

Integrated Hepatitis C Testing and Linkage to Care at a Local Health Department Sexually Transmitted Disease Clinic: Determining Essential Resources and Evaluating Outcomes

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Abstract: Guidance about integration of comprehensive hepatitis C virus (HCV)-related services in sexually transmitted disease (STD) clinics is limited. We evaluated a federally funded HCV testing and linkage-to-care program at an STD clinic in Durham County, North Carolina. During December 10, 2012, to March 31, 2015, the program tested 733 patients for HCV who reported 1 or more HCV risk factor; 81 (11%) were HCV-infected (ie, HCV antibody-positive and HCV ribonucleic acid-positive). Fifty-one infected patients (63%) were linked to care. We concluded that essential program resources include reflex HCV ribonucleic acid testing; a dedicated bridge counselor to provide test results, health education, and linkage-to-care assistance; and referral relationships for local HCV management and treatment.

An estimated 3.5 million persons in the United States have chronic hepatitis C virus (HCV) infection, which can progress to cirrhosis, liver cancer, and death—yet only about half of those living with chronic HCV are aware of their status.^{1,2} The Centers for Disease Control and Prevention (CDC) recommends HCV testing for high-risk populations, including persons who have ever injected drugs, are human immunodeficiency virus (HIV)-infected, or born between 1945 and 1965 (“baby boomers”).³

Because local health department (LHD) sexually transmitted disease (STD) clinics serve populations at high risk for HCV infection, targeted testing performed at STD clinics might be an

effective strategy for identification of HCV-infected persons in the community.^{4–7} However, HCV-infected persons often need specialty care for management—a resource that most LHDs lack.⁸ Resources are also limited for integrating comprehensive viral hepatitis services in STD clinics, including prevention education, testing, and linkage to care for HCV treatment.⁴

Among residents of Durham County, the sixth largest county in North Carolina (NC), there are barriers to viral hepatitis testing and treatment, including health care costs, lack of transportation, and disease stigma.⁹ In December 2012, the Durham County Department of Public Health implemented an HCV testing and linkage-to-care program funded by CDC, called HepTLC (Hepatitis C Testing and Linkage to Care), which operated in multiple sites throughout Durham County, including the county’s STD clinic, the county jail, a health care for the homeless clinic, and community testing sites.^{10,11} As a public health program, the primary goal of HepTLC was to identify HCV-infected (ie, HCV antibody-positive and HCV ribonucleic acid (RNA)-positive) persons in the community and link those persons to care; the program was not designed or resourced to follow up patients through the HCV care cascade. We specifically evaluated the HepTLC program at the county’s STD clinic to (1) demonstrate the effect of targeted HCV testing on infection-status awareness and linkage to care among HCV-infected persons; and (2) identify essential resources needed for integrating HCV-related services in this practice setting.

MATERIALS AND METHODS

Program Activities and Resources

The Durham County STD Clinic evaluates approximately 4500 patients annually for STD-related conditions and provides referral for immunizations, substance abuse, mental health counseling and primary care services in the community. There are no costs incurred by patients for any of the services provided. As part of the HepTLC program, all STD clinic patients completed a self-assessment form during the clinic visit, including demographics and HCV risk factors.^{3,4} The HCV risk factors included the following: HIV-positive, ever injected drugs, born between 1945 and 1965 (baby boomers), ever received hemodialysis, received an organ transplant or blood transfusion before 1992, received an unregulated tattoo, ever incarcerated, sex with a person who has ever injected drugs; sex with an HCV-infected person, ever received a diagnosis of syphilis, ever exchanged sex for money or drugs, >3 sexual partners in the 60 days before HCV testing, and men who have sex with men. Patients reporting ≥ 1 of these HCV-related risk factor were offered HCV testing at no charge. Additionally, patients who self-reported a previous HCV-positive result and requested testing through the HepTLC program were

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RESULTS

Testing Population and Linkage to Care

From December 10, 2012, to March 31, 2015, a total of 8431 patients were evaluated at the STD clinic and 733 unique, individual patients (9%) met the criteria for targeted HCV testing. Of these, 480 (66%) were men, 507 (69%) were black, and 370 (51%) were from the “baby boomer” birth cohort. Twenty-seven (4%) patients were HCV antibody-positive and HCV RNA-negative, indicating previous, resolved infection, and 81 (11%) were positive for both HCV antibody and RNA, indicating chronic infection (Table 1). Seventy-eight (11%) patients received HCV antibody testing on more than 1 occasion during the evaluation period.

Among the 81 unique HCV-infected patients, 58 (72%) were men, 51 (63%) were black, and 58 (72%) were birth cohort members. Statistically significant associations with HCV status were found for patient self-reported race ($P<0.001$) and for patient age category ($P<0.001$) but not for patient sex ($P=0.2$). The highest proportion of HCV infections were detected among patients who reported ever injecting drugs (49 [52%] of 95), whereas a lower proportion of HCV infections were observed among “baby boomers” (58 [16%] of 370). Among HCV-infected patients, 6 (7%) did not report a risk factor as defined by CDC guidelines; 5 of these patients underwent HCV testing on the basis of having ever been incarcerated or having a tattoo, and 1 patient reported no risk factors.

Of the HCV-infected patients, 51 (63%) were linked to care through the program. The 30 patients (37%) not linked to care were persons who were incarcerated, refused services, or could not be located. Of those patients linked to care, 34 (67%) patients attended the health department’s onsite HCV clinic and 17 (33%) patients attended their appointments at an academic medical center clinic. After the onsite HCV clinic was established in November 2013, only 4 (8%) of patients linked to care attended the initial medical evaluation at a local academic medical center clinic.

Survey of STD Clinic Staff

Five (71%) of 7 STD clinic staff responded to the online survey. Respondents reported that HCV testing activities had minimal effect on the clinic workflow, but added an estimated 10 minutes to each patient interaction. Per all respondents, reflex HCV RNA testing maintained clinic efficiency by eliminating a return visit by patients for a second blood draw. All respondents indicated that knowledge of local HCV management and treatment resources with HCV specialists was a critical component for successful linkage to care. Furthermore, respondents indicated that the HCV bridge counselor eased program implementation by providing HCV test results, education messages, and patient navigation services.

CONCLUSIONS

During the evaluation period, the Durham County STD clinic successfully implemented an HCV testing and linkage-to-care program, as evidenced by an increased number of HCV-infected persons who were aware of their HCV status and attended their first medical evaluation appointment. The HCV infection prevalence of 11% among the tested population, comparable to a recent study in a similar setting, supports the need for integrated HCV services in the STD clinic setting.¹⁴

The distribution of HCV risk factors reported by the infected population is consistent with the established epidemiology.^{2,3} Although STD clinics should follow established, risk factor-based HCV testing guidelines, knowledge of local HCV epidemiology and the clinic’s target population could inform expanded testing.

provided testing, because clinicians had no means of verifying previous results. Specimens were collected for HCV antibody and reflex RNA testing (ie, automatic confirmatory testing for positive antibody results) and transported to a local hospital laboratory for analyses.^{4,12}

Patients were asked to return to the clinic within 2 weeks of testing, at which time health educators or an HCV bridge counselor provided test results and, among HCV-infected (ie, HCV antibody-positive and HCV RNA-positive) patients, referrals for combination hepatitis A/B vaccinations at the LHD. The primary role of the HCV bridge counselor was to assist these HCV-infected patients with linkage to care. The bridge counselor also provided additional posttest counseling, including guidance for liver protection and testing recommendations for sexual partner (s). The bridge counselor attempted to contact HCV-infected patients who did not return for their results through a minimum of 2 telephone calls, 2 letters, and a home visit.

Two academic medical centers, the University of North Carolina at Chapel Hill (Chapel Hill, NC) and Duke University (Durham, NC), participated in the HepTLC program as referral sites. The bridge counselor referred HCV-infected patients to the patient’s choice of health care provider. In November 2013, a biweekly onsite HCV clinic at the LHD was also established, providing the opportunity for HCV-infected patients to be referred to either the onsite clinic or to one of the academic medical centers. Initial medical evaluations were provided regardless of patient insurance status at all locations. As an incentive to attend their initial appointment, two bus passes and a US \$10 gift card were provided to each referred patient.

The HepTLC budget for program implementation in Durham County was approximately US \$200,000 per year for 2 years (December 2012 to December 2014), with a no-cost award extension through March 2015. Approximately 25% (US \$50,000) of yearly project funds were directed toward HepTLC activities at the STD clinic, which included the costs of HCV testing; data collection; and staffing (project coordination, phlebotomist, and bridge counselor), who also supported other testing locations.

Program Evaluation

We identified the components of the HepTLC program at the STD clinic and developed a logic model on the basis of stakeholder interviews and program documentation (see Supplemental Digital Content, logic model, <http://links.lww.com/OLQ/A214>).¹³ We used the program’s patient database for the period of December 10, 2012, to March 31, 2015, to characterize the population tested for HCV, including demographics, risk factors, and test results.^{3,4} We compared patient demographics (self-reported race [white and nonwhite], sex [female and male], and age category [≤ 40 years and ≥ 41 years]) by HCV status using χ^2 tests ($\alpha=0.05$). Among HCV-infected patients, we estimated the proportion linked to care, which was defined as attending an initial appointment for medical evaluation of their HCV infection.¹⁰ We compared the number of patients linked to care at an onsite HCV clinic with the number linked to care at local academic medical centers to assess patient preference for referral. An online survey of all STD clinic providers (3 nurse practitioners, 2 nurses, and 2 health educators) was implemented to identify barriers and solutions related to integrating HCV testing in the clinic.

Human Participant Compliance

This evaluation was reviewed by CDC for human subject protection and designated as public health practice and not subject to institutional review board review.

TABLE 1. Characteristics of Patients Tested for HCV Infection at a STD Clinic—Durham County, North Carolina, December 10, 2012, to March 31, 2015

Characteristics	HCV-Infected,* n = 81 (%)	Not HCV-Infected,† n = 652 (%)	Total, N = 733
Race/ethnicity (self-identified)			
Black	51 (10)	456 (90)	507
White	27 (19)	115 (81)	142
Hispanic	0 (0)	51 (100)	51
Other	1 (7)	14 (93)	15
Missing	2 (11)	16 (89)	18
Sex			
Male	58 (12)	422 (88)	480
Female	22 (9)	223 (91)	245
Transgender	0 (0)	5 (100)	5
Missing	1 (33)	2 (67)	3
Age, y‡			
<21	0 (0)	39 (100)	39
21–40	17 (7)	238 (93)	255
41–60	56 (15)	323 (85)	379
>60	8 (14)	49 (86)	57
Missing	0 (0)	3 (100)	3
Risk factors§			
Multiple sexual partners	14 (7)	190 (93)	204
Injection drug use	49 (52)	46 (48)	95
Sex with injection drug user	16 (21)	60 (79)	76
Recent syphilis diagnosis¶	3 (3)	114 (97)	117
Sex with HCV-positive partner	8 (23)	27 (77)	35
Hemodialysis	0 (0)	1 (100)	1
Blood transfusion before 1992	2 (6)	34 (94)	36
Tattoo	40 (16)	207 (84)	247
Men who have sex with men	1 (1)	90 (99)	91
Ever received money or drugs for sex	13 (20)	53 (80)	66
Ever incarcerated	55 (25)	166 (75)	221
HIV-positive	1 (4)	26 (96)	27
Born between 1945 and 1965 (baby boomers)	58 (16)	312 (84)	370
No identified risk factors	0 (0)	4 (100)	4
Missing	2 (18)	9 (82)	11

*Evidence of active HCV infection (HCV antibody-positive and HCV ribonucleic acid-positive).

†No evidence of HCV infection (HCV antibody-negative) or evidence of resolved HCV infection (HCV antibody-positive and HCV ribonucleic acid-negative).

‡Age at first HCV testing at Durham County Department of Public Health during December 10, 2012, to March 31, 2015.

§>1 risk factor per individual is possible.

¶Defined as a diagnosis of syphilis within the past 12 months of HCV test date.

||Defined as having ever received chronic hemodialysis.

Evaluation findings demonstrate that HCV testing and linkage-to-care services can be successfully integrated into routine STD clinic activities. However, a number of essential resources are required. First, partnering with a laboratory to perform reflex HCV RNA testing eliminates the need for HCV antibody-positive patients to return for a second blood draw. Second, a dedicated bridge counselor facilitates comprehensive HCV services and assists patients in the logistics of linkage to care (eg, transportation) without impacting existing clinic workflows. Third, STD clinic efforts to integrate services should consider the referral preferences of their target population and partner with easily accessible providers (eg, federally qualified health centers) in the nearby area.¹⁵ Most HCV-infected patients (67%) linked to care through the HepTLC program selected referral to the onsite HCV clinic for their initial medical evaluation, indicating a preference to return to the LHD for medical care.

This evaluation entailed multiple limitations. HCV risk factors were self-reported and might not represent actual infection risk. A record of refusals was not maintained; therefore, an HCV testing participation rate cannot be determined. Linkage to care was defined as attending an initial appointment for medical

evaluation of HCV infection; however, comprehensive information is not available regarding reasons for not being linked to care or regarding subsequent HCV treatment initiation or outcomes. Only 5 (71%) of 7 STD clinic staff responded to the online survey, limiting conclusions about program sustainability. Finally, findings from this evaluation might be most relevant to LHDs with similar size and resources as the Durham County STD clinic. Replicability of this program to other LHDs might also be limited by available funding.

Policy and Practice Implications

Local health department STD clinics serve populations at high risk for HCV infection. The HCV-related services, including prevention education, testing, and linkage to care, can be successfully integrated into STD clinic activities. Because cost must be considered when planning integrated services, program priorities should include laboratory resources to provide reflex HCV RNA testing; a dedicated HCV bridge counselor to provide test results, health education, and linkage-to-care assistance; and the establishment of local and accessible health care providers for HCV referral and management.

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