

Update: Cholera Outbreak — Haiti, 2010

On October 19, 2010, the Haitian Ministry of Public Health and Population (MSPP) was notified of unusually high numbers of patients from Artibonite and Centre departments who had acute watery diarrhea and dehydration, in some cases leading to death. Within 4 days, the National Public Health Laboratory (LNSP) in Haiti isolated *Vibrio cholerae* serogroup O1, serotype Ogawa, from stool specimens obtained from patients in the affected areas by an investigation team from MSPP and CDC Haiti. This report describes the investigation of the initial cases, the ongoing outbreak of cholera in Haiti, and initial control measures. Since the initial identification of cholera, the outbreak has expanded to include cases in seven of Haiti's 10 departments and the capital city of Port-au-Prince. As of November 13, MSPP had reported 16,111 persons hospitalized with acute watery diarrhea and 992 cholera deaths, 620 of which occurred among hospitalized patients. Prevention and control measures implemented by MSPP with assistance from governmental and nongovernmental partners include 1) providing better access to treated drinking water; 2) providing education on improvement of sanitation, hygiene, and food preparation practices; 3) advising ill persons to begin using oral rehydration solution immediately and seek health care at the onset of watery diarrhea; 4) enhancing cholera treatment capacity at existing health-care institutions; and 5) establishing cholera treatment centers.

Initial Epidemiologic Investigation

During October 21–23, an investigation was conducted by MSPP and CDC Haiti at five hospitals in Artibonite Department. The first patients with diarrhea and severe dehydration were admitted to these hospitals on October 19. During October 20–22, the majority of patients at these hospitals with diarrhea and severe dehydration were aged >5 years, and the majority of the patients at these hospitals who died were aged >5 years, suggesting that the outbreak might be caused by cholera.

On October 19 and 20, stool specimens from patients in health facilities in Artibonite and Centre departments were brought to LNSP, where rapid tests on eight specimens

were positive for *V. cholerae* O1. LNSP identified *V. cholerae* serogroup O1, serotype Ogawa, from three specimens on October 22. Following confirmation of cholera, hospital staff members and public health authorities advised community members, including patients and their families, to boil or chlorinate their water before drinking.

During October 21–23, the investigative team used a standardized questionnaire to interview a convenience sample of 27 patients in the five hospitals in Artibonite Department. Most of these patients resided or worked in rice fields in communities located alongside a stretch of the Artibonite River approximately 20 miles (32 kilometers) long (Figure 1). Eighteen (67%) of the 27 hospitalized patients reported consuming untreated water from the river or canals before illness onset; 18 (67%) did not routinely use chlorine for treating water, and 21 (78%) practiced open defecation.

Cholera Surveillance and Laboratory Findings

A suspected case of cholera is defined as profuse, acute watery diarrhea in a patient. A confirmed case of cholera requires laboratory confirmation by culture of *V. cholerae*. When a department reports a case of laboratory-confirmed cholera, the department is declared “cholera affected.” Only reports from cholera-affected departments are tallied and included in the MSPP daily surveillance summaries.

Since the initial identification of cholera in Artibonite and Centre departments, the outbreak has expanded to include cases

INSIDE

- 1480 Occupational Transmission of *Neisseria meningitidis* — California, 2009
- 1484 Smoking Restrictions in Large-Hub Airports — United States, 2002 and 2010
- 1488 Syringe Exchange Programs — United States, 2008
- 1492 Announcements



Syringe Exchange Programs — United States, 2008

Persons who inject drugs should use a new, sterile needle and syringe for each injection (1). Syringe exchange programs (SEPs) provide free sterile syringes and collect used syringes from injection-drug users (IDUs) to reduce transmission of bloodborne pathogens, including human immunodeficiency virus (HIV), hepatitis B virus, and hepatitis C virus (HCV). As of March 2009, a total of 184 SEPs were known to be operating in 36 states, the District of Columbia (DC), and Puerto Rico (North American Syringe Exchange Network [NASEN], unpublished data, 2009). Of these, 123 (67%) SEP directors participated in a mail/telephone survey conducted by NASEN and Beth Israel Medical Center (New York, New York) that covered program operations for the calendar year 2008. To characterize SEPs in the United States, this report summarizes the findings from that survey and compares them with previous SEP survey results from the period 1994–2007 (2–3). In 2008, the 123 SEPs reported exchanging 29.1 million syringes and had budgets totaling \$21.3 million, of which 79% came from state and local governments. Most of the SEPs reported offering preventive health and clinical services in addition to basic syringe exchange: 87% offered HIV counseling and testing, 65% offered hepatitis C counseling and testing, 55% offered sexually transmitted disease screening, and 31% offered tuberculosis screening; 89% provided referrals to substance abuse treatment. Providing comprehensive prevention services and referrals to IDUs, such as those offered by many SEPs, can help reduce the spread of bloodborne infections and should increase access to health care and substance abuse treatment, thus serving as an effective public health approach for this population.

In March 2009, staff members from Beth Israel Medical Center and NASEN mailed surveys to directors of all 184 SEPs registered with NASEN at that time. The surveys included closed-ended questions regarding the number of syringes* exchanged, the types of services provided, budgets, and funding sources during 2008. Follow-up telephone interviews were conducted with the program directors by research staff members to clarify unclear or missing responses received on hard copy surveys. To protect

* For this report, the term “syringes” refers to both syringes and needles.

participant confidentiality, many SEPs do not collect client-level data (e.g., number of persons who exchanged syringes or used other services); thus, the survey did not ask for such information. The data collection and analysis methods for this report are similar to those used in previous SEP surveys (2–3). The analyses for this report are limited to frequencies. To assess changes in funding over time, budgets from previous years were adjusted to 2008 dollars.

Data were compiled to show the numbers of programs known to NASEN, numbers of programs completing the surveys, syringes exchanged, and budget information for the surveys conducted from 1994–1995 through 2008 (Table 1). Rapid growth occurred in the number of SEPs in the United States in the 1990s and early 2000s, followed by more incremental growth through 2008. The 123 SEPs participating in the 2008 survey reported operating in 98 cities[†] in 29 states and in DC.[§] A total of 120 SEPs reported budget information for 2008. The reported 2008 budgets for these 120 SEPs totaled \$21.3 million; individual program budgets ranged from \$300 to \$2.3 million, with a median of \$63,258.[¶] Approximately one third (32%) of SEPs operated with a budget of <\$25,000, 34% with \$25,000–\$100,000, and 37% with >\$100,000. SEPs reported multiple sources of financial support in 2008, including private (individuals and foundations) and public (state and local government); 71% of the 120 SEPs that provided budget information received public funding, totaling nearly \$16.8 million. The proportion of the SEP budgets coming from public sources increased from 62% during 1994–1995 to 79% in 2008 (Table 1).

[†] Cities with more than one SEP: Los Angeles, Redwood City, Sacramento, and San Francisco, California; Detroit, Michigan; Minneapolis, Minnesota; New York, New York; Portland, Oregon; Seattle and Tacoma, Washington; and Madison and Milwaukee, Wisconsin.

[§] States with SEPs: California (30); Washington (16); Wisconsin (14); New York (11); Connecticut (five); Illinois (five); Oregon (five); Maine, Michigan and Minnesota (three each); Alaska, DC, Louisiana, New Jersey, North Carolina, Pennsylvania, Texas, and Vermont (two each); Arizona, Colorado, Delaware, Indiana, Maryland, Massachusetts, Missouri, Montana, Ohio, and Oklahoma (one each). New Mexico and Hawaii have integrated statewide programs that operate in multiple cities/counties but were considered as single programs in this survey.

[¶] Some SEPs received funding from a common source, and specific allocations of those funds to individual programs was not always possible.

TABLE 1. Characteristics of syringe exchange programs (SEPs) — United States, 1994–2008

Characteristic	1994–1995	1996	1997	1998	2000	2002	2004	2005	2006	2007	2008
No. of SEPs known to NASEN*	68	101	113	131	154	148	174	166	188	186	184
No. of known SEPs participating in survey (%)	60 (88)	87 (86)	100 (88)	110 (84)	127 (82)	126 (85)	109 (63)	118 (71)	150 (80)	131 (70)	123 (67)
No. of cities with known SEPs participating in survey	44	69	78	77	98	97	88	90	113	100	98
No. of states† with known SEPs participating in survey	21	29	33	33	36	32	32	29	32	31	30
No. of syringes exchanged (millions)	8.0	13.9	17.5	19.4	22.6	24.9	24.0	22.5	27.6	29.5	29.1
Total of SEP budgets (in millions of dollars)	6.3	7.3	8.4	8.6	12.0	13.0	11.6	14.5	17.4	19.6	21.3
Total of SEP budgets (in millions of dollars, adjusted to 2008 standard)	10.8	11.6	13.0	12.9	16.8	16.6	13.6	16.3	18.8	20.3	21.3
% of total budget from public funding	62	62	67	69	74	67	76	74	79	73	79

* North American Syringe Exchange Network.

† Includes the District of Columbia and/or Puerto Rico.

SEPs were categorized as small, medium, large, or very large based on the number of syringes exchanged during 2008 (Table 2); SEPs reported exchanging a total of 29 million syringes in 2008. The 15 largest programs exchanged approximately 18 million syringes (62% of all syringes exchanged).

In 2008, many SEPs operated multiple sites, including fixed sites and mobile units. The total number of hours that clients were served by SEPs was summed for all sites operated by each program. The total number of scheduled hours per week ranged from <1 to 168 (mean: 29 hours per week; median: 24 hours per week). Delivery of syringes and other risk-reduction supplies to residences or meeting spots was reported by 41% of SEPs. A total of 111 (90%) SEPs allowed persons to exchange syringes on behalf of other persons (i.e., secondary exchange).

In addition to exchanging syringes, SEPs provided various supplies, services, and referrals in 2008; the percentage of programs providing each type of service was similar for the period 2005–2008 (Table 3). In 2008, all SEPs provided alcohol pads, and nearly all (98%) provided male condoms. Most (89%) provided referrals to substance abuse treatment. Other services also offered by SEPs included counseling and testing for HIV (87%) and HCV (65%), and screening for sexually transmitted diseases (55%) and tuberculosis (31%). Vaccinations for hepatitis A and B were provided by nearly half the programs (47% and 49%, respectively).

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Editorial Note

The findings in this report indicate that, in 2008, the number of SEPs and the number of syringes exchanged remained similar to recent years, in contrast to a period of rapid growth from the mid-1990s through the early 2000s. Budgets for SEPs increased from 1994–1995 through 2008, with the majority of funds coming from public sources. SEP budgets support syringe exchange and various prevention services, clinical care, and referral to substance abuse treatment. SEPs contribute to a comprehensive approach to the prevention of bloodborne infections among IDUs and can serve as a frontline source of health services for IDUs (4). The need for a comprehensive approach to HIV prevention for IDU is reflected in the implementation guidance for syringe services programs issued by the U.S. Department of Health and Human Services** and the National HIV/AIDS Strategy.††

** Available at <http://www.cdc.gov/hiv/resources/guidelines/syringe.htm>.

†† Available at <http://www.whitehouse.gov/sites/default/files/uploads/NHAS.pdf>.

TABLE 2. Number of syringes exchanged by syringe exchange programs (SEPs), by program size — United States, 2008

SEP size	No. of syringes exchanged per SEP	No. of SEPs	Total no. of syringes exchanged	% of total syringes exchanged
Small	<10,000	20	67,593	0.2
Medium	10,000–55,000	33	982,317	3.4
Large	55,001–499,999	54	9,894,182	34.1
Very large	≥500,000	15	18,113,914	62.3
Total		122*	29,058,006	100.0

* One of 123 programs responding to the survey did not track the number of syringes exchanged in 2008.

TABLE 3. Services and supplies provided by syringe exchange programs (SEPs) — United States, 2005–2008

Supplies and services	Survey year (No. of SEPs)							
	2005 (n = 118)		2006 (n = 150)		2007 (n = 131)		2008 (n = 123)	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Prevention supplies								
Male condoms	115	(97)	148	(99)	130	(99)	121	(98)
Female condoms	98	(83)	115	(77)	112	(85)	97	(79)
Alcohol pads	117	(99)	148	(99)	131	(100)	123	(100)
Bleach	82	(69)	89	(59)	77	(59)	69	(56)
On-site medical screenings and services								
HIV counseling and testing	96	(81)	126	(84)	115	(88)	107	(87)
Hepatitis C counseling and testing	66	(56)	94	(63)	72	(55)	80	(65)
Hepatitis B counseling and testing	44	(37)	71	(47)	30	(23)	30	(24)
Hepatitis A counseling and testing	28	(24)	57	(38)	22	(17)	22	(18)
Hepatitis B vaccination	46	(39)	77	(51)	58	(44)	60	(49)
Hepatitis A vaccination	43	(36)	74	(49)	59	(45)	58	(47)
Sexually transmitted disease (STD) screening	57	(48)	75	(50)	64	(49)	67	(55)
Tuberculosis screening	33	(28)	39	(26)	31	(24)	38	(31)
On-site medical care	34	(29)	50	(33)	43	(33)	47	(38)
Referrals								
Substance-abuse treatment	102	(86)	133	(89)	120	(92)	110	(89)
Education								
HIV/AIDS prevention/STD prevention	116	(98)	139	(93)	124	(95)	118	(96)
Hepatitis A,B, and C prevention	114	(97)	148	(99)	127	(97)	119	(97)
Safer injection practice	113	(96)	129	(86)	126	(96)	116	(94)
Abscess care/vein care	107	(91)	141	(94)	123	(94)	113	(92)
Male condom use	112	(95)	145	(97)	125	(95)	120	(98)
Female condom use	97	(82)	119	(79)	104	(79)	91	(74)

Multiple reviews have concluded that syringe exchange leads to reductions in injecting risk behaviors among IDUs (5,6). HIV incidence among IDUs declined by approximately 80% from 1988–1990 to 2003–2006 in the United States (7). Injection-related transmission is the only adult transmission category to show a reduction of this magnitude. Despite that overall decline, IDUs continue to represent a substantial proportion of persons with new HIV diagnoses, accounting for approximately 8,700 (15%) new infections in 2006 (7); moreover, injection-drug use is the most common risk factor for HCV infection (8). Economic evaluations have concluded that SEPs are cost-effective in preventing HIV infection (9). Additional services offered by SEPs, such as prevention of HCV infection and referrals to substance abuse treatment, should confer even greater benefits (10); additional research is needed on the role of SEPs in the prevention of HCV infection.

The findings in this report are subject to at least four limitations. First, the extent of SEP activity in the United States is almost certainly underestimated because 61 (33%) of the SEPs known to NASEN

did not complete the survey. Other SEPs might exist that are not known to NASEN. Second, certain SEPs operating within larger, community-based organizations were not able to report exact budget information because of difficulties in allocating shared costs across administrative units. Third, client-level information on the extent and use of preventive health services is not available. Finally, data collected were based on self-reports by program directors and were not verified independently.

The data in this report are from program operations during 2008, in the midst of an economic downturn in the United States. State and local governments continue to experience budget difficulties, which might impact public health adversely. However, the ban on federal funding of SEPs was modified for fiscal year 2010 funds, so that SEPs are now eligible for federal support, subject to provisions regarding the location of these programs. Ongoing, systematic data collection and evaluation are important for monitoring changes in the variety and volume of SEP services in the context of these types of political and economic changes.

What is already known on this topic?

Injection-drug users (IDUs) account for 15% of new human immunodeficiency virus (HIV) infections in the United States. Persons who inject drugs should use a new, sterile syringe for each injection to prevent transmission of HIV and other bloodborne infections.

What does this report add?

In 2008, 123 of 184 syringe exchange programs (SEPs) surveyed reported exchanging 29.1 million syringes; 120 SEPs reported budgets totaling \$21.3 million, of which 79% came from state and local governments. Most SEPs offered preventive health services in addition to basic syringe exchange.

What are the implications for public health practice?

Given the number of SEPs providing preventive health services, as well as provision of sterile syringes, these programs contribute to a comprehensive approach to the prevention of HIV and other bloodborne infections among IDUs.

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References

1. National Institute on Drug Abuse. Principles of HIV prevention in drug-using populations: a research based guide. Bethesda, MD: National Institutes of Health; 2002. NIH publication no. 02-4733. Available at http://www.nida.nih.gov/pohp/faq_1.html. Accessed November 10, 2010.
2. CDC. Syringe exchange programs—United States, 2005. *MMWR* 2007;56:1164–7.
3. Des Jarlais D, McKnight C, Goldblatt C, Purchase D. Doing harm reduction better: syringe exchange in the United States. *Addiction* 2009;104:1441–6.
4. Academy for Educational Development. Preventing bloodborne infections among injection drug users: a comprehensive approach. Atlanta, GA: US Department of Health and Human Services, CDC; 2000. Available at <http://www.cdc.gov/idu/pubs/ca/comprehensive-approach.pdf>. Accessed November 10, 2010.
5. Institute of Medicine. Preventing HIV infection among injecting drug users in high risk countries: an assessment of the evidence. Washington, DC: The National Academies Press; 2006.
6. Palmateer N, Kimber J, Hickman M, Hutchinson S, Rhodes T, Goldberg D. Evidence for the effectiveness of sterile injecting equipment provision in preventing hepatitis C and human immunodeficiency virus transmission among injecting drug users: a review of reviews. *Addiction* 2010;105:844–59.
7. Hall HI, Song R, Rhodes P, et al. HIV Incidence Surveillance Group. Estimation of HIV incidence in the United States. *JAMA* 2008;300:520–9.
8. CDC. Surveillance for viral hepatitis—United States, 2007. *MMWR* 2009;58(No. SS-3).
9. Belani HK, Muennig PA. Cost-effectiveness of needle and syringe exchange for the prevention of HIV in New York City. *J HIV AIDS Soc Serv* 2008;7:229–40.
10. Des Jarlais DC, Perlis T, Arasteh K, et al. Reductions in hepatitis C virus and HIV infections among injecting drug users in New York City, 1990–2001. *AIDS* 2005;19(Suppl 3):S20–5.

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