

Notes from the Field

Investigation of Hepatitis C Virus Transmission Associated with Injection Therapy for Chronic Pain — California, 2015

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On November 26, 2014, the California Department of Public Health (CDPH) contacted CDC concerning a report from the Santa Barbara County Public Health Department (SBPHD) regarding acute hepatitis C virus (HCV) infection in a repeat blood donor. The patient, who was asymptomatic, was first alerted of the infection by the blood bank and had no traditional risk factors for HCV infection. The donor had a negative HCV nucleic acid test (NAT) 56 days before the first positive NAT test, and an investigation into the donor's health care exposures and other potential risk factors, including injection drug use, incarceration, and long-term hemodialysis within this narrow exposure window, was conducted by SBPHD.

One such exposure occurred at a doctor's office (clinic A) where the blood donor received an injection procedure as part of prolotherapy. Prolotherapy, also known as regenerative injection therapy, is an increasingly popular, injection-based complementary and alternative medical therapy used to treat chronic musculoskeletal pain (1). Common substances injected include hypertonic dextrose, phenol-glycerine-glucose, and morrhuate sodium, a mixture of saturated and unsaturated fatty acids from cod liver oil (1). In addition, some patients also received platelet rich plasma therapy, a method of prolotherapy that involves injection of autologous blood with a high platelet-to-plasma ratio (2). No formal practice guidelines have been established for prolotherapy treatment, and no formal training is required to deliver this service. The initial investigation into clinic A revealed infection control breaches that included reentering multidose medication vials with a used syringe, use of single-dose medication vials for multiple patients, poor hand hygiene and inconsistent glove use, and lack of aseptic technique when handling injection equipment and medication. Clinic A was advised to stop these practices, and staff members were educated on bloodborne pathogen transmission. A subsequent visit to clinic A revealed ongoing poor infection control practices by staff members. After this visit, the county health officer issued an order to close clinic A immediately. A joint investigation into clinic A by SBPHD, CDPH, and CDC was initiated to identify additional cases and determine the source of transmission.

Patients who visited clinic A during the preceding 10 months (n = 400) were notified through mailed letters about their potential exposure to HCV, hepatitis B virus (HBV), and human immunodeficiency virus (HIV). SBPHD coordinated free testing through a local laboratory. Case-finding activities included review of medical records for patients who visited clinic A, review of state hepatitis surveillance records and cross-matching with clinic A records, and serologic HCV and HBV testing of staff members. Patients subsequently identified as having HCV infection were interviewed, and a blood specimen was sent to CDC for HCV genotype and phylogenetic testing.

In addition to the index patient, six other patients who received injections at clinic A were determined to have HCV infection by serologic testing. Among these six patients, five were unaware of their HCV infection status. Four of the patients without a prior HCV diagnosis or risk factors for HCV had injection procedures performed in clinic A on the same day as the index patient. A common injected substance used in all the infected patients was not identified through medical chart review, although documentation of injected local anesthesia was inconsistent. No new HBV or HIV infections were found.

Identification of a case of acute HCV infection in a frequent blood donor without other risk factors should be considered a sentinel event and should prompt public health investigation, because this could indicate a possible health care-associated infection (3). HCV transmission from health care exposures has been documented previously (Table) (4,5). Many of these outbreaks are attributable to the same unsafe injection practices observed in clinic A, namely reuse of syringes to access medications used for multiple patients (5). Although hospitals have established infection control education, resources, and oversight, health care settings where complementary and alternative medical therapies are administered, especially those that involve injections, might benefit from infection control training and inclusion in health care-associated infection surveillance networks, such as CDC's National Healthcare Safety Network (6). All health care settings, including complementary medical settings where injections occur, should follow guidelines for safe injection practices (7).

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TABLE. Health care–associated hepatitis C virus outbreaks reported to CDC, by setting — 2008–2015

Setting	Year	State	Persons notified for screening*	Outbreak-associated infections†	Known or suspected mode of transmission§
Outpatient					
Prolotherapy clinic	2015	CA	<1,500	5	Syringe reuse
Insulin infusion clinic	2015	CA	92	9	Fingerstick device (lancet holder) designed for personal use was reused on other patients; inadequate cleaning and disinfection of glucometer before reuse
Pain management clinic	2015	MI	122	2	Syringe reuse
Cardiology clinic	2015	WV	>2,000	5	Use of single-dose vials for >1 patient
Hematology oncology clinic	2012	MI	>300	10	Specific lapses in infection control not identified
Pain management clinic	2011	NY	466	2	Suspected syringe reuse
Pain management clinic	2010	CA	2,293	2	Syringe reuse
Clinic	2010	FL	3,929	5	Drug diversion
Alternative medicine clinic	2009	FL	163	9	Syringe reuse
Endoscopy clinics	2009	NY	3,287	2	Suspected syringe reuse
Ambulatory surgical centers (single-purpose endoscopy clinics) (n = 2)	2008	NV	>60,000	9	Syringe reuse
Cardiology clinic	2008	NC	1,200	5	Syringe reuse
Total	—	—	>75,000	65	—
Long-term care					
Skilled nursing	2013	ND	>500	46	Epidemiologic analysis suggested podiatry care, phlebotomy, and nail care
Hospital					
Hospital	2015	UT	7,217	>7	Drug diversion
Hospital	2012	AZ	>11,000	45	Drug diversion¶
		GA			
		KS			
		MD			
		MI			
		NH			
		NY			
		PA			
Hospital-based surgery service	2009	CO	>8,000	26	Drug diversion
Total	—	—	>26,217	>78	—
Hemodialysis facility					
Outpatient	2015	NJ	237	2	Multiple lapses in infection control identified, including hand hygiene and glove use, vascular access care, medication preparation, cleaning, and disinfection
Outpatient	2015	NJ	84	2	Multiple lapses in infection control identified, vascular access care, medication preparation, cleaning, and disinfection
Outpatient	2015	NJ	98	2	Multiple lapses in infection control identified, including hand hygiene and glove use, vascular access care, medication preparation, cleaning, and disinfection
Outpatient	2015	PA	115	3	Multiple lapses in infection control identified, medication preparation close to treatment area
Outpatient	2015	PA	130	3	Multiple lapses in infection control identified, medication preparation close to treatment area
Outpatient	2015	PA	97	2	Multiple lapses in infection control identified, medication preparation close to treatment area, use of single-dose vials for one patient, no separation of dirty and clean areas

See table footnotes on next page.

TABLE. (Continued) Health care–associated hepatitis C virus outbreaks reported to CDC, by setting — 2008–2015

Setting	Year	State	Persons notified for screening*	Outbreak-associated infections†	Known or suspected mode of transmission§
Outpatient	2015	CA	28	3	Breaches in environmental cleaning and disinfection practices
Outpatient	2014	WA	186	3	Breaches in environmental cleaning and disinfection practices
Outpatient	2014	TN	62	2	Breaches in environmental cleaning and disinfection practices
Outpatient	2014	NJ	69	4	Breaches in environmental cleaning and disinfection practices
Outpatient	2014	NJ	97	2	Breaches in environmental cleaning and disinfection practices
Outpatient	2012	PA	66	18	Multiple lapses in infection control identified, including hand hygiene and glove use, vascular access care, medication preparation, cleaning, and disinfection
Outpatient	2012	CA	42	4	Specific lapses in infection control not identified
Outpatient	2011	GA	89	6	Failure to maintain separation between clean and contaminated workspaces
Outpatient	2010	TX	171	2	Specific lapses in infection control not identified
Outpatient	2009	MD	250	8	Breaches in medication preparation and administration practices
Hospital-based	2009	NJ	144	21	Breaches in environmental cleaning and disinfection practices
Outpatient	2008	NY	657	9	Breaches in medication preparation and administration practices
					Breaches in environmental cleaning and disinfection practices
Outpatient	2008	NY	657	9	Failure to consistently change gloves and perform hand hygiene between patients; breaches in environmental cleaning and disinfection practices
Total	—	—	2,622	96	—

Abbreviations: HBV = hepatitis B virus; HCV = hepatitis C virus.

* The number of persons notified for screening is dependent upon information and resources available at the time of investigation and might underestimate the total number of persons at risk.

† Outbreak-associated HBV and HCV infections are defined as those with epidemiologic evidence supporting health care–related transmission and include patients/residents identified with acute infection, or previously undiagnosed chronic infections with epidemiologic evidence indicating that these were likely outbreak-related incident cases that progressed from acute to chronic. Patients/residents identified as likely (previously infected) sources for transmission are not included. In the outbreak investigation setting, case definitions are based on laboratory profile and clinical evidence rather than CDC surveillance case definitions, which might omit asymptomatic cases. Acute HBV is typically defined as having a positive hepatitis B surface antigen and positive IgM core antibody, or positive surface antigen and negative total core antibody (early infection). Chronic HBV is typically defined as having a positive hepatitis B surface antigen, positive total core antibody and negative IgM core antibody. There are no serologic markers to differentiate between acute and chronic HCV infection; defining an infection as possible health care transmission is dependent upon epidemiologic evidence along with a new finding of hepatitis C antibody and/or RNA positivity in a person not previously known positive (whether or not symptoms or alanine aminotransferase elevation are present).

§ All modes of transmission are patient-to-patient unless otherwise indicated.

¶ Drug diversion is the shift of a prescribed substance, typically opioids, from the individual for whom it was prescribed to another person for illicit use.

References

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