

WISCONSIN AIDS/HIV PROGRAM NOTES

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Hepatitis C Surveillance and Cluster Investigations in Wisconsin

Mari Gasiorowicz, MA, Epidemiologist; Sheila Guilfoyle, Adult Viral Hepatitis Coordinator; Marisa Stanley, MPH, Epidemiologist; Chris Bering, MEd, Data Manager, Wisconsin AIDS/HIV Program and Adult Viral Hepatitis Programs; and Katarina Grande, MPH, Population Health Fellow, UW-Madison

Hepatitis C virus (HCV) infection presents a major challenge to public health. This article provides a brief overview of HCV infection and focuses on recent and ongoing epidemiologic investigations of HCV infection in Wisconsin.

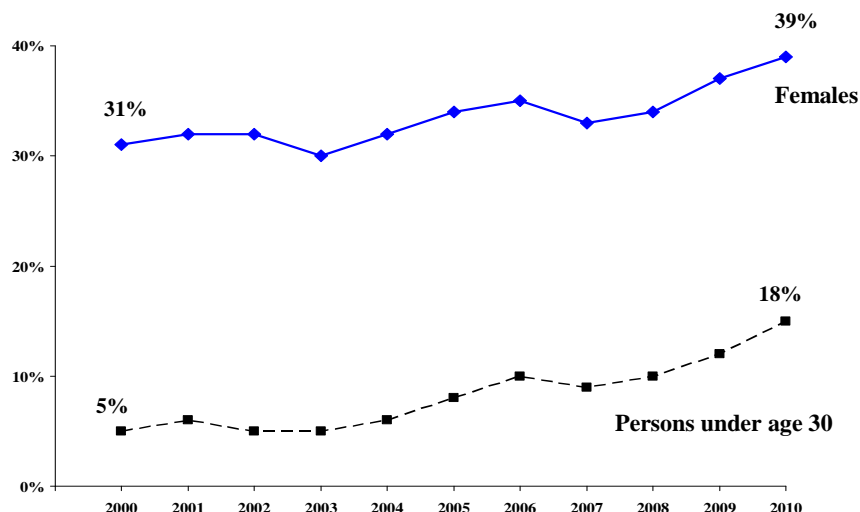
HCV infection is associated with significant morbidity and mortality. In the U.S., 3.2 to 5.2 million persons are currently infected (1-2% of the population), however approximately 75% of those individuals are unaware of their infection. HCV infection is the leading diagnosis associated with liver transplants.

Injection drug use (IDU) is the most commonly reported risk factor associated with new HCV infections. Sharing injection equipment is a highly efficient means of spreading HCV, 50%-80% of IDUs become infected with HCV within 5 years of first injection.

HCV infection in Wisconsin

HCV infection became a reportable communicable disease in Wisconsin in 2000 (Wisconsin Administrative Rule HFS 145), and electronic laboratory reporting (ELR) of HCV infection began in 2007 through the Wisconsin Electronic Disease Surveillance System (WEDSS). More than 30,000 cases were reported to the Wisconsin Division of Public Health (DPH) from 2000 through 2010, with more than 2,500 cases reported in 2010. For the period 2006-2010, case reports increased by 8%, with concomitant increases in the percentage of infections among females and persons under age 30, as shown in Figure 1. Another trend is the geographic shift in reported HCV cases from the southeastern region of Wisconsin to the north and west.

Figure 1: Females and persons under 30 as percentages of all reported cases of HCV, Wisconsin, 2000-2010



November 2011

Investigations

In 2010 and 2011, increases in cases of HCV infection became apparent in two areas of the state, a cluster of cases in six counties in northcentral Wisconsin and a cluster of cases in Manitowoc County (Figure 2).

Figure 2: Hepatitis C cluster investigations 2010-2011



The Wisconsin Division of Public Health (DPH), AIDS/HIV and Viral Hepatitis Programs, collaborated with local public health departments, the AIDS Resource Center of Wisconsin (ARCW), and other local partners to investigate increases in cases these two areas.

The objectives of the ongoing investigations and public health response are to:

- describe the demographic characteristics, risk behaviors, and social networks of persons recently diagnosed with HCV infection and their needle- and drug paraphernalia-sharing and/or sexual partners;
- determine the genetic relatedness of cases; and
- mount a public health response with appropriate prevention messages and referrals to services for persons who are infected or at risk for HCV infection.

Acute cases of HCV infection in northcentral Wisconsin

In 2010, DPH noted an increase in the number of HCV infections reported in young people from the counties of Langlade, Lincoln, Marathon, Oneida, Portage, and Wood. During 2004-2008, the six-county area averaged 8 new HCV case reports each year in persons under age 30. By contrast, 22 new cases were reported in this age group in 2009 and 26 new cases were reported during 2010. This cluster is characterized by a large number of acute cases in persons under the age of 30 diagnosed in urgent care and emergency rooms in the area. To date, no HIV coinfections have been identified.

DPH collaborated with local health departments, ARCW and the Centers for Disease Control and Prevention (CDC) to:

- analyze data, including HCV cases in WEDSS (N=47 cases under age 30 in 2009-2010) and medical records from area hospitals (N=36);

November 2011

- conduct questionnaire interviews of 17 persons under the age of 30 who had recently reported cases of HCV infection; and
- obtain serologic testing through the CDC to determine genetic relatedness of 16 samples from recent cases.

Incentives were used for completion of interviews and obtaining blood samples.

Preliminary key findings from the analysis include:

- New cases that participated in interviews had a relatively low level of education (41% had less than a high school graduation and 47% completed high school or a GED, with only 12% reporting any college);
- 82% were not employed;
- 53% did not have health insurance; and
- 94% had a history of incarceration.

History of injection drug use was widespread with 71% (N=12 of 17) acknowledging any history and 42% reporting use in 2011. Prescription opiates were the first drug injected by 67% of respondents, echoing a national trend in abuse of prescription drugs among adolescents and young adults.

While the HCV transmission risk of sharing needles is more widely known among those interviewed, risks associated with sharing other equipment is less well understood. More than half of respondents acknowledged sharing cookers (67%), cottons (75%), water (75%), engaging in backloading¹ (58%), and sharing snorting devices (94%). Several cases reported sharing drug use equipment within the cluster but serologic testing did not demonstrate that the cases were related genetically.

Increased cases of HCV infection in Manitowoc County

Manitowoc County has reported an increased number of cases of HCV in 2010 and 2011. From 2004-2009, Manitowoc County averaged 18 cases of HCV, of which 19% were among persons under age 30. In 2010, 36 cases were reported and 31% of the cases were under age 30. In the first three quarters of 2011, 56 cases were reported, 41% of which were of among persons under age 30. The large number of cases identified in 2011 is the result of the county health department's work in contacting and testing partners named by HCV cases.

As of September 30, 2011, the county health department has compiled a list of 165 individuals who were either reported being HCV infected or who were named by clients as partners at risk for HCV infection. Of the compiled list of 165 individuals, 55% are HCV cases, 12% are HCV-negative, and the remainder are yet to be tested. Four individuals have HIV. In contrast to the northcentral cluster described above, where an usually large number of individuals presented in emergency rooms with symptoms of acute infection, the Manitowoc cluster is driven by individuals seeking testing at the health department or in jail after hearing about an increase in cases HCV and HIV in their injection drug-using networks.

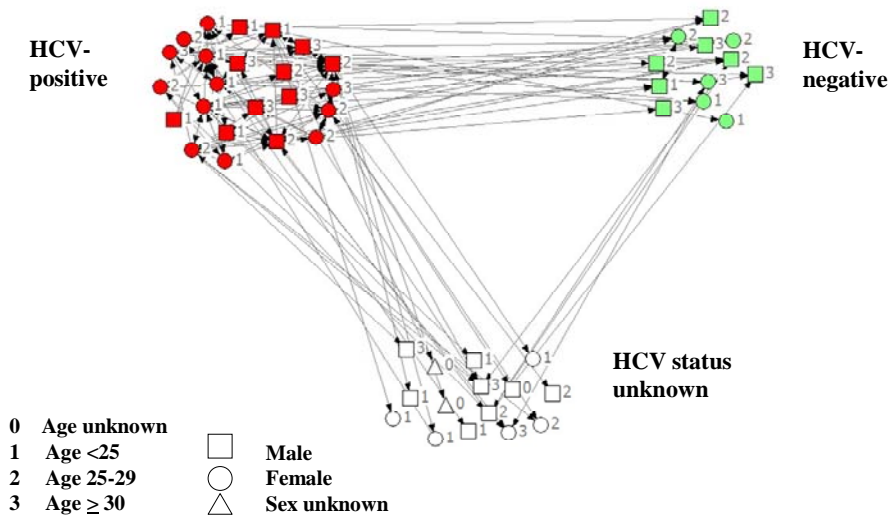
Manitowoc County Health Department's collaboration with the jail and drug unit of the police department as well as their ability to develop a high level of trust in the IDU community have contributed to the large number of individuals requesting testing and naming contacts.

¹ Backloading, as defined by the investigation interview tool, is the activity whereby an individual divides drugs with somebody else by using a needle, also called "piggybacking" or "splitting drugs wet".

November 2011

DPH is working with Manitowoc County to maintain information about cases and contacts in a database and using UCINET social networks software to visualize the relationships among individuals. Figure 3 is an example of a social networks diagram showing the individuals with the largest numbers of needle- and drug paraphernalia-sharing and/or sexual partners. DPH used the network analysis software to provide Manitowoc County with a list of highest priority individuals for follow-up testing, including individuals who were either HCV-negative or individuals with an unknown HCV status and a large number of HCV-positive needle-sharing partners.

Figure 3: Social network analysis of hepatitis C cases and contacts (N=50) with the largest numbers of needle-sharing and sexual partners, Manitowoc County, as of September 2011



Summary and implications of investigations

Major findings and implications derived from recent investigations in Wisconsin and elsewhere,² indicate:

- An increasing percentage of HCV cases in Wisconsin are under age 30 and female.
- Injection drug use is the primary route of transmission. Many users abused prescription drugs such as oxycodone before they began injecting drugs.
- Medical personnel should be aware of the increase in cases of HCV in young people and conduct HCV testing and behavioral risk assessment of individuals with symptoms of acute HCV infection.
- Testing for HCV in jails is an important intervention given the large percentage of individuals with HCV who have a history of incarceration.
- Major barriers in accessing treatment for HCV infection include the high cost of treatment; lack of health insurance; and limited access to testing, hepatitis vaccinations, and treatment for individuals in jails.

²CDC. Hepatitis C virus infection among adolescents and young adults --- Massachusetts, 2002—2009, MMWR 2011; 60: 537-541. Available from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6017a2.htm?s_cid=mm6017a2_w.

November 2011

Broader recommendations

The Institute of Medicine Report, *Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C*,³ released January 11, 2010, recommends the following strategies to address the national epidemic of viral hepatitis:

- outreach and other strategies to attract drug users to services;
- hepatitis A (HAV) and B (HBV) vaccination;
- HCV testing with pretest and posttest counseling;
- safe injection education;
- provision of sterile syringes, drug preparation equipment, and condoms; and
- drug treatment.

The IOM report recommends HCV testing for persons who:

- currently inject drugs;
- injected drugs in the past, even it was one time or occurred many years ago;
- have HIV infection;
- have abnormal liver test or liver disease;
- received donated blood or organs before 1992;
- have been exposed to blood on the job as a result of a needle stick or injury with a sharp object; and/or
- are receiving hemodialysis.

On May 12, 2011, the US Department of Health and Human Services (DHHS) released a comprehensive viral hepatitis plan, *Combating the Silent Epidemic of Viral Hepatitis: US Department of Health and Human Services Action Plan for the Prevention, Care and Treatment of Viral Hepatitis*. This plan was developed in response to the IOM hepatitis report noted above and establishes a roadmap for a coordinated federal response to the viral hepatitis epidemic, including support for capacity building at state and local levels. *Combating the Silent Epidemic of Viral Hepatitis* is available on the web at <http://www.hhs.gov/ash/initiatives/hepatitis>.

AIDS/HIV and Adult Viral Hepatitis Program staff continue to collaborate closely with local health departments and other community partners in the ongoing surveillance and investigation of HCV infections and the implementation of community-based interventions. The AIDS/HIV and Adult Viral Programs acknowledge contributions to the current investigations from staff in the regional and local health departments, the Wisconsin State Laboratory of Hygiene, the AIDS Resource Center of Wisconsin, primary and acute health care facilities, the Metro Drug Unit of Manitowoc Police Department, and the Centers for Disease Control and Prevention (CDC).

For additional information regarding hepatitis C and related resources in Wisconsin, visit the website of the Wisconsin Hepatitis C Program at:

<http://www.dhs.wisconsin.gov/communicable/hepatitis/>.

³ IOM (Institute of Medicine) 2010. Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C. Washington, DC: The National Academies Press. Available from: <http://www.iom.edu/Reports/2010/Hepatitis-and-Liver-Cancer-A-National-Strategy-for-Prevention-and-Control-of-Hepatitis-B-and-C.aspx>.