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Trends and Characteristics in Maternal Hepatitis C Virus Infection Rates During Pregnancy: United States, 2016–2021

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Abstract

Objectives—This report presents data on trends for hepatitis C virus infection in mothers giving birth in the United States from 2016 through 2021, and rates by selected maternal characteristics for 2016, 2020, and 2021.

Methods—Data are from birth certificates and based on 100% of births registered in the United States from 2016 through 2021. Descriptive tabulations on trends in hepatitis C virus infection rates from 2016 through 2021 and rates by maternal age, race and Hispanic origin, education level, smoking status during pregnancy, trimester prenatal care began, and payment source for delivery for 2016, 2020, and 2021 are presented.

Results—The overall rate of hepatitis C virus infection rose 20% from 2016 through 2020 (from 421.4 to 506.5 per 100,000 births) and then declined 8% from 2020 through 2021 (463.7). Hepatitis C rates increased significantly from 2016 through 2020 for mothers aged 25 and over, all maternal race and Hispanic-origin groups except non-Hispanic Asian (subsequently, Asian) women, all maternal education levels, mothers who smoked cigarettes during pregnancy and those who did not, all prenatal care categories, and all source of payment groups except for the "other" category. A significant decrease in rates was observed for mothers under age 25. From 2020 through 2021, rates decreased or were unchanged for all categories within characteristics. In 2021, the rate of hepatitis C varied by maternal race and Hispanic origin, ranging from 102.7 for Asian mothers to 1,652.1 for non-Hispanic American Indian or Alaska Native mothers. The rate of hepatitis C virus infection was highest for mothers aged 25–34 and lowest for those under age 20. The rate was highest for mothers with less than a high school diploma, mothers who smoked during pregnancy, mothers who received no prenatal care, and mothers who used Medicaid as the principal source of payment for the delivery.

Keywords: hepatitis C virus infection • race and Hispanic origin • maternal infections • National Vital Statistics System

Introduction

Hepatitis C is a liver infection caused by the hepatitis C virus (HCV) that is spread through contact with blood from an infected person (1). The presence of HCV infection can lead to negative health outcomes for both mothers and infants (2–5). Potential adverse health outcomes for the mother include cholestasis (a liver problem slowing or stopping the normal flow of digestive fluid) of pregnancy, increased risk for gestational hypertension, cesarean delivery, and intensive care unit admission (2,4,5). Potential adverse outcomes for the infant include increased risk of preterm birth, low birthweight, fetal growth restriction, admission to a neonatal intensive care unit, and congenital anomalies (2,4,5). In response to increases in HCV infection in the general population aged 20–39, in April 2020, the Centers for Disease Control and Prevention recommended that prenatal care providers screen all pregnant women for HCV infection during each pregnancy, except in places where the occurrence of HCV infection is less than 0.1% (6,7).

The 2003 revision of the U.S. Standard Certificate of Live Birth added the item "Infections present and/or treated during this pregnancy" that includes a checkbox for hepatitis C. Data from all states for HCV infection became available from the birth certificate in 2016. This report presents trends in HCV infection in women giving birth in the United States from 2016 through 2021 and rates of HCV infection by maternal race and Hispanic origin, age, education level, smoking during pregnancy, timing of prenatal care, and source of payment for delivery for 2016, 2020, and 2021.

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National Center for Health Statistics
National Vital Statistics System

NCHS reports can be downloaded from: https://www.cdc.gov/nchs/products/index.htm.

Methods

This analysis uses data from the birth certificate and is based on 100% of births registered in the United States from 2016 through 2021. Birth certificate data on hepatitis C are recommended to be collected from the mother's medical records (8). Mothers are to be reported as having hepatitis C if a positive test for HCV during pregnancy is indicated in the mother's medical records (8). Because of the observed overall increasing trend for 2016–2020 and a decline for 2020–2021, these periods were compared for the overall rate of HCV infection and rates of infection by maternal race and Hispanic origin, age, education level, smoking during pregnancy, timing of prenatal care, and source of payment for delivery. A detailed analysis was conducted on 2021 data for overall rates of HCV infection and for rates of infection by all other characteristics.

Of the 3,664,292 births registered in the United States for 2021, 14,846, or 0.4%, were missing information on HCV infection. Data were missing for 1.5% (56,607) of births for maternal education level (excluding births to mothers under age 25), 0.4% (15,541) for maternal cigarette smoking during pregnancy, 2.1% (77,416) for timing of initiation of prenatal care, 0.8% (28,050) for source of payment, and 1.0% (36,381) for maternal Hispanic origin. Births with missing values for race (255,181, or 7.0%) and age (318, or 0.01%) were imputed. Records with missing information were excluded from analyses.

Race and Hispanic origin are reported separately on the birth certificate and self-reported by the mother. All race and Hispanic-origin groups are based on single-race reporting and consistent with the 1997 Office of Management and Budget standards (9). Analysis was limited to the five largest race and Hispanic-origin groups (Hispanic, non-Hispanic American Indian or Alaska Native, non-Hispanic Asian, non-Hispanic Black, and non-Hispanic White [subsequently, American Indian or Alaska Native, Asian, Black, and White]). Data for non-Hispanic Native Hawaiian or Other Pacific Islander mothers were not included due to insufficient numbers to calculate reliable rates for single years of data (data available from https://www.cdc.gov/nchs/data_access/vitalstatsonline.htm). Analyses of maternal education level were limited to women aged 25 and over to allow for completion of education.

Rates of HCV infection are expressed as the number of live births to mothers with HCV infection per 100,000 live births. All statements about differences in rates in the text have been tested for statistical significance, and a statement that a given rate is higher or lower than another rate indicates that the rates are significantly different using a two-tailed *z* test at the alpha level of 0.05 (10).

References to decreasing or increasing trends in rates (for example, trends in rates for 2016 through 2020) are statistically significant at the 0.05 level and were assessed using the Cochran–Armitage test for trends, a modified chi-squared test.

The reliability of percentages was evaluated based on standards developed by the National Center for Health Statistics. For detailed information on the standards, see "National Center for Health Statistics Data Presentation Standards for Proportions" (11).

Results

Overall trends

- The number of cases of HCV infection during pregnancy rose by an average 2.5% annually from 2016 (16,588) through 2020 (18,246), for a total increase of 10% (Table 1). The number of cases then declined 7% from 2020 through 2021 (16,923).
- The rate of HCV infection rose by an average of 5% annually from 2016 (421.4 per 100,000 births) through 2020 (506.5), for a total increase of 20% (Table 1, Figure 1). The rate then declined 8% from 2020 through 2021 (463.7).

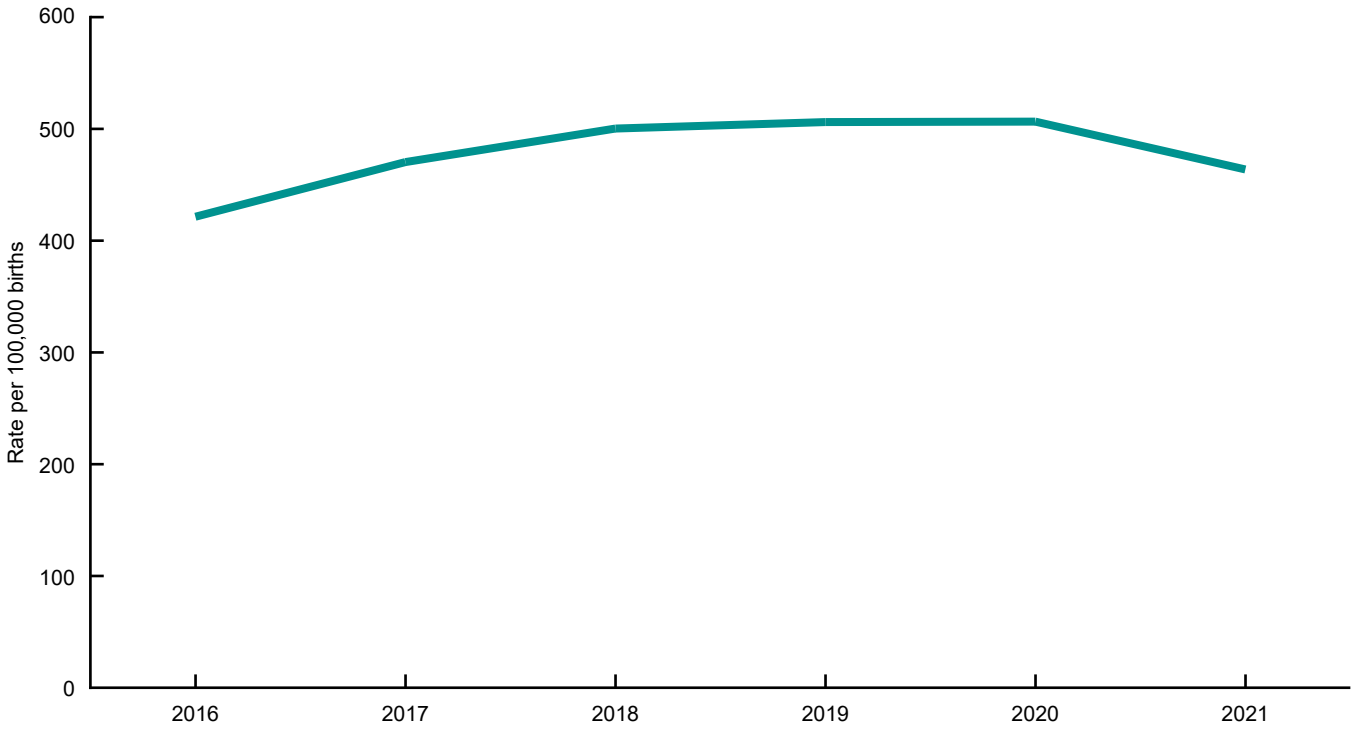
Maternal age

- For 2016–2020, the rate of HCV infection decreased for mothers under age 25 and rose for mothers aged 25 and over. The rate declined 25% for mothers under age 20 (from 141.8 per 100,000 births to 106.1) and 16% for mothers aged 20–24 (from 428.1 to 359.3) (Table 2). Rates increased 13% for mothers aged 25–29 (554.8 to 627.4), 44% for mothers aged 30–34 (394.1 to 566.5), 47% for mothers aged 35–39 (329.9 to 485.1), and 49% for mothers aged 40 and over (266.8 to 398.1).
- From 2020 through 2021, HCV infection rates declined 19% for mothers aged 20–24 (289.3 in 2021), 14% for mothers aged 25–29, and 6% for mothers aged 30–34; changes in rates for mothers under age 20 and aged 35 and over were not significant.
- In 2021, the rate of HCV infection was highest for mothers aged 25–29 (542.0) and 30–34 (531.9) and lowest for mothers under age 20 (118.8) (Table 2, Figure 2). Similar patterns by age were seen for 2016 and 2020.

Maternal race and Hispanic origin

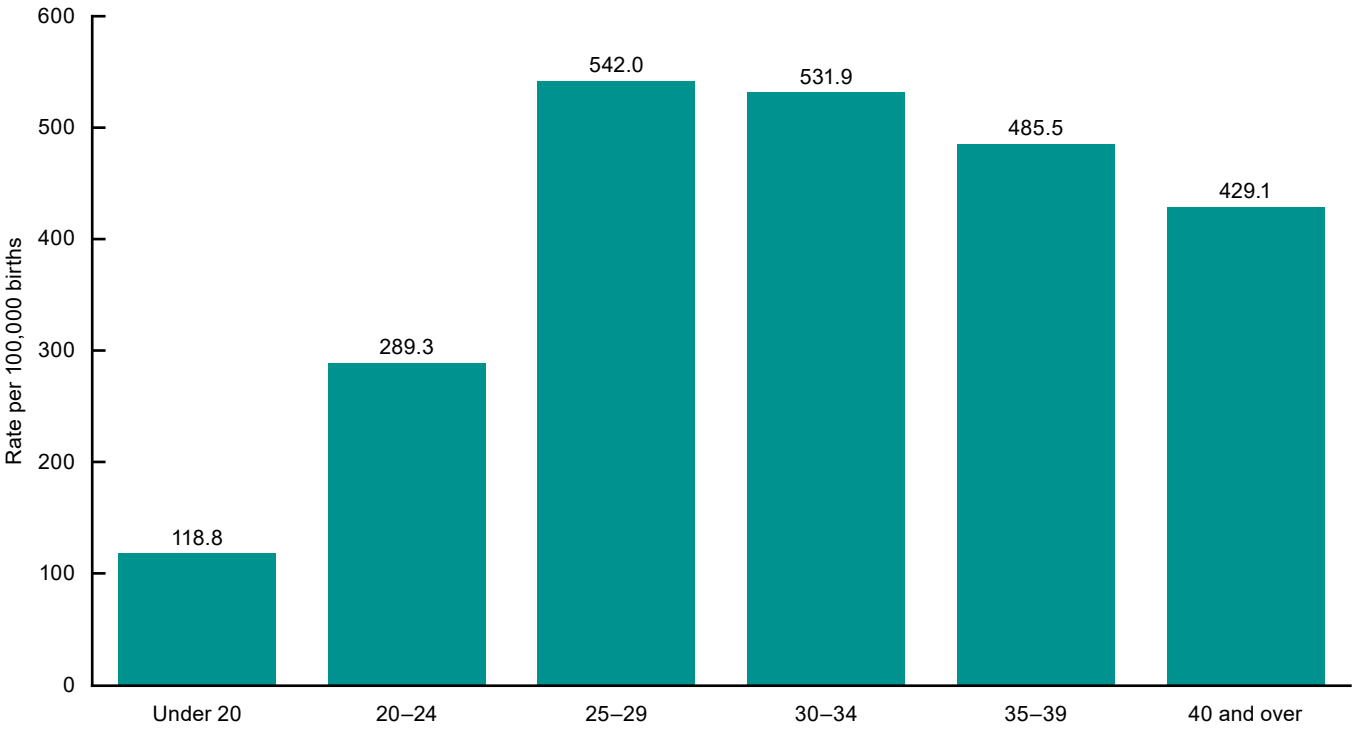
- The rate of HCV infection increased significantly among four of the five race and Hispanic-origin groups for 2016–2020. Rates rose 20% for White mothers (from 649.2 per 100,000 births to 781.7), 22% for Hispanic mothers (139.8 to 170.2), 28% for Black mothers (137.2 to 176.1), and 34% for American Indian or Alaska Native mothers (1,386.4 to 1,860.7); the 18% increase for Asian mothers (73.6 to 86.9) was not significant (Table 2).
- From 2020 through 2021, the rate of HCV infection declined 10% to 704.8 for White mothers and 8% to 156.1 for Hispanic mothers. Changes in rates from 2020 through 2021 for American Indian or Alaska Native, Asian, and Black mothers were not significant.
- In 2021, the rate of HCV infection was highest for American Indian or Alaska Native mothers (1,652.1), followed by White (704.8), Black (179.3), Hispanic (156.1), and Asian (102.7) mothers (Table 2, Figure 3). This general pattern was also observed for 2016 and 2020.

Figure 1. Rate of maternal hepatitis C virus infection: United States, 2016–2021



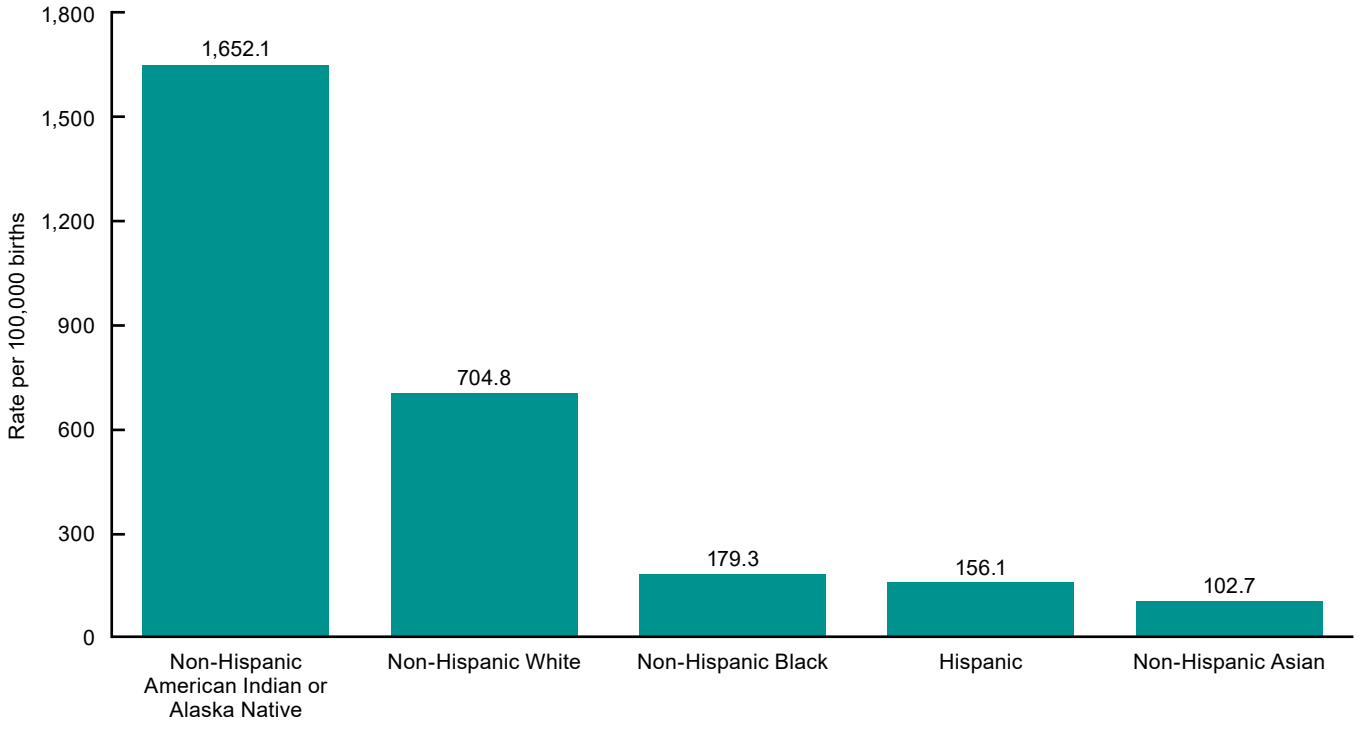
NOTE: A significant increasing trend was observed for 2016–2020, while a significant decline was seen for 2020–2021 ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Figure 2. Rate of maternal hepatitis C virus infection, by age of mother: United States, 2021



NOTE: Differences between all maternal age groups are significant except between mothers aged 25–29 and 30–34 ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Figure 3. Rate of maternal hepatitis C virus infection, by race and Hispanic origin of mother: United States, 2021



NOTE: Differences between all race and Hispanic-origin groups are significant ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Maternal education level

- The rate of HCV infection increased for each of the maternal education level categories from 2016 through 2020 among women aged 25 and over. The HCV infection rate increased 40% for mothers with less than a high school diploma (from 985.0 per 100,000 births to 1,378.7), 29% for mothers with a high school diploma or GED (880.8 to 1,139.6), 22% for mothers with some college or an associate's degree (496.8 to 606.4), and 31% for mothers with a bachelor's degree or higher (58.4 to 76.4) (Table 2).
- From 2020 through 2021, the rate of HCV infection declined 5%–6% for mothers with less than a high school diploma, a high school diploma or GED, and some college or an associate's degree; the 3% increase for mothers with a bachelor's degree or higher was not significant.
- In 2021, the rate of HCV infection declined with increasing maternal education level: Mothers with less than a high school diploma had the highest rate of infection (1,308.7), and those who had a bachelor's degree or higher had the lowest rate (78.4) (Table 2, Figure 4). This pattern also was observed for 2016 and 2020.

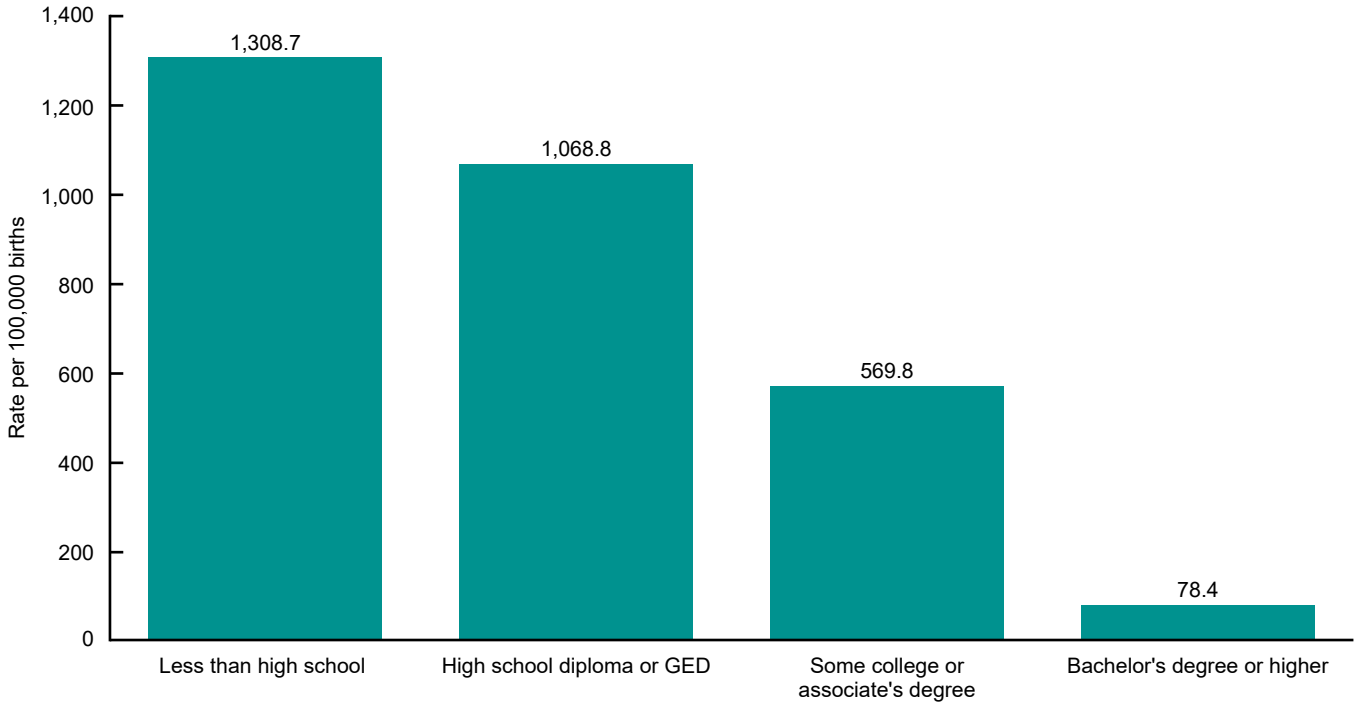
Maternal smoking during pregnancy

- The rate of HCV infection increased from 2016 through 2020 both for mothers who smoked cigarettes during pregnancy and those who did not. The rate increased 46% for mothers who smoked (from 3,579.4 per 100,000 births to 5,223.6) and 30% for mothers who did not smoke (171.0 to 222.3) (Table 2).
- From 2020 through 2021, HCV infection rates were essentially unchanged for mothers who did and those who did not smoke during pregnancy.
- In 2021, the rate of HCV infection was higher for mothers who smoked (5,302.0) compared with mothers who did not smoke (222.9) during pregnancy. The rate of HCV infection also was consistently higher for mothers who smoked during pregnancy compared with those who did not smoke in 2016 and 2020.

Timing of prenatal care

- The rate of HCV infection increased from 2016 through 2020 both for mothers with and without prenatal care. The rate rose 22% for mothers who began care in the first trimester (from 283.2 per 100,000 births to 345.3), 16% for mothers who began care in the second trimester (718.3 to 833.5), 21% for mothers who began care in the third trimester

Figure 4. Rate of maternal hepatitis C virus infection, by maternal education level: United States, 2021



NOTES: A significant decreasing trend was observed for maternal education level ($p < 0.05$). Analyses by maternal education level were limited to women aged 25 and over to allow for completion of education.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

(1,033.2 to 1,245.7), and 44% for mothers with no prenatal care (1,686.8 to 2,422.4) (Table 2).

- From 2020 through 2021, the rate of HCV infection declined 8%–10% for mothers who began care in the first, second, or third trimesters of pregnancy; the decline for 2020–2021 among mothers with no prenatal care was not significant.
- In 2021, the rate of HCV infection increased the later that prenatal care began. That is, the rate was lowest for mothers who began prenatal care in the first trimester (318.0), followed by those who received care beginning in the second trimester (750.0) and third trimester (1,151.1), and those who did not receive prenatal care (2,267.4) (Table 2, Figure 5). The pattern in rates was consistent in 2016 and 2020.

Source of payment for delivery

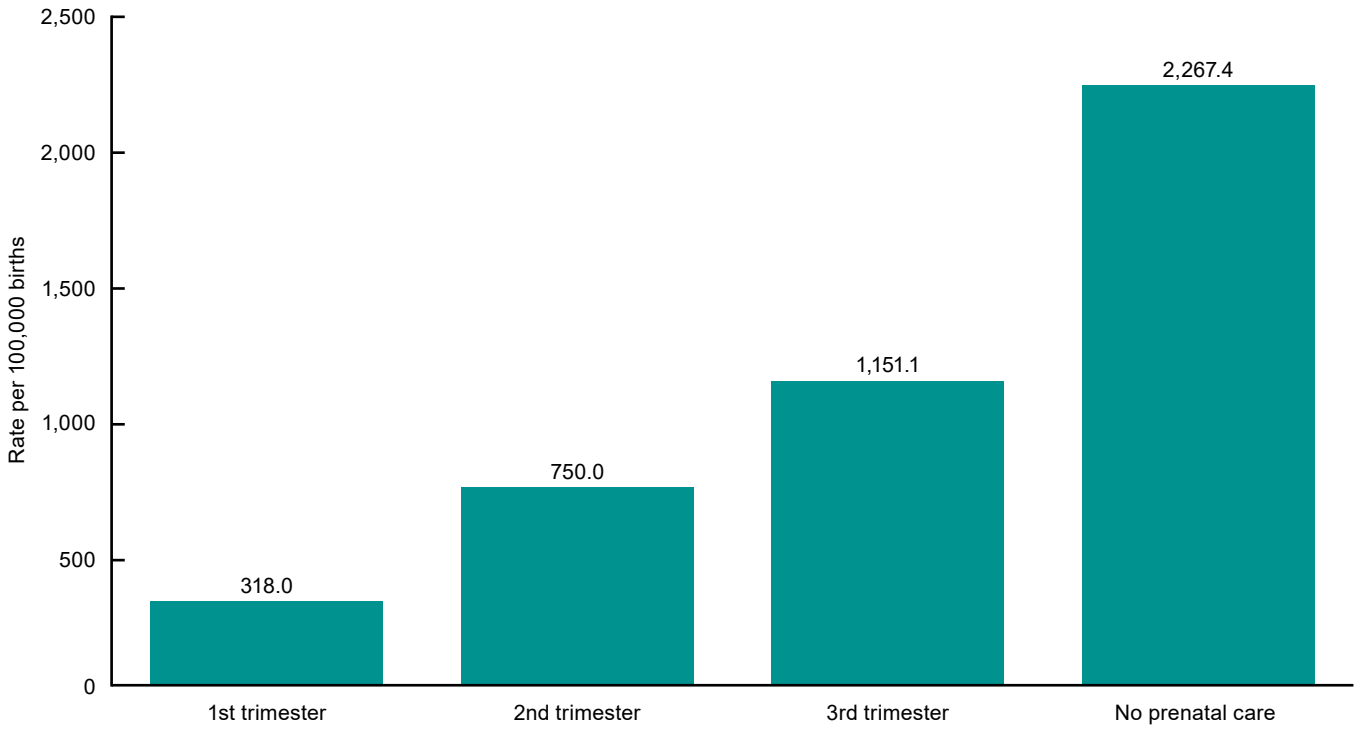
- From 2016 through 2020, the rate of HCV infection increased for mothers who used all sources of payment for the delivery except other sources. The rate increased 9% for mothers using private insurance (from 127.3 per 100,000 births to 138.5), 25% for mothers using Medicaid (769.7 to 961.9), and 40% for mothers who self-paid for the delivery (270.3 to 378.0) (Table 2). The 2% decline (453.1 to 444.8) for mothers using other sources of payment was not significant.
- From 2020 through 2021, the rate of HCV infection decreased 8% for mothers using Medicaid and 26% for mothers who self-paid; changes for 2020–2021 for mothers using private insurance and other forms of payment were not significant.
- In 2021, the rate of HCV infection was highest for mothers who used Medicaid (888.9), followed by other sources of payment (444.1), self-pay (279.7), and private insurance (138.8). This pattern was consistent in 2016 and 2020.

Discussion

The HCV infection rate for mothers giving birth rose 20% from 2016 through 2020 (421.4 to 506.5) and then declined 8% from 2020 through 2021 (463.7). HCV infection rates increased from 2016 through 2020 for nearly all of the characteristics analyzed, that is, for mothers aged 25 and over, all maternal race and Hispanic-origin groups except Asian, all maternal education level categories, mothers who smoked cigarettes during pregnancy and those who did not, all prenatal care categories, and each payment group except for the "Other" category. In contrast, from 2020 through 2021, rates decreased or were statistically unchanged for all characteristics.

Wide variation in the rate of HCV infection was observed across the analyzed characteristics. Among the race and Hispanic-origin groups in 2021, the rate for American Indian or Alaska Native mothers was at least nine times higher than the rates for Asian, Black, and Hispanic mothers. Rates of HCV infection were highest among mothers aged 25–34, those who had less than a high school diploma, smoked during pregnancy, had no prenatal care, and used Medicaid as the source of payment for delivery.

Figure 5. Rate of maternal hepatitis C virus infection, by timing of prenatal care: United States, 2021



NOTE: A significant increasing trend was observed for prenatal care ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Findings from other data sources

Data from the Centers for Disease Control and Prevention's National Notifiable Diseases Surveillance System (NNDSS) are used to monitor, control, and prevent approximately 120 diseases, including hepatitis C (12). NNDSS data show an increasing trend in acute HCV infection in the United States from 2010 through 2020 among all women (1), consistent with findings from this analysis on trends from 2016 through 2020 among women who gave birth. Data for 2021 were not available from NNDSS at the time this report was created. NNDSS data also show that both acute and chronic hepatitis C rates in 2020 were highest for people aged 20–39 and for American Indian or Alaska Native people, which are consistent with the findings of this report (1).

Earlier studies based on birth certificate data showed higher percentages and rates of HCV infection among women with lower education levels, women who had Medicaid or other government insurance as the source of payment for delivery, and women who smoked cigarettes; these findings are consistent with this report (13,14). Data from the 1995–2012 National Health and Nutrition Examination Surveys also showed higher percentages of HCV infections in people who smoked or had lower levels of education (15).

Note that birth certificate data represent a subset of women whose characteristics may differ from those of the general population, preventing direct comparisons across data sources. However, without other publicly available, population-based, pregnancy-specific HCV data, data sources with nationally representative data for the general population can provide comparisons for overall trends.

Limitations

Underreporting of health conditions is considered a primary limitation of birth certificate data (16,17). Two studies examining data from the 2003 revision of the birth certificate found wide variation in data quality between the medical and health checkbox items (18,19). While some medical and health items, such as the method of delivery items, had moderate to high levels of sensitivity (a measure of underreporting), many of the examined pregnancy risk factors had low or extremely low sensitivity for the three reporting areas from which data were examined (18,19). The infections during pregnancy items were not assessed because they occur less frequently. Consequently, limited information is available on the quality of HCV infection data on birth certificates. Additionally, diagnostic criteria indicating a current HCV infection, that is, an HCV antibody test followed by a nucleic acid test for HCV RNA, cannot be determined from the checkbox item in the birth certificate.

Further, routine quality review of birth certificate data by the National Center for Health Statistics suggests underreporting of maternal HCV infection in some jurisdictions. For example, review of HCV infection data at the facility level revealed instances of large hospitals (more than 1,000 births per year) that would be expected to report some incidence of maternal HCV reporting

fewer than expected or no cases. This is based on their report of a lower than expected number of infections (a chi-squared test statistic comparing the facility's observed number of cases with the expected number based on data from the previous year for all other facilities of similar size and region exceeding 12) or no infections at all over the course of a year or years, suggesting systemic underreporting of HCV infection by these facilities. Accordingly, the results in this report are likely to underestimate the occurrence of maternal HCV infections. Studies of maternal HCV infection using birth certificate data should consider the possibility of underreporting and its effects on analysis.

Conclusion

Hepatitis C is an increasing public health issue in the United States (6,7). When present during pregnancy, hepatitis C can lead to negative health outcomes for both mothers and newborns (2–5,14,20,21). This report shows increasing HCV infection rates for nearly all characteristics examined from 2016 through 2020, and a decline or no change from 2020 through 2021. An advantage of using birth certificate data for surveillance is that information is collected on all women giving birth in the United States each year, allowing for analysis of national trends as well as differences among smaller population groups. Despite concerns with potential reporting issues, trends and patterns in the rate of HCV infection shown in this report are generally consistent with those of other studies, and these data provide opportunities to examine HCV infection rates among all women giving birth in the United States.

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List of Detailed Tables

Table 1. Number of cases and rate of maternal hepatitis C virus infection: United States, 2016–2021

[Rates are number of births to mothers with hepatitis C virus infection per 100,000 births]

Year[1]	Total births	Number of cases of hepatitis C virus infection	Rate (95% confidence interval)	Not stated[2]
2021	3,664,292	16,923	463.7 (456.7–470.7)	14,846
2020	3,613,647	18,246	506.5 (499.2–513.9)	11,429
2019	3,747,540	18,917	506.1 (498.9–513.3)	9,471
2018	3,791,712	18,927	500.3 (493.2–507.4)	8,460
2017	3,855,500	18,086	470.3 (463.5–477.2)	9,976
2016	3,945,875	16,588	421.4 (415.0–427.8)	9,624

[1]Significant increasing trend for 2016–2020 ($p < 0.05$); significant decline for 2020–2021 ($p < 0.05$).
[2]No response reported for "Infections present and/or treated during this pregnancy" item on the birth certificate.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

Table 2. Number of cases and rate of maternal hepatitis C virus infection, by selected characteristics: United States, 2016, 2020, and 2021

[Rates are number of births to mothers with hepatitis C virus infection per 100,000 births in specified group]

Characteristic	Rate (95% confidence interval)			Percent change	
	2016	2020	2021	2016– 2020	2020–2021
Total	421.4 (415.0–427.8)	506.5 (499.2–513.9)	463.7 (456.7–470.7)	†20	†-8
Age group					
Under 20	141.8 (125.8–157.8)	106.1 (90.1–122.1)	118.8 (101.2–136.3)	†-25	12
20–24	428.1 (413.8–442.4)	359.3 (344.9–373.7)	289.3 (276.2–302.4)	†-16	†-19
25–29	554.8 (541.2–568.4)	627.4 (612.1–642.7)	542.0 (527.7–556.2)	†13	†-14
30–34	394.1 (382.4–405.7)	566.5 (552.3–580.8)	531.9 (518.4–545.5)	†44	†-6
35–39	329.9 (314.7–345.1)	485.1 (467.0–503.3)	485.5 (467.8–503.2)	†47	0
40 and over	266.8 (237.8–295.8)	398.1 (363.7–432.4)	429.1 (394.3–464.0)	†49	8
Race and Hispanic origin					
Non-Hispanic, single race:[1]					
American Indian or Alaska Native	1,386.4 (1,256.9–1,515.9)	1,860.7 (1,698.6–2,022.7)	1,652.1 (1,497.2–1,806.9)	†34	-11
Asian	73.6 (63.0–84.1)	86.9 (74.5–99.2)	102.7 (89.1–116.3)	18	18
Black	137.2 (127.4–146.9)	176.1 (164.8–187.4)	179.3 (167.8–190.9)	†28	2
White	649.2 (638.2–660.2)	781.7 (769.0–794.4)	704.8 (692.9–716.8)	†20	†-10
Hispanic[2]	139.8 (132.2–147.5)	170.2 (161.5–178.9)	156.1 (147.8–164.3)	†22	†-8
Education level (ages 25 and over)[3]					
Less than high school	985.0 (949.5–1,020.5)	1,378.7 (1,332.2–1,425.3)	1,308.7 (1,262.1–1,355.3)	†40	†-5
High school diploma or GED	880.8 (856.2–905.5)	1,139.6 (1,112.0–1,167.3)	1,068.8 (1,042.1–1,095.4)	†29	†-6
Some college or associate's degree[4]	496.8 (481.6–511.9)	606.4 (589.0–623.8)	569.8 (553.0–586.6)	†22	†-6
Bachelor's degree or higher[5]	58.4 (54.1–62.7)	76.4 (71.4–81.5)	78.4 (73.4–83.3)	†31	3
Smoking status					
Did not smoke during pregnancy	171.0 (166.8–175.3)	222.3 (217.3–227.3)	222.9 (217.9–227.9)	†30	0
Smoked during pregnancy	3,579.4 (3,510.7–3,648.0)	5,223.6 (5,125.7–5,321.6)	5,302.0 (5,194.4–5,409.6)	†46	2
Trimester prenatal care began[6]					
1st	283.2 (277.1–289.3)	345.3 (338.4–352.3)	318.0 (311.4–324.6)	†22	†-8
2nd	718.3 (697.6–739.0)	833.5 (809.9–857.2)	750.0 (727.2–772.8)	†16	†-10
3rd	1,033.2 (985.8–1,080.7)	1,245.7 (1,189.6–1,301.8)	1,151.1 (1,097.2–1,205.1)	†21	†-8
No prenatal care	1,686.8 (1,583.6–1,790.0)	2,422.4 (2,304.8–2,539.9)	2,267.4 (2,158.6–2,376.2)	†44	-6
Payment source					
Medicaid	769.7 (756.4–783.0)	961.9 (946.3–977.5)	888.9 (873.8–904.0)	†25	†-8
Private insurance	127.3 (122.3–132.4)	138.5 (133.1–143.9)	138.8 (133.4–144.1)	†9	0
Self-pay	270.3 (244.9–295.7)	378.0 (345.8–410.1)	279.7 (252.0–307.3)	†40	†-26
Other[7]	453.1 (419.3–486.8)	444.8 (407.7–481.9)	444.1 (407.2–481.1)	-2	0

See footnotes at end of table.

Table 2. Number of cases and rate of maternal hepatitis C virus infection, by selected characteristics: United States, 2016, 2020, and 2021—Con.

[Rates are number of births to mothers with hepatitis C virus infection per 100,000 births in specified group]

Characteristic	Number of cases of hepatitis C virus infection			Number of births			Not stated[8]		
	2016	2020	2021	2016	2020	2021	2016	2020	2021
Total	16,588	18,246	16,923	3,945,875	3,613,647	3,664,292	9,624	11,429	14,846
Age group									
Under 20	300	169	176	212,062	159,808	148,850	515	587	652
20–24	3,433	2,384	1,868	803,978	665,595	648,484	2,088	2,153	2,722
25–29	6,360	6,407	5,527	1,149,122	1,024,402	1,023,989	2,811	3,235	4,209
30–34	4,368	6,043	5,909	1,111,042	1,069,984	1,115,055	2,558	3,280	4,202
35–39	1,802	2,728	2,863	547,488	564,059	592,179	1,281	1,755	2,477
40 and over	325	515	580	122,183	129,799	135,735	371	419	584
Race and Hispanic origin									
Non-Hispanic, single race:[1]									
American Indian or Alaska Native	434	497	430	31,452	26,813	26,124	148	102	96
Asian	187	190	219	254,471	219,068	213,813	289	367	561
Black	764	930	925	558,622	529,811	517,889	1,590	1,750	2,021
White	13,321	14,368	13,252	2,056,332	1,843,432	1,887,656	4,438	5,357	7,517
Hispanic[2]	1,281	1,471	1,378	918,447	866,713	885,916	2,268	2,241	2,870
Education level (aged 25 and over)[3]									
Less than high school	2,929	3,322	2,991	298,343	242,078	229,746	987	1,131	1,194
High school diploma or GED	4,864	6,451	6,125	553,796	567,924	575,461	1,588	1,860	2,363
Some college or associate's degree[4]	4,128	4,630	4,385	832,899	765,524	772,329	1,922	2,016	2,768
Bachelor's degree or higher[5]	702	893	971	1,203,917	1,170,649	1,242,689	1,942	2,435	3,546
Smoking status									
Did not smoke during pregnancy	6,219	7,536	7,730	3,643,801	3,400,012	3,480,665	7,946	9,655	12,715
Smoked during pregnancy	10,073	10,355	8,839	282,712	199,584	168,086	1,294	1,350	1,375
Trimester prenatal care began[6]									
1st	8,361	9,482	8,914	2,956,775	2,751,233	2,810,233	4,422	5,413	6,974
2nd	4,589	4,740	4,124	639,944	569,997	551,537	1,094	1,326	1,690
3rd	1,802	1,871	1,728	174,839	150,698	150,746	431	504	635
No prenatal care	1,009	1,591	1,631	61,226	67,751	74,360	1,410	2,071	2,428
Payment source									
Medicaid	12,824	14,448	13,192	1,670,265	1,506,889	1,490,085	4,140	4,802	5,929
Private insurance	2,463	2,509	2,601	1,937,207	1,815,741	1,879,814	2,887	4,065	5,445
Self-pay	434	529	392	161,546	141,174	141,270	991	1,209	1,098
Other sources[7]	688	550	553	152,360	124,041	125,073	505	381	560

† Significant change ($p < 0.05$).

[1]Race and Hispanic origin are reported separately on birth certificates; people of Hispanic origin may be of any race. In this table, non-Hispanic mothers are classified by race. Race categories are consistent with the 1997 Office of Management and Budget standards. Single race is defined as only one race reported on the birth certificate.

[2]Includes all people of Hispanic origin of any race.

[3]Significant decreasing trend ($p < 0.05$); analyses limited to women aged 25 and over to allow for completion of education.

[4]Includes Associate of Arts and Associate of Science.

[5]Includes Bachelor of Arts, Bachelor of Science, Master of Arts, Master of Science, Master of Engineering, Master of Education, Master of Social Work, Master of Business Administration, Doctor of Philosophy, Doctor of Education, Doctor of Medicine, Doctor of Dental Surgery, Doctor of Veterinary Medicine, Doctor of Laws, and Juris Doctor.

[6]Significant increasing trend ($p < 0.05$).

[7]Includes Indian Health Service, CHAMPUS or TRICARE, other government sources (federal, state, or local), and charity.

[8]No response reported for "Infections present and/or treated during this pregnancy" item on the birth certificate.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Natality data file.

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Contents

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