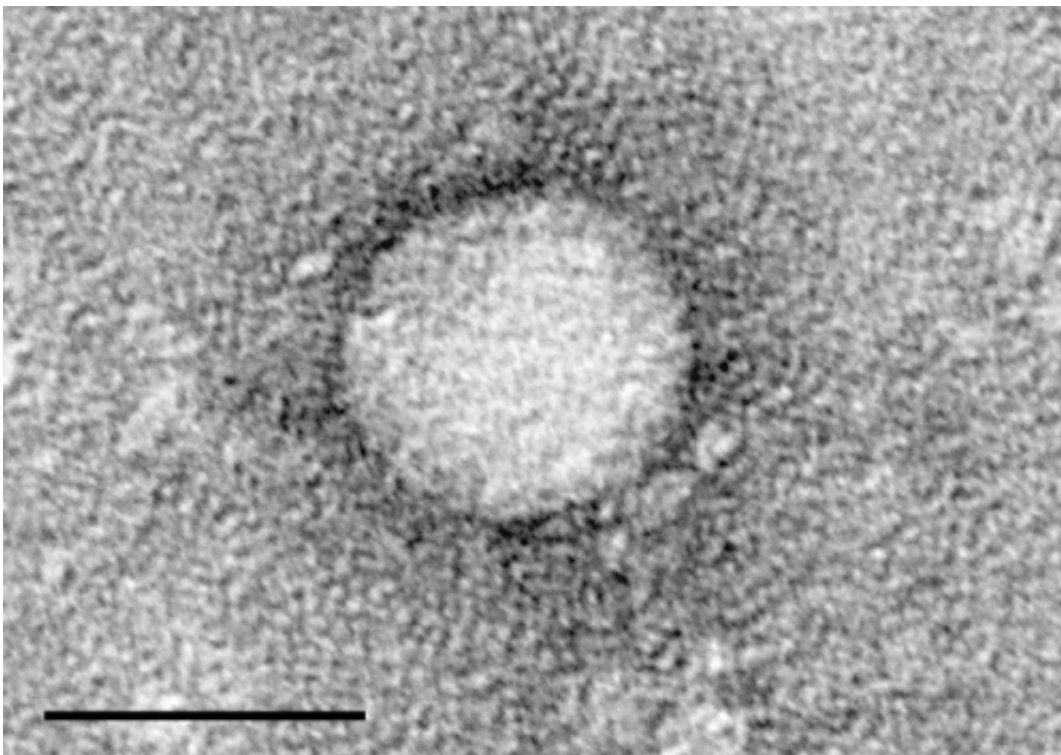


Public health surveillance system may underestimate cases of acute hepatitis C infection

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Electron micrographs of hepatitis C virus purified from cell culture. Scale bar is 50 nanometers. Credit: Center for the Study of Hepatitis C, The Rockefeller University.

A new study suggests that massive underreporting may occur within the system set up by the U.S. Centers for Disease Control and Prevention

(CDC) to estimate the incidence of acute hepatitis C virus (HCV) infection. In a paper receiving advance online publication in *Annals of Internal Medicine*, a team led by investigators from Massachusetts General Hospital (MGH) and the Massachusetts Department of Public Health (Mass. DPH) describes how less than 1 percent of a group of acute HCV patients participating in a long-term study of the disease had been reported to the CDC, largely because data that would have triggered reporting was either not available in a timely fashion or did not meet CDC definitions for acute HCV infection.

"The incidence of HCV can be likened to an 'iceberg,' in that only a fraction of cases—the proverbial 'tip'—is visible," says Arthur Kim, M.D., of the MGH Division of Infectious Diseases, senior author of the *Annals* paper. "That is due to the minimal symptoms that usually accompany acute HCV and the fragmented care available to those at highest risk, such as those who inject drugs. Many states have limited resources to track and identify HCV cases; and since even Massachusetts, where we have reasonable resources for HCV surveillance, found it difficult to report acute cases during the period we studied, it's likely that national estimates have been based on inaccurate numbers."

The authors note that, while the reported incidence of HCV infection in the U.S. has been decreasing since the 1990s, the rate of decrease has leveled off in recent years and may now be increasing due to an expanding opioid epidemic. "The CDC is already seeing increasing numbers of acute cases of HCV from a variety of jurisdictions—including a recent report from Kentucky, Tennessee, Virginia and West Virginia," says Kim. "How large nationally is the 'iceberg' of HCV, given the growing numbers of persons who have injected drugs? An accurate estimate of the incidence of HCV is crucial for guiding public health initiatives, setting priorities and planning for future needs."

The current investigation analyzed data from an NIH-funded study that followed a group of 183 Massachusetts patients diagnosed with acute HCV from 2001 to 2011. The analysis revealed that only 149 of those cases had been reported to the Massachusetts DPH and entered into their automated database, although the percentage of diagnosed cases that were reported improved over time. Of those reported cases, 130 were classified as a confirmed present or past HCV infection, based on then-current Mass. DPH case definitions, and 43 were investigated as potential acute HCV cases, based on meeting at least one CDC reporting criterion. However, only a single case fully met the definition of a confirmed reportable case, the others being disqualified because of factors such as the absence of specific symptoms or not meeting threshold lab test results.

Lead author Shauna Onofrey, MPH, of the Massachusetts DPH, says, "The Massachusetts surveillance system collects any evidence of HCV infection, allowing us to identify trends such as the epidemic of HCV in young people who inject drugs, despite this underestimation of acute infection. But in areas of the country where only acute HCV is reportable, this has likely delayed our understanding of the scope of this epidemic. Improved case definitions, along with continued partnership with health care providers to collect the necessary clinical information, will allow [public health](#) to better target resources to respond to this epidemic."

Kim notes that, in response to this study, the Massachusetts DPH has already changed its reporting procedures to improve capturing the change from a negative to a positive HCV antibody status by linking past test results with recent ones. Most recently the Council of State and Territorial Epidemiologists, the organizations that determines which health conditions are nationally reportable, changed its case definitions for active and chronic HCV infection, changes that will be officially adopted by the CDC in January 2016.

An assistant professor of medicine at Harvard Medical School, Kim says, "Clinicians may wish to follow the recommendation that persons at high risk for HCV infection—such as those who inject drugs—be tested on an annual basis. Overall, I would argue that we should devote more resources to surveillance, so that we can better track cases as part of a comprehensive effort to prevent HCV and HIV infection in people who inject drugs. Otherwise the costs—both personal and financial—of allowing these infections to spread and treating them in the future will be quite high."

Provided by Massachusetts General Hospital

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