

# Viral Hepatitis in a Homeless Shelter in Hawai'i

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## Abstract

*It is estimated that as many as 21,000 people in the state of Hawai'i may be infected with HCV. Most of those infected with viral hepatitis are unaware they are infected. Complications from viral hepatitis include liver cirrhosis and hepatocellular carcinoma. Hawai'i has the highest incidence of hepatocellular carcinoma in the United States. In 2003 there were over 6000 homeless and over 155,000 people at-risk of becoming homeless living in the state of Hawai'i. Risk factors for hepatitis, such as drug use, tattoos, sexual contact, and sharing of personal hygiene equipment are more prevalent in the homeless population.*

*To determine the incidence of hepatitis B and C among a population of homeless individuals, a health fair was held at a Honolulu area homeless shelter with approximately 200 residents. The incidence of hepatitis B and C was determined by anti-HCV and HBsAg blood tests. A survey was also conducted regarding risk factors and basic demographics.*

*Fifty-nine homeless adults volunteered for testing and took the survey. Thirty-one (52%) volunteers were born in Micronesia, twenty-four (41%) were born in the United States, two (3%) were born in Samoa, one (2%) was born in the Philippines, and one (2%) was born in the Marshall Islands. Forty adults were tested for Hepatitis C antibody, three of which tested positive. The primary risk factor among this group was jail time (100%), followed by illegal drug injection (67%), tattoos (67%), ear/body piercing (67%), snorting drugs (33%), blood transfusions (33%), and a sex partner with hepatitis (33%). Forty adults were also tested for HBsAg, One of which tested positive. This was a recent immigrant from Micronesia.*

*Homeless people in Hawai'i are more likely to have hepatitis B or C because risk factors are common among this population. Additionally, a large proportion of Hawai'i's homeless people come from the Pacific Islands, where the prevalence of hepatitis B is one of the highest in the world. In addition there are significant risks of hepatitis spread among the homeless and into the general population as many homeless do not realize they are infected. The health fair approach was an effective means for screening homeless people for hepatitis B and C. Our preliminary information suggests homeless shelters may be a good place for education, screening, and possibly interventions as well.*

## Background

Hepatitis C virus (HCV) infection is the most common chronic blood-borne viral infection in the United States, infecting at least 3.9 million (1.8%) of Americans. HCV accounts for almost half of all patients in the United States with chronic liver disease.<sup>1</sup> Of the 40,000 new patients infected with HCV each year, 85% develop chronic hepatitis, of which 20% develop cirrhosis, which can lead to hepatocellular carcinoma (HCC) or death.<sup>2</sup> It is estimated that as many as 21,000 people in the state of Hawai'i may be infected with HCV; with most being unaware they are infected.<sup>3</sup> It is because of these infections that Hawai'i has the highest incidence of HCC in the United States.<sup>4</sup> The primary source of HCV infection is drug abuse by injection and snorting, although transfusions were a significant risk prior to the use of screening tests for the virus in 1992.

HBV infection may be spread via vertical transmission to children from infected mothers, as well as through horizontal transmission via intravenous drug use and sexual contact. The incidence of ac-

tive HBV in Americans has fallen dramatically since an effective vaccine became available in 1982.<sup>5</sup> There are approximately 1.25 million persons infected with HBV in the United States, but only 4,759 new infections were reported in 2006.<sup>6</sup> Hawai'i is different, however, because of the large immigrant population. Vaccine programs have not been available in most Asian and Pacific Island countries. Viremia has been studied by the World Health Organization with a prevalence reputed as high as 12% in Micronesia, 4% in Guam, 10% in the Philippines, and 20% in Tonga.<sup>7</sup> More than 4,000 people migrated to Hawai'i from outside the country in 2007, many of whom have not been vaccinated against viral hepatitis or lack knowledge of their HBV status.<sup>8</sup>

The homeless of Hawai'i are at particular risk for viral hepatitis due to their heritage and risk factors. The situation is compounded by this "silent epidemic" with infected people being asymptomatic for decades until their disease deteriorates into cirrhosis or erupts into carcinoma. Homeless populations lack adequate sources of health care and are less likely to seek treatment for conditions that are not acute illnesses such as with HCV.<sup>9</sup> For these reasons hepatitis infections among the homeless population often go undetected or are not adequately treated. This population is often difficult to reach due to cultural and language barriers, as well as the economic barriers that limit access to health care. The homeless also pose a risk to the rest of society by acting as a reservoir for the viruses.

In 2003, more than 6,000 people in Hawai'i were thought to be homeless with over 155,000 at risk of becoming homeless. A high proportion of the homeless have a history of drug abuse, incarceration, as well as prostitution.<sup>10</sup> Common tools of hygiene such as razors and toothbrushes may be unavailable or become a vehicle of transmission if shared. Hepatitis C virus has been found in up to one-third of tooth brushes<sup>11</sup> and 38% of razors used by those infected.<sup>12</sup>

An example of the problem can be drawn from the Micronesian population. One of the largest and fastest growing populations of homeless in Hawai'i comes from Micronesia, with over 8,000 migrants already residing in Hawai'i, and a migration rate that has increased 35% over the last six years.<sup>13</sup> Many among this group become homeless because they lack family support, job skills, and English-language proficiency. Many Micronesians leave their homeland for increased medical resources, possibly resulting in a higher rate of disease among the migrant population than those living in Micronesia.

In order to better understand the problems and risks of hepatitis among the homeless individuals in Hawai'i, we undertook an investigation of the new Next Step homeless shelter in Oahu, which housed 200 adults and 90 children as of 2006.

## Methods

We received approval from those responsible for the study and the human studies section of the University of Hawai'i Institutional Review Board. We then arranged a hepatitis Health Fair with speakers on hepatitis, music and free food on the evening of July 28, 2006.

People in the shelter were encouraged to be tested for hepatitis B and C using blood tests including assays for hepatitis C antibody and Hepatitis B surface antigen. T-shirts were offered for those who were tested. Those who volunteered were informed about the study and asked to fill out an approved survey form with demographic information and risk factors. The survey included questions regarding ethnicity, place of birth, history of prior hepatitis and HIV testing, vaccinations, risk factors for hepatitis B and C, family history of liver disease, and alcohol use. They were also provided information about available health care resources in the event that they tested positive for an infection. The blood collected was promptly delivered to a local laboratory for standard processing. Results were sent to the physician or clinic designated by the volunteer.

Information about those tested was collected and coded so that it could not be connected to the laboratory results with any significant personal identifiers. Results were tabulated and analyzed using standard methodology. Statistical significance was not determined due to the small number of people tested.

## Results

Fifty-nine adults volunteered for testing and took the survey. Of those, 19 (32%) were men and 40 (68%) were women. Thirty-three (56%) designated themselves as Micronesian, eleven (19%) Hawaiian, Six (10%) Caucasian, three (5%) Japanese, two (3%) Filipino, two (3%) Samoans, one (2%) Marshallese and one (2%) African-American. Thirty-one (52%) volunteers were born in Micronesia, twenty-four (41%) were born in the United States, two (3%) were born in Samoa, one (2%) was born in the Philippines, and one (2%) was born in the Marshall Islands.

Forty participants were tested for hepatitis C antibody. Three (7%) of these were found to be positive, all of whom were born in the United States. A comparison between individuals who tested positive and negative for Hepatitis C is shown in Table 1. Among the three who tested positive, the following risk factors were noted: jail time (3), injection drug use (2), tattoos (2), ear/body piercing (2), snorted drugs (1), blood transfusion (1), and sex partner with hepatitis (1). None had a history of amphetamine use, alcohol use, or family members with hepatitis or liver disease. Two had no knowledge of having the infection, while one of the three had been told of hepatitis C previously.

Table 1.— Risk Factors Among Homeless Individuals Tested for Hepatitis C Antibody

Risk Factor	HCV Positive (3 people)	HCV Negative (37 people)
Average age	52	38
Gender	1 male, 2 female	16 male, 21 female
Injection drug use	67%	5%
Snorted drugs	33%	13%
Used "ice" or amphetamines	0%	9%
Blood transfusion	33%	13%
Needle stick	0%	3%
Tattoos	67%	40%
Ear/body piercing	67%	54%
Sex partner with hepatitis	33%	5%

Forty volunteers were tested for hepatitis B surface antigen. Only one of these tested positive. This was a 26-year-old woman who emigrated from Micronesia to Hawai'i the year prior and was unaware of her infection.

The survey also indicated that only one person was aware of being vaccinated for hepatitis A. Seven people reported vaccination against HBV. Of the three people with HCV, none reported vaccination against HAV and only one reported vaccination against HBV.

## Discussion

Our limited study suggests the homeless people of Hawai'i are more likely to have viral hepatitis than the general population, as expected and reported by others. It also suggests the homeless are not aware of their infections or the relationship these infections have to risk factors. They also appear to be lacking in awareness of possible therapy for their infections as well as prevention of secondary infections through hepatitis vaccination. Interventions through health care programs designed for homeless shelters appear to offer a good opportunity to educate, test and offer treatment to stem the spread of these infections within and outside the homeless communities.

The number of inhabitants of the shelter who were tested and took the survey was encouraging. More than a quarter of the people who resided at the shelter volunteered for testing even though many regular residents were not present. The reasons others at the shelter did not participate in testing could not be determined. This study is limited by the small number of volunteers; however the findings suggest homeless shelters offer an opportunity for education, testing, and potential intervention with vaccination programs and possible treatment if indicated.

Further studies may be designed to document our findings, which are consistent with many other studies and unlikely to be false or not of concern. The "silent epidemic" of hepatitis B and C with the sequelae of liver cancer and cirrhosis can be reduced through funding for educational programs, testing, and interventions such as vaccines, safety kits, and treatments.

In conclusion, the homeless in Hawai'i appear to be at greater risk for having hepatitis B and C and are in need of interventions not only for the benefit of themselves but the rest of society. It is also clear the homeless are often not aware of their disease and lack awareness of the need for lifestyle changes such as abstinence from alcohol and drug abuse. They also lack understanding for the need for vaccination and the risks posed to others by sharing needles, snorting devices, razors, and even toothbrushes.

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