

Trends in Hepatitis B Infection and Immunity Among Women of Childbearing Age in the United States

Background

- Recent increases in hepatitis C virus (HCV) infection have been reported in the United States, at least in part owing to injection drug use. From 2006 to 2014, HCV infection rates nearly doubled among US women of reproductive age.¹
- The factors associated with increased rates of hepatitis C could also lead to increased rates of hepatitis B.
- Because mothers can transmit hepatitis B virus (HBV) to their children, women of reproductive age are a target group for efforts to eliminate HBV.
- Objectives:** In this Quest Diagnostics Health Trends™ study, investigators assessed 1) HBV rates among women of childbearing age; 2) geographical differences; and 3) correlation of HBV seroprotection rates with prevailing vaccination recommendations.

Methods

- The rate of HBV infection was estimated for women 15 to 44 years of age (N=8,871,965) at national and state levels, based on de-identified data from Quest Diagnostics (2011-2017).
- Four clinical subgroups were evaluated: acute HBV infection, chronic HBV infection, HBV exposure, and HBV immunity due to vaccination.
- Investigators defined and compared 3 non-overlapping subgroups based on prevailing HBV vaccination recommendations: “birth-dose cohort” (born in 1992 or later), “adolescent-dose cohort” (born in 1980 to 1991), and “no universal vaccination cohort” (born before 1980).

Results

- Acute HBV:** The rate of new acute HBV infection between 2011 and 2017 was stable at ~0.03%. However, rates increased in Kentucky, Alabama, and Indiana ($P < 0.03$ for each state).
- Chronic HBV:** The rate of new chronic HBV infections significantly declined from 0.83% in 2011 to 0.19% in 2017 ($P < 0.001$). However, rates increased in Mississippi, Kentucky, and West Virginia ($P \leq 0.05$ for each state).
- HBV exposure:** Overall, the rate of HBV exposure was 2.4% in 2011 and remained at 2.6% for the next 6 years. However, rates increased in 5 states over the same period: Kentucky, Mississippi, West Virginia, Ohio, and Maryland ($P \leq 0.01$ for each state).
- HBV immunity:** HBV immunity declined from 2011 to 2017.
- Cohort analysis:** The “no universal vaccination” cohort had the highest rates of acute infection, chronic infection, and HBV exposure; it also had the lowest rate of HBV vaccine-derived immunity.

Conclusions

- Among women of reproductive age in the United States, acute HBV infections remained stable and chronic HBV infections declined from 2011 to 2017.
- Rates of new HBV infections increased in certain Appalachian states, where rates of HCV infection have also increased¹; such increases may reflect the illicit injected opioid epidemic in this geographic area.
- Vaccine recommendations appear to have effectively decreased infection rates, but seroprotection waned over time.

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