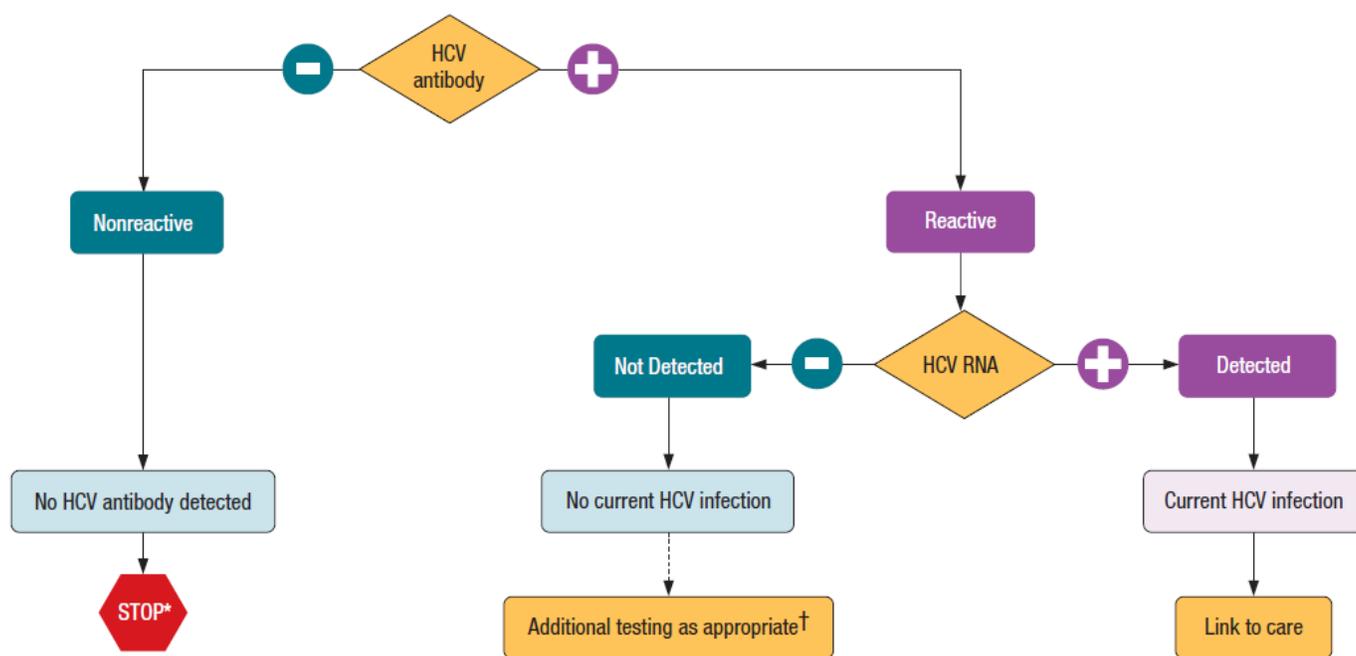
### TESTING GUIDANCE FOR HEPATITIS C IN ADULTS

Based on AASLD recommendations, all pregnant women should be tested for the Hepatitis C virus according to the recommended testing sequence below created by the CDC:

## Recommended Testing Sequence for Identifying Current Hepatitis C Virus (HCV) Infection



U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention



\* For persons who might have been exposed to HCV within the past 6 months, testing for HCV RNA or follow-up testing for HCV antibody is recommended. For persons who are immunocompromised, testing for HCV RNA can be considered.

† To differentiate past, resolved HCV infection from biologic false positivity for HCV antibody, testing with another HCV antibody assay can be considered. Repeat HCV RNA testing if the person tested is suspected to have had HCV exposure within the past 6 months or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

Source: CDC. Testing for HCV infection: An update of guidance for clinicians and laboratorians. MMWR 2013;62(18).



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF HEALTH AND HUMAN SERVICES  
LANSING

ELIZABETH HERTEL  
DIRECTOR

Date:

Dear Colleague:

As you may know, hepatitis C virus (HCV) is a blood-borne pathogen that affects nearly 5 million individuals in the United States. Because of the asymptomatic nature of chronic HCV infection, between 50 and 75 percent of those infected are unaware. In recent years, the prevalence of HCV in women of childbearing age has been increasing. As a result, we are seeing a subsequent rise in perinatal HCV infections.

The vast majority of children with HCV are infected via perinatal transmission, which is believed to occur in utero or during childbirth. Recently, the Centers for Disease Control and Prevention (CDC) and American Association for the Study of Liver Diseases (AASLD) have begun to recommend universal testing of all pregnant persons for HCV infection. Those who report risk factors for HCV are especially encouraged to receive testing for the virus.

We strongly encourage providers to screen patients for HCV risk factors and offer HCV testing to those at risk in accordance with the AASLD and CDC recommendations. We have developed a [HCV SCREENING ASSESSMENT TOOL](#) that can assist in determining who may need to be tested for HCV infection.

HCV testing should be conducted in accordance with the CDC's HCV testing algorithm:  
[https://www.cdc.gov/hepatitis/hcv/pdfs/hcv\\_flow.pdf](https://www.cdc.gov/hepatitis/hcv/pdfs/hcv_flow.pdf)

Patient education materials can be found on CDC's website here:  
<http://www.cdc.gov/hepatitis/resources/patientedmaterials.htm>

- Hepatitis C – General Information:  
<http://www.cdc.gov/hepatitis/HCV/PDFs/HepCGeneralFactSheet.pdf>
- Hepatitis C – What to Expect When Getting Tested:  
<http://www.cdc.gov/hepatitis/hcv/pdfs/hepcgettingtested.pdf>
- Hepatitis C – Information on Testing:  
<https://www.cdc.gov/hepatitis/hcv/pdfs/HepCGettingTested.pdf>

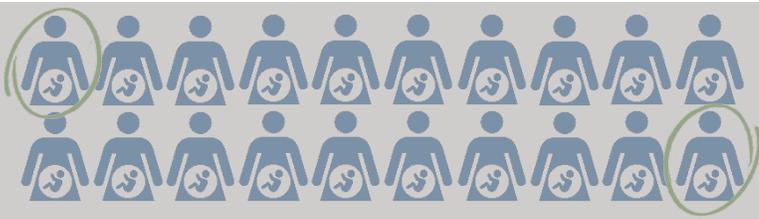
HCV treatment decisions are generally made in consultation with a gastroenterologist, hepatologist, or infectious disease physician. Currently, pregnant persons are advised to defer HCV treatment until after birth. Please contact the Viral Hepatitis Unit at the Michigan Department of Health and Human Services with questions at [MDHHS-Hepatitis@michigan.gov](mailto:MDHHS-Hepatitis@michigan.gov) or 517-335-8165.

Sincerely,

Viral Hepatitis Unit, Communicable Disease Division, MDHHS  
[MDHHS-Hepatitis@michigan.gov](mailto:MDHHS-Hepatitis@michigan.gov)

517-335-8165

[www.mi.gov/hepatitis](http://www.mi.gov/hepatitis)



*Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected*

## FREQUENTLY ASKED QUESTIONS

### **Is HCV screening routinely recommended for all pregnant women?**

Yes, as of 2018, the American Association for the Study of Liver Diseases (AASLD) recommends all pregnant persons should be tested for HCV infection, particularly at the initiation of prenatal care. In addition, as of 2020, the Centers for Disease Control and Prevention (CDC) recommends all pregnant persons be tested during each pregnancy, regardless of age.

### **Are there interventions to help reduce the risk of vertical transmission of HCV?**

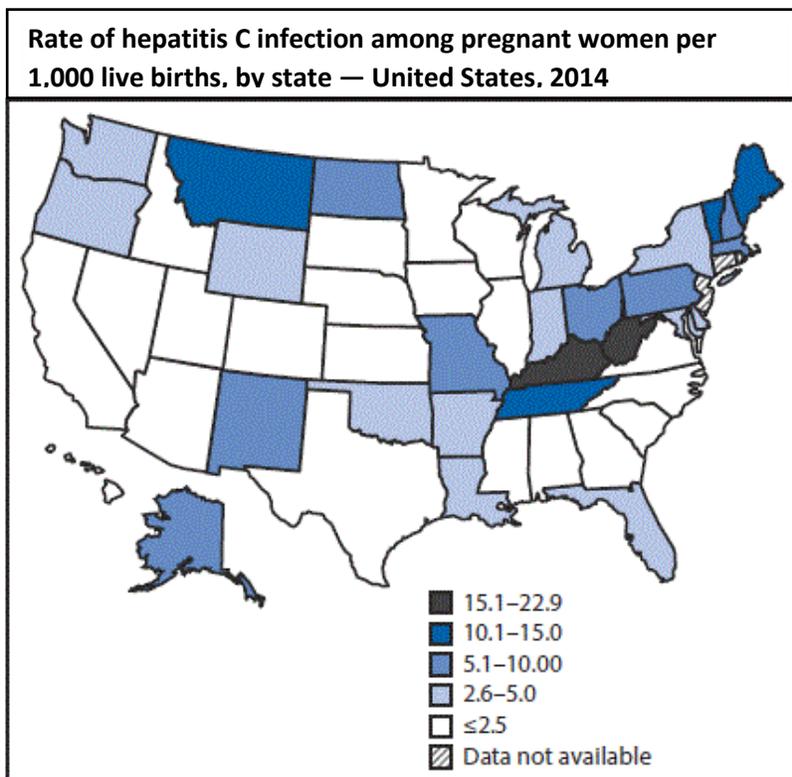
Though this is an active area of research, no intervention (such as delivery via caesarean section or prophylaxis) that has been shown to be effective in reducing the risk of mother to child transmission of HCV.

### **Can I be treated for my HCV infection while I am pregnant?**

There is currently a lack of safety and efficacy data regarding treatment during pregnancy. According to the American Association for the Study of Liver Diseases (AASLD) and the Infectious Disease Society of America (IDSA) it is not recommended to be treated for HCV while pregnant.

### **Can I breastfeed my child if I have HCV?**

Yes. There is no evidence of transmission of HCV via breastmilk. However, HCV-positive mothers should refrain from breastfeeding if their nipples are cracked or bleeding.

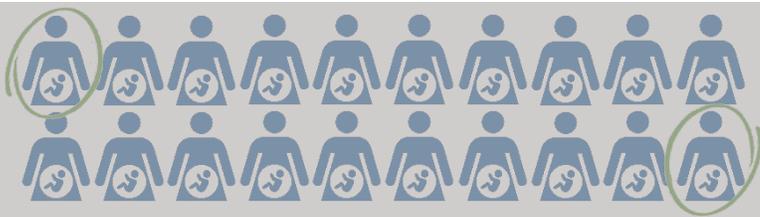


Source: <https://www.cdc.gov/mmwr/volumes/66/wr/mm6618a3.htm>



## PERINATAL HEPATITIS C





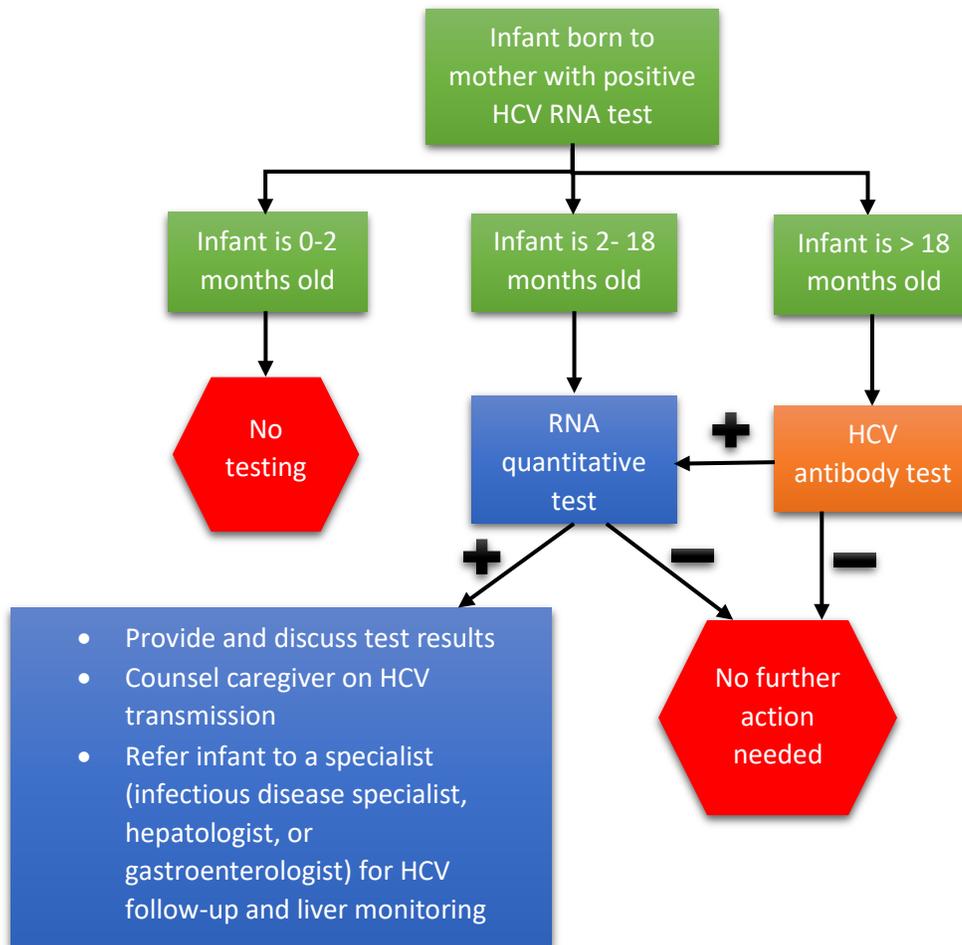
Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected

### BEST PRACTICE RECOMMENDATIONS FOR HCV TESTING IN INFANTS

Maternal antibodies can remain in the infant for up to 18 months of age, therefore the American Academy of Pediatrics (AAP) along with the American Liver Foundation (ALF) recommends holding off on antibody testing until the infant is over 18 months of age. HCV RNA testing, however, can be done as early as the first well-child visit around 2 months of age as recommended by both AASLD and the AAP.

A sample letter to Pediatricians can be found on page 12 highlighting the importance of testing infants born to HCV-positive mothers according to the testing recommendations from the AASLD. This letter is intended to be sent to Pediatricians to help raise awareness of perinatal transmission of HCV.

Below is the testing sequence consistent with recommendations from AASLD, AAP, and ALF:





GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF HEALTH AND HUMAN SERVICES  
LANSING

ELIZABETH HERTEL  
DIRECTOR

Date:

Dear Colleague:

As you may know, hepatitis C virus (HCV) is a blood-borne pathogen that affects nearly 5 million individuals in the United States. Because of the asymptomatic nature of chronic HCV infection, between 50 and 75 percent of those infected are unaware. In recent years, the prevalence of HCV in women of childbearing age has been increasing, especially as a result of the growing opioid epidemic. Subsequently, we are seeing a rise in perinatal HCV infections.

The vast majority of children with HCV are infected via perinatal transmission, which is believed to occur in utero or during childbirth. Perinatal transmission is estimated to occur in 5%-15% of children born to HCV-positive women. There currently is no method by which to reduce the risk of vertical transmission of HCV like there are for other blood-borne pathogens like hepatitis B virus (HBV) and HIV. There is no vaccine for HCV and cesarean sections and alternative modes of delivery have not shown to reduce the risk of HCV transmission.

MDHHS is encouraging clinicians to test infants born to HCV-infected mothers for HCV. Maternal HCV antibodies transfer efficiently from the mother to the child and may not clear for up to 18 months. Therefore, the American Association for the Study of Liver Diseases (AASLD) recommends HCV RNA (PCR) testing for children between the ages of 2 and 18 months. HCV antibody testing should only be conducted in children greater than 18 months old.

- 2 months to 18 months old – HCV RNA/PCR/Nucleic Acid Amplification test
- >18 months old – HCV antibody test. if positive, follow-up with a HCV RNA test to confirm infection

For more information on Perinatal Hepatitis C please visit the American Association for the Study of Liver Diseases and Infectious Disease Society of America: Hepatitis C Guidance in Pregnancy and Children at:

<https://www.hcvguidelines.org/unique-populations/pregnancy>

<https://www.hcvguidelines.org/unique-populations/children>

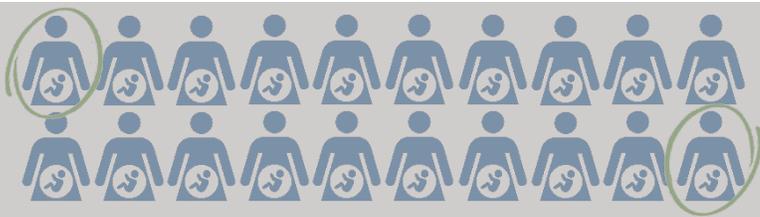
Sincerely,

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## FREQUENTLY ASKED QUESTIONS

### **If my child has Hepatitis C do we need to disclose it to their school or daycare?**

There is no requirement to disclose HCV infection to the child's school or daycare facility. Disclosure of the child's HCV infection is at the discretion of the guardian or parent. Standard precautions should always be followed when coming into contact with potentially infectious blood or body fluids. A child can safely attend any school or daycare setting regardless of HCV infection status.

### **Can my child with HCV participate in school sports and other activities?**

Hepatitis C virus is not transmitted by casual contact, and therefore children with HCV do not pose a risk to other children in school, sports, or other athletic activities. There are no exclusion indications for either school or sports activities for children with HCV infection. Standard precautions should always be followed when coming into contact with potentially infectious blood or body fluids. Open cuts and abrasions should be covered during sport activities or if others may come in contact with the wounds.

### **Can children be treated for HCV infection?**

Based on FDA approval and recommendations, there are currently two prescription drugs (Harvoni and Sovaldi) that can treat children over the age of 3 with HCV, one prescription drug (Epclusa) for use in pediatric patients ages 6 years and older with HCV, and one (Mavyret) for use in pediatric patients ages 12 years and older. The AASLD recommends treatment for children 3 years and older with direct-acting antiviral (DAA) regimens if they are available for the child's age group. In addition, they also recommend deferring treatment of children aged 3-11 years with chronic HCV until interferon-free regimens are available. See: <https://www.hcvguidelines.org/unique-populations/children>

### **What are some symptoms of children with perinatal HCV?**

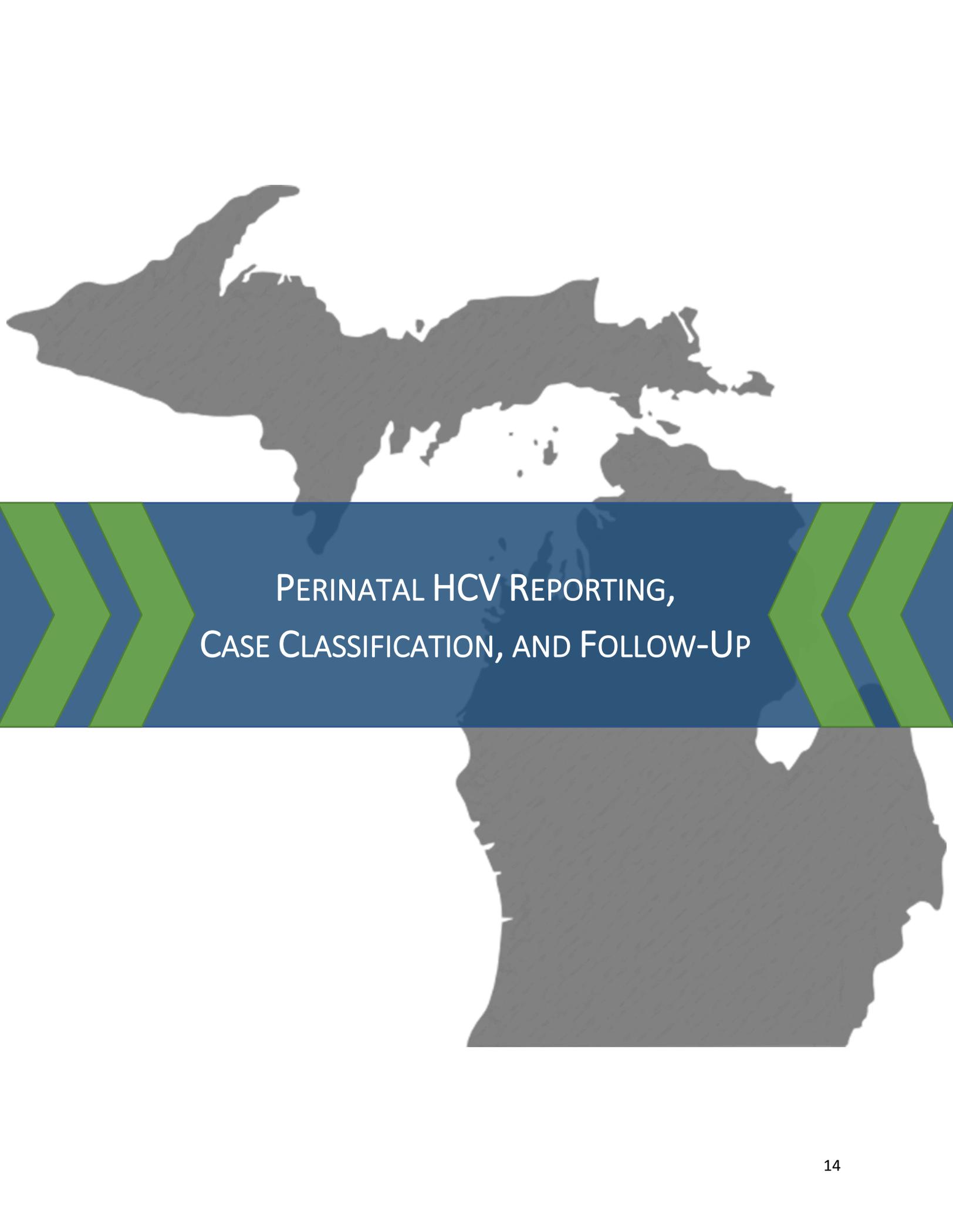
The majority of children with perinatal HCV infection will have mild or no symptoms. Approximately 80% of children with vertical transmission of HCV will have minimal to no scarring of the liver, known as fibrosis, by age 18. Between 20-25 percent of children will experience more aggressive disease symptoms and can develop advanced scarring of the liver as early as 8 years of age. Symptoms that can occur among those with liver damage caused by HCV infection include tiredness, itchy skin, muscle soreness, nausea, stomach pain, loss of appetite, jaundice, and dark urine.

### **Are there any recommended vaccines for children with perinatal HCV?**

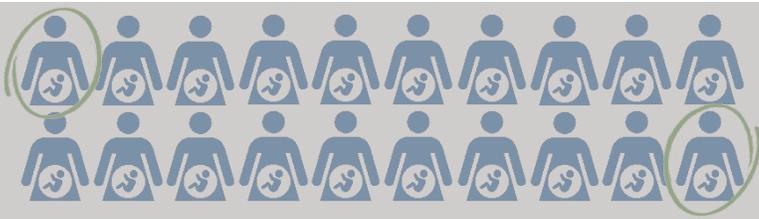
There is currently no vaccine available for HCV. However, vaccines for hepatitis A and hepatitis B exist. The CDC recommends all children receive the hepatitis A vaccine at one year of age and the hepatitis B vaccine at birth. Children infected with HCV should receive both the hepatitis A and hepatitis B vaccines to help prevent further liver complications.

### **Is it safe to give an infected child routine medications like Tylenol or ibuprofen?**

Both acetaminophen (Tylenol) and ibuprofen in the standard recommended doses are generally safe for children with HCV infection. If the child has advanced liver disease, these products may not be safe and should not be given without first consulting a physician.



PERINATAL HCV REPORTING,  
CASE CLASSIFICATION, AND FOLLOW-UP



*Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected*

## CASE DEFINITION AND CLASSIFICATION

All positive HCV lab results will continue to be reported to the Michigan Disease Surveillance System (MDSS) according to the [2021 Reportable Diseases in Michigan](#) and [Health Care Professional's Guide to Disease Reporting in Michigan](#). Incoming HCV electronic lab reports for cases less than 36 months of age will automatically be assigned to the Perinatal HCV condition in MDSS.

Cases between the ages of 2 to 36 months should be classified according to the [2018 Perinatal HCV Council of State and Territorial Epidemiologists \(CSTE\) / CDC position statement](#). Any cases greater than 36 months of age should be classified according to the existing acute and chronic case definitions.

### PERINATAL HEPATITIS C CASE DEFINITION (CSTE, 2018)

For a patient that is between 2 to 36 months of age:

#### Laboratory Criteria:

- HCV RNA positive test result; **OR**
- HCV genotype test result; **OR**
- HCV antigen test result\*

*\*When and if a test for HCV antigen(s) is approved by FDA and available*

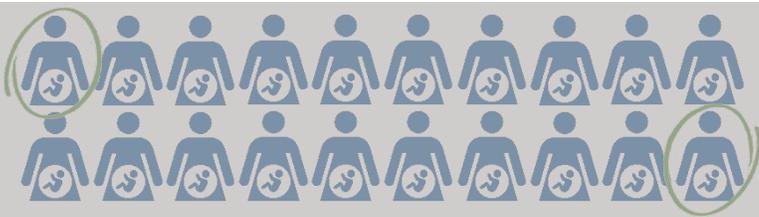
#### Epidemiologic Linkage

- Maternal infection with HCV of any duration, if known.
- Not known to have been exposed to HCV via a mechanism other than perinatal (e.g. not acquired via healthcare).

### CASE DEFINITION/CLASSIFICATION NOTES AND REPORTING GUIDELINES

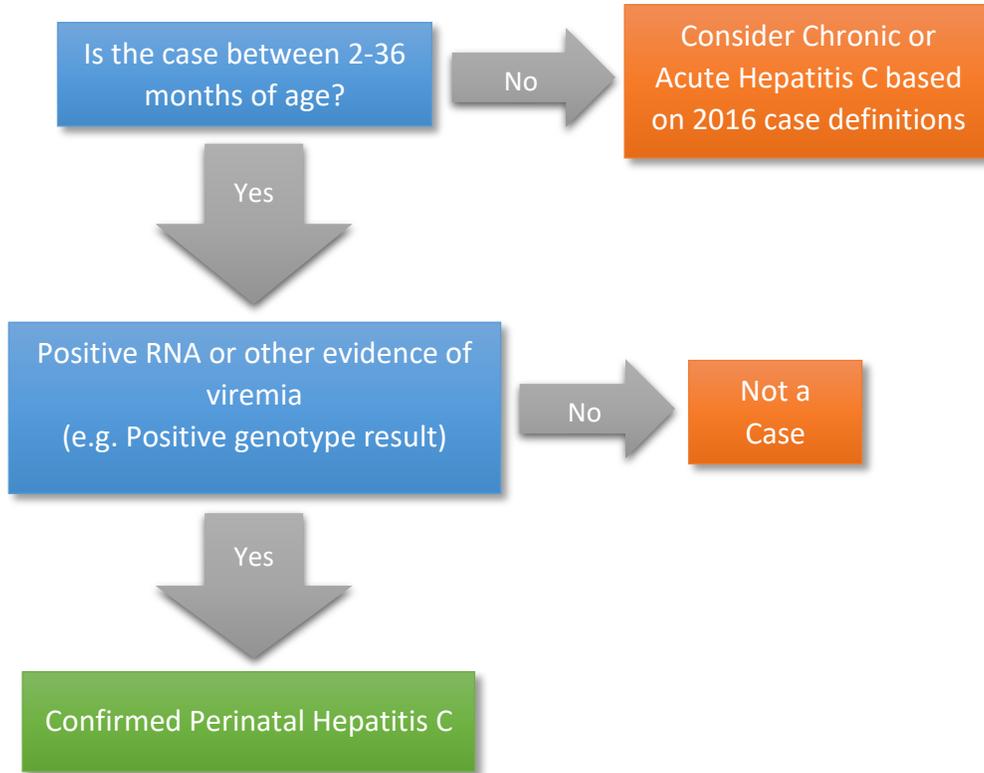
According to the new perinatal Hepatitis C case definition created by CSTE, infants 36 months of age and under should only be assessed for perinatal HCV infection, and not for chronic or acute HCV. If there is evidence that a case under 36 months of age was exposed to HCV via a mechanism *other than* perinatal transmission, such as healthcare associated transmission, it should be classified as acute or chronic HCV according to the 2020 case definitions. Test results prior to 2 months of age should not be used for case classification. Collection of maternal HCV status is recommended but not required for the case definition.

The case classification guidance for perinatal HCV cases in Michigan can be found on the next page (pg. 16).



*Approximately 5 to 15 percent of all babies born to HCV infected mothers will be infected*

### Case Classification Chart for Perinatal Hepatitis C Virus



### FOLLOW-UP FOR PRENATAL AND PERINATAL HCV CASES

Currently, there is no “case management” of HCV infected pregnant women. So, unlike with HBV, HCV-positive pregnant women do not need to be specially referred to MDHHS for management.

For new cases of perinatal HCV infection, MDHHS recommends confirming the HCV status of the mother and educating the parent/guardian and pediatrician on HCV infection, transmission, and treatment. LHDs may consider promoting HAV and HBV vaccination for infants known to be infected with HCV. LHDs may consider assisting the pediatrician and parent/guardian in finding a specialist to refer the infant for liver monitoring. Clinical management of children with HCV and recommendations for counseling parents regarding transmission and prevention can be found at <https://www.hcvguidelines.org/unique-populations/children>.

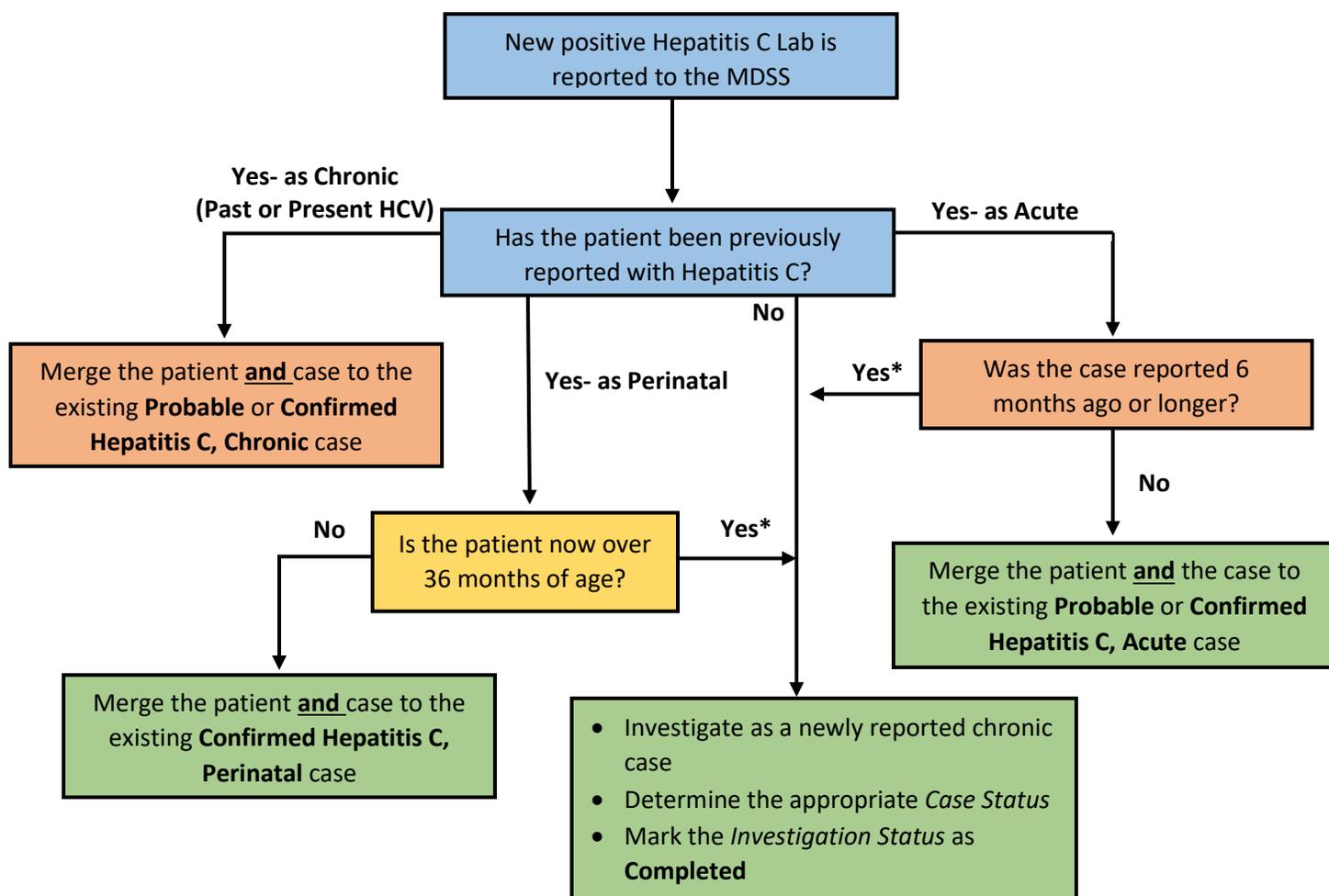
Some frequently asked questions that LHD investigators might encounter can be found on pages 9 (HCV and pregnancy) and 13 (HCV in infants and children).



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## DE-DUPLICATING HEPATITIS C REPORTS IN MDSS

When de-duplicating HCV cases, particularly Perinatal HCV cases in MDSS, please refer to the following flowchart. A patient can only be reported and counted once in their lifetime for perinatal HCV infection. If the same patient tests positive for HCV and is older than 36 months of age, a new chronic case should be created.



### Hepatitis C Case Statuses Allowed by Current Case Definition:

	Unknown	Suspect	Probable	Confirmed	Not a Case
Hepatitis C, Acute	-	-	Valid	Valid	Valid
Hepatitis C, Chronic	-	-	Valid	Valid	Valid
Hepatitis C, Perinatal	-	-	-	Valid	Valid
Hepatitis C, Unknown	-	-	-	-	-

**Note:** Electronic Lab Reports (ELRs) for Hepatitis C Virus (HCV) are generally reported in MDSS as Hepatitis C, Acute. Please review the *Reportable Condition* to make sure it is accurate. For more information, refer to the "Hepatitis C Reporting Flowchart".



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## RESOURCES

For further information on perinatal Hepatitis C infection, or Hepatitis C in general, please see the following resources:

### **American Academy of Pediatrics (AAP) – Red Book**

<https://redbook.solutions.aap.org/chapter.aspx?sectionid=88187160&bookid=1484>

### **American Association for the Study of Liver Diseases (AASLD) and the Infectious Disease Society of America (IDSA)**

<https://www.hcvguidelines.org/>

<https://www.hcvguidelines.org/unique-populations/pregnancy>

<https://www.hcvguidelines.org/unique-populations/children>

### **American College of Gastroenterology**

<http://patients.gi.org/topics/hepatitis-c/#tabs1>

### **American Liver Foundation**

<http://hepc.liverfoundation.org/>

### **Centers for Disease Control and Prevention (CDC) and CSTE**

<https://www.cdc.gov/hepatitis/hcv/index.htm>

<https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-perinatal-infection/case-definition/2018/>

<http://www.cste.org/resource/resmgr/2017PS/2017PSFinal/17-ID-08.pdf>

### **Michigan Department of Health and Human Services (MDHHS)**

[www.mi.gov/hepatitis](http://www.mi.gov/hepatitis)

[www.mi.gov/cdinfo](http://www.mi.gov/cdinfo)