

## Acceptability of Rapid Point-of-Care Hepatitis C Tests Among People Who Inject Drugs and Utilize Syringe-Exchange Programs

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People who inject drugs may benefit from point-of-care hepatitis C virus (HCV) testing offered at syringe exchanges. We sought to understand whether this population would be willing to undergo rapid HCV testing. We found that there was broad support for rapid HCV testing, especially among younger people who inject drugs with high perceived risk.

**Keywords.** hepatitis C screening; people who inject drugs; rapid diagnostics; syringe exchange programs.

Community-based programs, such as syringe-exchange programs (SEPs), improve access to testing services for vulnerable populations [1]. People who inject drugs (PWID) are heavily affected by hepatitis C virus (HCV), but they are often unaware of testing and treatment options [2–5]. Therefore, PWID are a high priority for screening. One challenge in testing PWID, particularly in community settings, is linkage to care and treatment after a positive test. Rapid testing eliminates the need to return for test results, which makes it possible to immediately collect a serum sample for HCV ribonucleic acid testing in those who test positive; therefore, rapid testing has potential utility in high-risk populations such as PWID. A highly sensitive and specific rapid point-of-care (POC) HCV antibody test was approved by the US Food and Drug Administration in 2012 [6]. Such a model of rapid testing streamlines the continuum of HCV care by reducing the number of patients who are lost to follow-up during the diagnostic process and may be part of a cost-effective testing strategy [7, 8]. Despite its potential clinical

utility, few studies have examined the acceptability of the POC test among PWID. Morano et al [9] found acceptance of standard HCV testing among clients of a mobile medical clinic with prior injection exposures, but these participants did not favor rapid POC testing over standard phlebotomy. Hayes et al [10] found that the rapid test was preferred to standard phlebotomy. Therefore, although the POC HCV test is a potentially valuable tool for testing, there is a lack of clarity regarding acceptability among PWID. We sought to determine the acceptability of a rapid HCV test among PWID who participate in SEPs.

### METHODS

We surveyed PWID utilizing a free, multisite SEP operating in Southern Wisconsin between June and August 2012. The Life-point Needle Exchange operates (1) through office-based locations in the cities of Madison and Milwaukee and (2) via mobile van units that serve the surrounding rural and suburban communities. All individuals who speak and read English, were 18 years or older, and reported a history of injecting drugs were invited to participate. Participants provided verbal informed consent and were paid \$10 in cash as compensation for completing the survey. The study protocol was approved by the Minimal Risk Institutional Review Board at the University of Wisconsin School of Medicine and Public Health.

We developed a pilot questionnaire assessing demographic characteristics, HCV serostatus, injection drug use frequency and behaviors, perceived HCV risk, and attitudes toward rapid HCV testing. Perceived HCV risk was assessed using a 10-level visual analog scale with 0 being “no risk,” 5 being “moderate risk,” and 10 being “high risk.” We evaluated acceptability of rapid HCV tests with the following question: “Would the availability of a rapid test for hepatitis C (one like the rapid human immunodeficiency virus test which can give you a result in 20 minutes) make you more likely to get tested for HCV?” Hayes et al [10] used a similar approach. Therefore, those who answered in the affirmative are labeled as “acceptors” in our analysis. The survey was self-administered by the respondent using a tablet computer to decrease the likelihood of socially desirable responding.

We entered responses into a deidentified database for analysis. We used descriptive statistics to characterize the study population and examine differences with respect to demographic and behavioral characteristics between those who were rapid test acceptors and those who were not. We dichotomized sociodemographic and clinical variables and analyzed them using Wald  $\chi^2$  tests or Fisher’s exact test where appropriate, with significance defined as  $P < .05$ . Next, we constructed a multivariable logistic regression model to determine the odds of being a rapid test acceptor. We

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pursued a stepwise backward elimination approach to model construction, in which we included all variables with a univariate *P* value <.10 and retained those with a *P* value <.05 in multivariate testing. We report odds ratios (ORs) and 95% confidence intervals (CIs) for the final model. Statistical analyses were conducted using STATA (Cary, NC), version 11.

## RESULTS

Over the 8-week study period, 862 consecutive SEP participants were invited to participate in the study. Five hundred fifty-three eligible participants (64%) agree to complete the survey, and 497 participants provided information on their HCV serostatus. Of the 553 participants who completed the survey, 423 participants (77%) reported no known history of HCV infection, and 413 (75%) provided a response regarding acceptability of HCV testing with a rapid POC test. Characteristics of these 413 self-reported HCV-seronegative participants are shown in Table 1, stratified by willingness to accept a rapid HCV test. The mean age was 30.6 (SD = 5.5 months), and participants were predominantly male (67%) and white (85%). Eighty percent of these respondents reported a standard HCV test in the past year; 20% of which were performed through the SEP.

Eighty-five percent (351 of 413) of the participants with no known history of HCV infection were rapid HCV test acceptors, and 80% of those reported testing in the past year. Univariate regression showed that white participants (OR, 2.5; 95% CI, 1.3–3.6), participants with history of incarceration (OR, 1.8; 95% CI, 1.0–3.3), participants with risky injection practices (OR, 2.0; 95% CI, 1.0–3.8), and participants with highest perceived risk of HCV (OR, 2.1; 95% CI, 1.2–3.8) were more likely to be rapid test acceptors. In the final stepwise multivariate logistic regression model measuring the association of subject characteristics with rapid test acceptance, those who were <30 years (OR, 3.2; 95% CI, 1.1–9.3) and who perceived themselves as high risk (>7 on the analog scale) for HCV acquisition (OR, 3.0; 95% CI, 1.1–8.3) were rapid test acceptors. In contrast, those with daily injection drug use (OR, 0.25; 95% CI, .08–.84) were less likely than those who injected less than once daily to be rapid test acceptors.

## DISCUSSION

The use of rapid HCV tests may be a useful tool for testing and linkage to care in PWID, a high-risk population. Although rapid testing at SEPs may not turn the tide of the HCV epidemic, they provide a critical link to health services for a highly marginalized population who do not otherwise access the healthcare system. Because SEPs already provide POC HIV testing and are convenient for PWID due to their mobility and nonjudgmental nature, rapid HCV testing could be provided there as well.

Our data suggest that PWID are willing to be tested for HCV and are accepting of rapid testing. This aligns well with the work done by Hayes et al [10], but it differs slightly from other data

**Table 1. Characteristics of PWID Sample, by Acceptance of Rapid HCV Test<sup>a</sup>**

Characteristics	Acceptors of Rapid HCV Test	Nonacceptors of Rapid HCV Test
Overall number of subjects	351	62
Age (mean years±SD)	30.4 ± 0.5	31.8 ± 1.38
Gender (%)		
Male	235 (67)	44 (71)
Female	116 (33)	18 (29)
Race (%)		
White	298 (85)	43 (69)
Non-white	53 (15)	19 (31)
Ethnicity (%)		
Hispanic	21 (6)	4 (6)
Non-Hispanic	330 (94)	58 (94)
Education (%)		
Completed some college or technical school	168 (48)	26 (42)
Completed no college of technical school	183 (52)	36 (58)
Currently employed (part- or full-time) (%)		
No	208 (59)	40 (65)
Yes	143 (31)	22 (35)
Area of residence (N = 403) (%)		
Urban	137 (40)	29 (48)
Suburban/rural	205 (60)	32 (52)
Insurance status (%)		
Yes	168 (48)	23 (37)
No	183 (52)	39 (63)
Visited a doctor in the past 6 mo (N = 160) (%)		
No	27 (20)	4 (17)
Yes	110 (80)	19 (83)
Have a regular PCP (%)		
No	183 (52)	34 (55)
Yes	168 (48)	28 (45)
Been to the ED in past 6 mo (N = 328) (%)		
No	185 (68)	37 (67)
Yes	88 (32)	18 (33)
Ever been incarcerated (N = 405) (%)		
No	195 (57)	43 (70)
Yes	149 (43)	18 (30)
Risky injection practices <sup>b</sup> (N = 408) (%)		
No	48 (14)	15 (24)
Yes	298 (86)	47 (76)
Daily injection drug use (N = 408) (%)		
No	113 (33)	19 (31)
Yes	233 (67)	43 (69)
Ever overdosed on drugs (N = 408) (%)		
No	248 (72)	46 (74)
Yes	98 (28)	16 (26)
Standard HCV test in the past year (%)		
No	70 (20)	9 (15)
Yes	281 (80)	53 (85)
Perceived risk <sup>c</sup> (%)		
Low-moderate	80 (23)	24 (39)
High	271 (77)	38 (61)

Abbreviations: ED, emergency department; HCV, hepatitis C virus; PCP, primary care physician; PWID, people who inject drugs; SD, standard deviation.

<sup>a</sup>All values are n (%) unless otherwise noted. All n values are 413 unless otherwise noted. Response rates to individual questions account for the variability.

<sup>b</sup>Risky injection practices include sharing drug paraphernalia (needles, syringes, filters, cookers, rinse water, or containers) or splitting drugs in the past 6 months.

<sup>c</sup>High perceived risk denotes a score of ≥7 on a 10-level visual analog scale regarding the question, "How would you describe your level of risk for getting hepatitis C?"

[9]. Morano et al [9] also found wide acceptance of HCV testing among persons with prior injection drug use. In contrast to our findings, they found that those with injection-related risk had no preference as to the testing modality [9]. One possible, yet unsubstantiated, explanation for this difference lies in “bundling” services at SEPs. Because participants in our study were routinely offered rapid HIV tests, an additional test may not be perceived as an inconvenience.

The most encouraging finding was the risk profile of those who were likely to accept rapid testing. Although many respondents had low perceived risk of HCV acquisition, those with high-perceived risk were more likely to be rapid test acceptors. In addition, 67% of those with daily injection drug use and 86% of those with “risky injection practices” were rapid test acceptors. We are encouraged that the highest risk PWID are willing to accept rapid HCV testing. If people with identified HCV infection are willing to be linked to care, they could ultimately receive curative therapies with new oral direct-acting agents.

There are limitations to our study. All participants resided in Southeastern Wisconsin, were existing clients of a large, well established SEP, and the majority were white males. Therefore, they may not be representative of PWID in other regions and may limit generalizability. The low response rate of 64% indicates that the results may disproportionately reflect attitudes of individuals who are more willing to participate in health research, who may also be more willing to accept HCV testing. This notion may also be reflected by the fact that 80% of the respondents reported previous testing. Our survey may have excluded individuals who are less likely to engage in healthcare and thus are inherently at higher risk for HCV. This is a limitation of any research conducted with a difficult-to-reach population, such as PWID, that does not actively seek out participants. However, it is encouraging that HCV testing is common in those actively engaged in risk reduction strategies. Next, the single question used in this survey to assess acceptability of rapid HCV testing may not necessarily predict future testing behavior. Finally, we did not clarify the method of rapid testing. Further research is needed to determine whether the availability of rapid HCV tests results in increased uptake in HCV testing. These potential sources of bias notwithstanding, our study adds to the understanding of testing and prevention strategies that are acceptable to PWID, a population that has traditionally been difficult to engage in research.

## CONCLUSIONS

Our study suggests that a rapid POC HCV test could be used at SEPs to screen a high-risk population with a high incidence of

HCV. Ideally, rapid testing could be performed at SEPs because they provide continuity for many PWID who do not otherwise access the healthcare system due to mistrust, stigma, and lack of resources. As cost of HCV therapies begins to decrease and restrictions are lifted on treatment of those with active drug use, future studies should investigate the use of rapid HCV testing and direct linkage to HCV treatment.

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