17-ID-08

Committee: Infectious Disease

Title: Public Health Reporting and National Notification of Perinatal Hepatitis C Virus Infection

I. Statement of the Problem
There has not been a case definition established for the classification of perinatal hepatitis C infection cases. The 2015 Revision of the Case Definition of Hepatitis C for National Notification position statement does not include information on reporting of perinatal case status. There has been an increase noted by a number of jurisdictions in perinatal HCV transmission and consistent classification and reporting is needed.

II. Background and Justification
The 2015 Revision of the Case Definition of Hepatitis C for National Notification position statement (1) that established revised case classifications for acute and chronic hepatitis C virus (HCV) infection did not specifically address perinatal HCV cases (cases of HCV infection exposed during childbirth). Screening recommendations and interpretation of HCV laboratory test results for infants born to HCV-infected mothers differ from those for adolescents and adults (2)(3). There has been a reported increase of HCV infection among women of childbearing age in numerous jurisdictions in the United States (4)(5)(6), and there would be an expected rise in perinatal transmission as a result. While there are no measures currently recommended for prevention of HCV transmission by pregnant women to their infants, HCV in pediatric populations can lead to significant illness (7) and it is important for those children to be appropriately assessed and in clinical care for HCV infection. Available curative HCV therapies are not currently recommended for pediatric patients under the age of 12, but that may change as data become available on the use of recently approved medications in younger pediatric populations.

There is no one standard HCV screening recommendation for infants born to HCV infected mothers. Available guidelines consistently recommend against antibody testing for children under 18 months of age due to transient maternal HCV antibody that may not reflect actual infection status of the child. However, there are multiple recommended timelines for HCV RNA screening of infants born to HCV-infected mothers. These include not testing until at least 1-2 months of age and, in some cases, recommending repeat serial testing of infants if an infant tests positive on one test, if done before 12 months of age. There is concern that testing outside of recommended parameters may identify transient HCV RNA in infants that may spontaneously clear the infection following perinatal exposure. Inappropriate testing and loss of follow-up of infants born to HCV-infected mothers has been reported (8).

There is currently no recommendation for universal HCV screening among pregnant women. Testing is only recommended for women of childbearing age if they are known to be at-risk for HCV infection, regardless of pregnancy status.

Use of a consistent perinatal HCV infection case definition would assist in quantifying the scope of the problem, ensure appropriate classification of perinatally exposed cases, and support identification of cases who require additional follow-up and investigation. Investigation of these cases may also support HCV case finding of women of childbearing age.

III. Statement of the desired action(s) to be taken

1. Utilize standard sources (e.g. reporting*) for case ascertainment for perinatal HCV infection. Surveillance for perinatal hepatitis C virus should use the following recommended sources of data to the extent of coverage presented in Table III.

Table III. Recommended sources of data and extent of coverage for ascertainment of cases of perinatal HCV.

Source of data for case ascertainment	Coverage	
	Population-wide	Sentinel sites
Clinician reporting	X	
Laboratory reporting	X	
Reporting by other entities (e.g., hospitals, veterinarians, pharmacies, poison centers)	X	
Death certificates		
Hospital discharge or outpatient records	X	
Extracts from electronic medical records	X	
Telephone survey		
School-based survey		
Other _____		

2. Utilize standardized criteria for case identification and classification (Sections VI and VII) for perinatal HCV infection and add perinatal HCV infection to the *Nationally Notifiable Condition List.*

☐2a. Immediately notifiable, extremely urgent (within 4 hours)
☐2b. Immediately notifiable, urgent (within 24 hours)
☒2c. Routinely notifiable

CSTE recommends that all States and Territories enact laws (statue or rule/regulation as appropriate) to make this disease or condition reportable in their jurisdiction. Jurisdictions (e.g. States and Territories) conducting surveillance (according to these methods) should submit case notifications** to CDC.

Expectations for Message Mapping Guide (MMG) development for a newly notifiable condition: NNDSS is transitioning to HL7-based messages for case notifications; the specifications for these messages are presented in MMGs. When CSTE recommends that a new condition be made nationally notifiable, CDC must obtain OMB PRA approval prior to accepting case notifications for the new condition. Under anticipated timelines, notification using the Generic V2 MMG would support transmission of the basic demographic and epidemiologic information common to all cases and could begin with the new *MMWR* year following the CSTE annual conference. Input from CDC programs and CSTE would prioritize development of a disease-specific MMG for the new condition among other conditions waiting for MMGs.

3. CDC should publish data on perinatal HCV infection as appropriate in *MMWR* and other venues (see Section IX).

CSTE recommends that all jurisdictions (e.g. States or Territories) with legal authority to conduct public health surveillance follow the recommended methods as outlined above

Terminology:
* Reporting: process of a healthcare provider or other entity submitting a report (case information) of a condition under public health surveillance TO local or state public health.
**Notification: process of a local or state public health authority submitting a report (case information) of a condition on the Nationally Notifiable Condition List TO CDC.

IV. Goals of Surveillance

The goals of surveillance for perinatal hepatitis C virus infection are:

- Improved assessment of the scope of the problem of perinatal HCV transmission
- Identification of infants who become infected with HCV via exposure from a mother with HCV infection (perinatal HCV infection)
- Use of perinatal HCV surveillance data for determination of linkage to care for infants with confirmed HCV infection.
- Evaluating health outcomes of infected infants

V. Methods for Surveillance: Surveillance for perinatal HCV infection should use the recommended sources of data and the extent of coverage listed in Table III.

Surveillance for perinatal HCV infection begins with the identification of children under 36 months of age with evidence of HCV infection via laboratory testing. This allows identification of infants at risk and monitoring of infants for evidence of chronic infection. Knowledge of the maternal HCV status supports determination of infection source. While recommendations vary, the typical recommended test to assess HCV infection in infants is HCV RNA after at least 2 months of age. Medical records, laboratory test reporting, and case reports provide the data for this purpose.

VI. Criteria for case identification

A. Narrative: A description of suggested criteria for case ascertainment of a specific condition.

For purposes of perinatal HCV surveillance, infant and maternal status should be ascertained.

Infants 36 months of age and under should only be assessed for perinatal HCV infection and not according to the 2015 Surveillance Case Definition of Hepatitis C. The laboratory and epidemiologic criteria described in the 2015 case definitions for acute and chronic hepatitis C should only apply to individuals 36 months of age or more. However, if there is evidence that the case was exposed to HCV via a mechanism other than perinatal (e.g. was acquired via healthcare), and is under 36 months of age, it can and should be classified under the 2015 position statement.

Clinical criteria:

- Diagnosis of hepatitis C infection in an infant between 2 months and 36 months of age, or diagnosis of hepatitis C infection in a pregnant woman.

Laboratory criteria:

- Report all infants under 36 months of age with evidence of HCV infection as evidenced by the following laboratory tests: HCV RNA or a positive test indicating presence of hepatitis C viral antigen(s) (HCV antigen)*, or other evidence of HCV viremia (e.g., genotype testing). Also report all infants between 18 and 36 months of age with positive HCV antibody test results and no or unknown HCV RNA, antigen or genotype results.
- Report all pregnant women with evidence of HCV infection as evidenced by the following laboratory tests: positive HCV RNA OR positive test indicating presence of HCV antigen, OR other evidence or HCV viremia (e.g., genotype testing).

Criteria for epidemiological linkage: When possible, in order to verify infection source for an infant that has been reported as having evidence of HCV infection status, the HCV status of the mother should be determined, using the acute and/or chronic HCV infection case definition as a guideline for which cases would be considered confirmed.

Other recommended reporting procedures:

All cases of acute and chronic hepatitis C should be reported.
All cases of hepatitis C should be reported with gender and age accurately documented.
All cases of hepatitis C among females of childbearing age should be reported with pregnancy status documented
Reporting should be ongoing and routine.

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

B. Table of criteria to determine whether a case should be reported to public health authorities

Table VI-B. Table of criteria to determine whether a case should be reported to public health authorities.

Criterion				
Clinical Evidence				
Diagnosis of HCV infection		N		
Pregnant				N
Born to a woman with evidence of hepatitis C infection (positive HCV RNA, antigen, or genotype)				
Laboratory Evidence				
Positive HCV RNA	O			O
Positive HCV antigen	O			O
Positive HCV genotype	O			O
Positive HCV antibody			N	
Demographic Evidence				
Between 2 and 36 months of age		N		
Under 36 months of age	N			
Between 18 and 36 months of age			N	

Notes:
S = This criterion alone is Sufficient to report a case.
N = All “N” criteria in the same column are Necessary to report a case.
O = At least one of these “O” (One or more) criteria in each category (e.g., clinical evidence and laboratory evidence) in the same column—in conjunction with all “N” criteria in the same column—is required to report a case. * A requisition or order for any of the “S” laboratory tests is sufficient to meet the reporting criteria.

C. Disease-specific data elements

Infant:

HCV RNA (NAAT) test results and timing of test performance
HCV genotype test results and timing of test performance
HCV antigen test results and timing of test performance*

VII. Case Definition for Case Classification

A. Narrative: Description of criteria to determine how a case should be classified.

Clinical Criteria
Perinatal hepatitis C in pediatric patients may range from asymptomatic to fulminant hepatitis.

Laboratory Criteria
HCV RNA positive test results for infants between 2 to 36 months of age; OR
HCV genotype test results for infants between 2 to 36 months of age or greater; OR
HCV antigen test results for infants between 2 to 36 months of age or greater

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).

Criteria to distinguish a new case of this disease or condition from reports or notifications which should not be enumerated as a new case for surveillance
Test results prior to 2 months of age should not be used for classification. Test results after 36 months of age should be reported under the 2015 Acute and Chronic HCV Infection case classification and not as perinatal HCV infection. Cases in the specified age range that are known to have been exposed to HCV via healthcare and not perinatally should be reported under the 2015 position statement. Event date should be based on earliest relevant laboratory test date within the 2-36 month window.

Case Classification
Confirmed Perinatal Hepatitis C Infection: Infant who has a positive test for HCV RNA (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.

B. Classification Tables

Table VII-B. Criteria for defining a case of perinatal HCV infection.

Criterion	Confirmed
Clinical Evidence	
Infant between 2 and 36 months of age	N
Laboratory evidence	
Positive for HCV RNA	O
Positive for HCV genotype	O
Positive for HCV antigen*	O
Epidemiologic evidence	
Not known to have acquired HCV via a mechanism other than perinatal	N
Criteria to distinguish a new case:	
Never previously reported as a case of perinatal HCV infection	N

Notes:
S = This criterion alone is Sufficient to classify a case.
N = All “N” criteria in the same column are Necessary to classify a case. A number following an “N” indicates that this criterion is only required for a specific disease/condition subtype (see below). If the absence of a criterion (i.e., criterion NOT present) is required for the case to meet the classification criteria, list the Absence of criterion as a Necessary component.
O = At least one of these “O” (One or more) criteria in each category (e.g., clinical evidence and laboratory evidence) in the same column—in conjunction with all “N” criteria in the same column—is required to classify a case. (These “O” criteria are alternatives, which means that a single column will have either no O criteria or multiple O criteria; no column should have only one O.) A number following an “O” indicates that this criterion is only required for a specific disease/condition subtype.

VIII. Period of Surveillance

Ongoing surveillance

IX. Data sharing/release and print criteria

- It is recommended that states notify CDC of confirmed cases of perinatal hepatitis C infection.
- It is recommended that states transmit reports of hepatitis C to CDC to be analyzed weekly by CDC.
- CDC will summarize perinatal hepatitis C reports annually in the MMWR.
- CDC will conduct an extensive analysis for publication annually as a surveillance summary.
- CDC will send reports of cases to states, for quality control and reconciliation.
- There is no current plan to rerelease case data. CDC will make aggregate reports publicly available and states will maintain confidential surveillance databases.

X. Revision History

There have been no previous position statements specifically on perinatal HCV infection.

Position Statement ID	Section of Document	Revision Description
	Case definitions for infectious conditions under public health surveillance. Centers for Disease Control and Prevention. MMWR Recomm Rep. 1997 May 2; 46(RR-10):1-55.	
17-ID-08	Table VII-B.	CSTE National Office made minor technical clarifications in Table VII-B to align table with narrative section VII-A.

XI. References

(1) Revision of the case definition for HCV case classification (2015) http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/2015PS/2015PSFinal/15-ID-03.pdf
(2) CDC. Recommendations for the prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. MMWR 1998;47(RR-19). http://www.cdc.gov/mmwr/PDF/RR/RR4719.pdf
(3) Smith B, et al. Recommendations for the identification of chronic hepatitis C virus infection among persons born during 1945-1965. MMWR 2012;61(RR-04). http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6104a1.htm
(4) Onofrey, et al. Hepatitis C virus infection among adolescents and young adults, Massachusetts 2002-2009. MMWR 2011;60(17):537-41. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6017a2.htm
(5) Zibbell J, et al. Increases in hepatitis C virus infection related to injection drug use among persons aged ≤30 years – Kentucky, Tennessee, Virginia, and West Virginia, 2006-2012. MMWR 2015;64(17):453-8. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6417a2.htm
(6) Koneru A, Nelson N, Hariri S, et al. Increased hepatitis C virus (HCV) detection in women of childbearing age and potential risk for vertical transmission – United States and Kentucky, 2011-2014. MMWR Morb Mortal Wkly Rep 2016;65:705-10. DOI: http://dx.doi.org/10.15585/mmwr.mm6528a2

(7) Mohan P, Colvin C, et al. Clinical spectrum and histopathologic features of chronic hepatitis C infection in children. J Pediatr 2007; 150(2): 168-174.
(8) Kuncio D, et al. Failure to test and identify perinatally infected children born to hepatitis C positive women.CID 2016;https://cid.oxfordjournals.org/content/early/2016/01/20/cid.ciw026.full.pdf+html

XII. Coordination

Agencies for Response

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N/A

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