Acute Hepatitis C Virus Infections Attributed to Unsafe Injection Practices at an Endoscopy Clinic—Nevada, 2007

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2 figures omitted

On January 2, 2008, the Nevada State Health Division (NSHD) contacted CDC concerning surveillance reports received by the Southern Nevada Health District (SNHD) regarding two persons recently diagnosed with acute hepatitis C. A third person with acute hepatitis C was reported the following day. This raised concerns about an outbreak because SNHD typically confirms four or fewer cases of acute hepatitis C per year. Initial inquiries found that all three persons with acute hepatitis C underwent procedures at the same endoscopy clinic (clinic A) within 35-90 days of illness onset. A joint investigation by SNHD, NSHD, and CDC was initiated on January 9, 2008. The epidemiologic and laboratory investigation revealed that hepatitis C virus (HCV) transmission likely resulted from reuse of syringes on individual patients and use of single-use medication vials on multiple patients at the clinic. Health officials advised clinic A to stop unsafe injection practices immediately, and approximately 40,000 patients of the clinic were notified about their potential risk for exposure to HCV and other bloodborne pathogens. This report focuses on the six cases of acute hepatitis C identified during the initial investigation, which is ongoing; additional cases of acute hepatitis C associated with exposures at clinic A might be identified. Comprehensive measures involving viral hepatitis surveillance, health-care provider education, public awareness, professional oversight, licensing, and improvements in medical devices can help detect and prevent transmission of HCV and other bloodborne pathogens in health-care settings.

The objectives of the investigation were to conduct case-finding and review health histories of infected persons, to determine the source of transmission and implement control measures, to identify other patients at risk for exposure, and to assist in development of recommendations to prevent HCV transmission in health-care settings. Persons with acute hepatitis C were interviewed, and blood samples were obtained after these persons gave oral consent. Blood samples were sent to CDC for testing for HCV genotype at the NS5b region and phylogenetic relatedness at the hypervariable 1 region (HVR1) to help determine whether a common source of transmission existed. Specimens also were tested for other bloodborne infections (hepatitis B virus [HBV]) and human immunodeficiency virus [HIV]). Case-finding activities included SNHD's review of acute hepatitis C surveillance records, cross-matching of local HCV laboratory records with clinic A procedure logs, review of medical records for patients who underwent procedures at clinic A on the same day as HCV-infected persons, and serologic HCV, HBV, and HIV testing of staff. An extensive review of the clinic practices and procedures also was conducted, including observation of several endoscopic procedures and endoscopic reprocessing, observation of anesthesia practices, and interviews with staff members regarding their infection-control practices.

For this investigation, a person was defined as having health-care–associated acute hepatitis C if he or she (1) had symptoms of acute hepatitis within 6 months of having a procedure performed at clinic A during July-December 2007; (2) had laboratory-confirmed HCV infection (antibodies to HCV [anti-HCV]) by enzyme immunoassay (ELA) and recombinant immunoblot assay (RIBA) or ELA with an appropriate signal-to-cutoff ratio for a given assay, or presence of HCV RNA by polymerase chain reaction (PCR) in the absence of acute hepatitis A virus (HAV); and (3) did not have other risks for HCV infection.

In addition to the three persons identified initially, three other persons were determined to have health-care–associated acute hepatitis C, for a total of six cases diagnosed during July-December 2007. One of the three cases was identified by review of surveillance records, another by cross-matching local laboratory records with procedure records at clinic A, and the third by physician report after the start of the investigation. The six persons ranged in age from 37 to 72 years; four were female. All had signs and symptoms of acute hepatitis, including jaundice, abdominal discomfort, and laboratory evidence of liver inflammation with alanine aminotransferase (ALT) levels of 552-1,165 units/L.* Four of the six persons required hospitalization as a result of their HCV infection.

The six persons with acute hepatitis C had onset of symptoms in late October 2007 and November 2007, 35-90 days after undergoing procedures at clinic A and within the typical incubation period of 15-160 days. None had significant risk factors for HCV infection and none had other common exposures. One of the procedures was performed in July 2007; the other five were performed on the same day in September 2007. Five persons (four with procedures on the same day) for whom blood specimens were available at the time of this report had HCV genotype 1a. The four who had procedures on the same day had viral sequences with 99%-100% genetic similarity at HVR1, point-
Injection practices had been commonly pied its existing location, the unsafe in-


At least the 4 years that clinic A occu-


Syringes or needles used on HCV-


The viral sequence from the HCV-infected person who had the pro-


During the 2 days in which persons with health-care–associated hepatitis C had procedures at clinic A, 120 additional persons had procedures at the clinic. HCV test results for those persons are pending. Thirty-eight staff members at the clinic involved in direct patient care were available for test-


The medication was in-


Direct observation of infection-control practices at clinic A. Specifically, a clean needle and syringe were used to draw medication from a single-use vial of pro-


Backflow from the patient's intravenous catheter or from needle removal might have contami-


The patient required more sedation, the needle was removed from the syringe and re-


As soon as improper injection prac-


If a patient required more sedation, the needle was removed from the syringe and re-


CDC Editorial Note: Although case-


Among persons with acute HCV infections, 60%-70% are asymptomatic. Additionally, current laboratory tests cannot distinguish acute from chronic HCV infection, which makes identifying newly acquired cases difficult.


The investigation described in this report identified six cases of acute hepaticitis C in persons who underwent procedures at clinic A 35-90 days before the onset of their illness. None of the persons had significant risk factors for HCV infection within the typical incubation period (15-160 days before onset of symptoms), and five of the cases had procedures on the same day (September 21, 2007). The genetic related-


BOX. Injection safety recommendations


Never administer medications from the same syringe to more than one patient, even if the needle is changed.


Consider a syringe or needle contami-


Never use medications packaged as single-use vials for more than one patient.


Assign medications packaged as multi-use vials to a single patient whenever possible.


Do not use bags or bottles of intravenous solution as a common source of supply for more than one patient.


Follow proper infection-control practices during the preparation and administration of injected medications.


CDC Adapted from: CDC. Guideline for isolation precautions: preventing transmis-


Follow proper infection-control prac-


Do not enter a vial with a used sy-


Never use medications packaged as single-use vials for more than one patient.


Assign medications packaged as multi-use vials to a single patient whenever possible.


Do not use bags or bottles of intravenous solution as a common source of supply for more than one patient.


Follow proper infection-control practices during the preparation and administration of injected medications.


From the Centers for Disease Control and Prevention.
infected persons were reused to draw medication from a vial from which medicine was then drawn and administered to multiple persons, as was found in this investigation.

When gross errors or high-risk infection-control breaches that could lead to bloodborne pathogen transmission are recognized, including unsafe injection practices, potentially exposed persons should be notified and tested, even if transmission has not been confirmed. Those persons who are found to be infected can then obtain proper medical care. In addition to approximately 40,000 notifications that occurred as a result of this outbreak, in unrelated incidents, unsafe injection practices at three other outpatient clinics in two states have resulted in approximately 28,000 patient notifications during the preceding year (CDC, unpublished data, 2008). These situations could have been avoided if standard infection-control precautions, which include basic safe injection practices, had been followed (see box).

This outbreak highlights the importance of surveillance and investigation in detecting viral hepatitis transmission in health-care settings. Prevention of transmission in these settings requires understanding and adherence to recommended infection-control practices. Medical and nursing school curricula and other health-care professional training, licensing, and continuing education requirements should include infection-control content, including the safe handling and administration of parenteral medications, as areas of competency. Although hospitals employ infection-control professionals and regularly evaluate infection-control practices, such oversight might be limited in outpatient settings that are not associated with hospitals. As use of these settings grows, appropriate methods will be needed to provide similar oversight for outpatient clinics. Better surveillance, education, and oversight are needed to detect and prevent bloodborne pathogen transmission in ambulatory and other health-care settings.

REFERENCES

Human Rabies—Alberta, Canada, 2007

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On April 26, 2007, a patient from Alberta, Canada, died after 9 weeks in an intensive care unit (ICU) from encephalitis caused by a rabies virus variant associated with silver-haired bats. This report summarizes the clinical course of disease in that patient, who was treated using the Milwaukee Protocol, an experimental treatment protocol similar to one used for the rabies survivor described in 2005. This report also describes the subsequent epidemiologic investigations by three regional public health departments in Alberta. Rabies continues to be a cause of human death in the developed and developing world.

The findings in this report underscore the need for continued public education that promotes rabies prevention and postexposure prophylaxis while emphasizing the importance of bat exposure in rabies transmission.

Case Report

During August 2006, a man aged 73 years was bitten by a bat on his left shoulder while sleeping at home in rural Alberta. He killed and disposed of the bat and did not seek medical attention. The patient had no history of previous rabies vaccination and became ill on February 14, 2007, when he had onset of left shoulder pain. The pain was radicular, severe, and progressive and evolved to include left hand weakness during the next few days. The man sought care at a local emergency department on February 15, 17, and 19, and was administered analgesics.

On February 21 (the seventh day of clinical illness), the patient was admitted to the local hospital with general weakness, anorexia, and dysphagia. His family described the patient as irritable and not himself. Forty-eight hours after admission, the patient had left arm myoclonus and gasping respirations, suggestive of inspiratory spasms. His illness progressed with high fever, hypoxia, hypersalivation, and a decreased level of consciousness. He required intubation and was transferred to a tertiary-care hospital ICU on February 23 (the ninth day of clinical illness) with a presumptive diagnosis of aspiration pneumonia and sepsis. The history of a previous bat bite was not obtained at that time.

A computerized tomography scan of the head on admission to the tertiary-care hospital was unremarkable. A lumbar puncture was performed, and analysis of cerebrospinal fluid (CSF) indicated no white blood cells, normal glucose, and marginally elevated protein. A chest radiograph revealed a right lower lobe infiltrate, and treatment for presumed pneumonia with broad-spectrum antibiotics was initiated. The patient continued to deteriorate with cardiac dysrhythmias, profound hemo-