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Missed Opportunities for HIV and HCV Screening among Emergency Department Patients with Untreated Opioid Use Disorder

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Abstract

Objective: We assessed the frequency of emergency department (ED) HIV and HCV screening in a high-risk cohort of ED patients with untreated opioid use disorder (OUD).

Methods: This analysis used data from a prospective, observational study of English-speaking, adults with untreated OUD enrolled from April 2017 to December 2018 in four urban, academic EDs. Two cohorts were defined for this analysis by self-reported negative/unknown status for HIV (cohort 1) and HCV (cohort 2). Sites featured structured screening programs throughout the entire enrollment period for HIV and during at least part of the enrollment period for HCV. We calculated the proportion tested for HIV and HCV during the study enrollment ED visit.

Results: Among 394 evaluated ED patients, 328/394 (83.2%) were not tested for HIV or HCV and 244/393 (62.1%) lacked a usual medical care provider. In cohort 1, 375 reported negative or unknown HIV status; 59/375 (15.7%) overall and 33/218 (15.1%) of those reporting recent injection drug use were tested for HIV. In cohort 2, 231 reported negative or unknown HCV status; 22/231 (9.5%) overall and 9/98 (9.2%) of those reporting recent injection drug use were tested for HCV. The proportion tested by the ED ranged from 3–25% for HIV and 4–32% for HCV across study sites.

Conclusions: ED HIV and HCV screening remains infrequent among patients with untreated OUD, including those who inject drugs, even in EDs committed to screening. Targeted HIV/HCV screening should be considered as an adjunct strategy until the ideal of universal screening is more fully achieved.

Keywords

HIV; hepatitis C; mass screening; emergency medicine; opioid-related disorders; epidemiology

INTRODUCTION

Timely diagnosis of HIV and hepatitis C (HCV) is essential for epidemic control.^{1,2} Emergency departments (EDs) have been heavily emphasized for screening given their access to at-risk populations.^{1–4} Patients with opioid use disorder (OUD) are at especially high-risk and are often encountered in EDs.^{4–7}

Despite ongoing controversy and barriers, implementation of ED HIV and HCV screening has increased significantly.^{8,9} Yet, full implementation of non-targeted screening remains elusive. Only 1.4% of ED patients with substance use disorder are tested for HIV.¹⁰ Although missed opportunities for earlier diagnosis in EDs with screening implemented has been reported,^{11–14} risk among ED patients missed by incomplete implementation has not been characterized.

We assessed frequency of HIV and HCV screening among ED patients with untreated OUD reporting negative or unknown HIV/HCV disease status in four geographically diverse, urban, academic centers experienced in screening.

MATERIAL AND METHODS

This was a descriptive analysis of data originally collected during the baseline evaluation period (phase 1) of *Project ED HEALTH* (CTN 0069; [NCT03023930](#)), a study funded by the National Institute on Drug Abuse Clinical Trials Network and described previously.¹⁵

The parent study protocol and use of collected data was approved by the Western Institutional Review Board.

Parent Study

Setting—Between April 2017 to December 2018, trained study assistants prospectively enrolled ED patients and collected electronic medical records data at four urban, academic EDs (Maryland, Ohio, Washington, and New York). Each site enrolled for twelve months. Participating ED sites were generally engaged in HIV and HCV screening concurrently with the parent study. (Table 1)

Parent Study Sample—Patients were eligible to participate if: i) adult 18 years old, ii) in the ED during enrollment hours, iii) had moderate to severe untreated OUD, iv) urine toxicology indicated opioids other than or in addition to fentanyl before any ED opioid medication for clinical care, and v) able and willing to consent in English.

Procedures avoided alerting participants and ED staff to the opioid study focus: i) the study was titled *Project ED Health* without disclosure of study intent to ED staff, ii) participant assessments included factors other than opioid use, and iii) consent was for an observational study assessing health and healthcare utilization. Study measures included factors pertinent to HIV/HCV screening, but the parent study did not seek to prospectively assess nor influence HIV/HCV screening practices.

Current Analyses

Two partially overlapping cohorts (i.e., some in both cohorts) were created using de-identified records of the parent study: i) those who reported negative or unknown HIV status, and ii) those who reported negative or unknown HCV status. Each cohort was evaluated independently.

Measures—Measures selected from available data included self-reported socio-demographics, having a usual medical provider, HIV/HCV related risk behaviors including recent injection drug use during 30 days prior to the ED encounter, and receipt of HIV or HCV screening during the ED encounter.

Statistical Analyses—The same descriptive statistics were used to characterize each study cohort. The primary outcomes of interest were the proportion of *Project ED Health* participants who were tested for HIV or HCV during the enrollment ED visit: i) overall in each cohort, ii) among participants reporting recent injection drug use, and iii) crossed by each participating ED site.

RESULTS

The parent study (phase 1) enrolled 394 ED patients, of whom 36 (9.1%) received only an ED HIV test, 7 (1.8%) received only an ED HCV test, 23 (5.8%) were tested for both HIV and HCV, and 328 (83.2%) were tested for neither. Having a usual medical care provider was reported by 149/393 (38%). There were 375 who reported negative or unknown HIV

status (cohort 1) and 231 who reported negative or unknown HCV status (cohort 2). Patient characteristics are reported in Table 2.

In the first cohort, 59/375 (15.7%) received an ED HIV test (range across sites 3–25%). Among 218 reporting recent injection drug use in this cohort, 33 (15.1%) were tested for HIV. In the second cohort, 22/231 (9.5%) received an ED HCV test (range across sites 4–32%). Among 98 reporting recent injection drug use in this cohort, 9 (9.2%) were tested for HCV.

DISCUSSION

The importance of ED screening and linkage to care for HIV and HCV is well established.^{1–5,9,11–14} EDs also contribute to surveillance and can assist in HIV/HCV outbreak detection.⁵ We found that only a minority of ED patients with untreated OUD, including those with recent injection drug use, were screened for HIV or HCV at the study sites. The majority did not report having a usual medical provider, meaning that EDs may have been the only screening opportunity. Findings are particularly noteworthy since the study involved urban, academic ED settings where non-targeted screening for HIV and HCV has been pioneered and promoted, and all had experience with establishing screening programs or could be expected to be actively screening.

Non-targeted screening for HIV/HCV is recommended for all settings to reduce stigmatization and include those who do not know or report their risk.^{1,2,16} Missed opportunities for testing persist in spite of a non-targeted approach, unless screening is fully implemented.^{11–14} Despite considerable progress over the past two decades, EDs may never achieve full implementation.^{9,16,17} Targeted screening is not recommended but can focus resources on those at highest risk and is unavoidable for appropriate repeat screening. Also, individuals missed by an incompletely implemented non-targeted approach may have high and recognizable risk amenable to a targeted approach. To further address the ongoing tension between the ideal of non-targeted screening versus the practical need to avoid, at a minimum, missed screening of the highest-risk individuals, future research should address at least two focus areas.

First, in addition to diagnostic testing of any with signs and symptoms consistent with HIV illness, EDs should adopt innovative and feasible strategies so screening becomes routine for those with obvious risk (e.g. sexually transmitted infections, mental health disorders, substance use disorders, and injection drug use). Of note, prior studies comparing patient selection approaches have focused on broadly targeting patients at-risk^{16,18} more than identifying patients at highest risk using information already obvious to clinicians during usual current practice.

Second, there is a need to understand how to functionally combine non-targeted screening approaches with “fail-safe” capture of at least those at highest risk. To date, consideration of this controversy has been framed as an “either or” rather than “both and”. It is inadvisable to abandon progress made in non-targeted screening implementation, but pursuit of non-targeted screening does not preclude additional complementary approaches.

Our findings should be considered in context with study limitations. Data collected at the parent study sites may not be generalizable to other centers or over time. Screening practice may have been more optimized than this analysis suggests, as available data did not include reasons for non-testing (e.g. provider unaware of risk; screening offered but declined; inability to consent clinically for HIV testing; recent testing). We combined individuals who reported negative status with those who reported unknown status without verification or information on timing of any prior testing.

CONCLUSIONS

ED-based HIV and HCV screening remains insufficient among patients with untreated OUD, including PWID, even in ED settings with established screening. Risk-targeted HIV/HCV screening could be an important adjunct strategy until the ideal of universal screening can be more fully achieved, and future research should delineate best approaches to hybrid models combining targeted and non-targeted screening.

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Conflicts of Interest and Source of Funding:

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TABLE 1:

Study Site Emergency Department Descriptions of HIV and HCV Testing Activity

	Site 1 ¹	Site 2 ¹	Site 3 ¹	Site 4 ¹
Number of Annual ED Patient Encounters	65,613	76,639	71, 827	62,232
HIV Program²(months)³	12	12	12	12
Funded Effort ⁴				
Laboratory				
<i>Assay type</i>	Rapid Architect or Oraquick ⁵	Rapid Architect ⁵	Rapid Architect or Oraquick ⁵	Oraquick ⁵
<i>Sample type</i>	blood	blood	blood	blood
<i>Lab processed</i>	X	X	X	X
<i>Bedside/point-of-care</i>	X		X	
Testing Processes				
<i>Clinician-directed</i>	X		X	X
<i>Nurse-directed/standing protocol</i>	X	X	X	X
<i>External/parallel staff</i>	X	X	X	
<i>EHR prompted</i>	X	X	X	
Patient Selection Criteria ⁶				
<i>Non-targeted screening</i>	X	X	X	
<i>Risk-targeted screening</i>		X	X	X
<i>Diagnostic testing</i>	X	X	X	X
HIV Tests (n,%) ⁷	10,500 (16.0)	7899 (10.3)	4,448 (6.2)	811 (1.3)
HCV Program (months)²	12	2	12	2
Funded Effort ⁴	X	X	X	X
Laboratory				
<i>Assay type</i>	Rapid Architect or Oraquick ⁵	Rapid Architect ⁵	Rapid Architect or Oraquick ⁵	Oraquick ⁵
<i>Sample type</i>	blood	blood	blood	blood
<i>Lab processed</i>	X	X	X	X
<i>Bedside/point-of-care</i>	X		X	
Testing Processes				
<i>Provider-directed</i>			X	X
<i>Nurse-directed/standing protocol</i>	X	X	X	
<i>External/parallel staff</i>	X	X	X	
<i>EHR prompted</i>	X	X	X	
Patient Selection Strategies ⁶				
<i>Non-targeted screening</i>	X	X	X	
<i>Risk-targeted screening</i>		X	X	X

	Site 1 ¹	Site 2 ¹	Site 3 ¹	Site 4 ¹
<i>Diagnostic testing</i>	X	X	X	X
HCV Tests (n,%) ⁷	6,549 (10.0)	3,621 (4.3)	2996 (4.2)	735 (1.2)

¹Data estimated or where necessary extrapolated from available electronic health records.

²Refers to structured screening program (i.e., intention, promotion, and monitoring beyond individual clinician action)

³Number of months during enrollment in parent study that ED HIV or HCV screening was implemented.

⁴Budgeted monetary support outside of usual healthcare financing, from either internal or external source (e.g. specific hospital subsidy, grant funding, etc.)

⁵ARCHITECT® HIV Ag/Ab Combo and HCV Ag assay, Abbott; OraQuick® HIV test and HCV test, OraSure Technologies

⁶Non-targeted screening considers all eligible without respect to behavioral risk, risk-targeted screening bases eligibility on established risk, and diagnostic testing is for individuals with signs or symptoms of illness

⁷The proportion of unique ED patients with a lifetime or past year ED screening was not calculated but is greater than the proportion of ED encounters during which a test is performed (as shown here), unless repeat testing of the same individuals is more frequent than repeat ED utilization.

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TABLE 2:

Emergency Department Patients with Opioid Use Disorder, Overall and by ED Screening for HIV and HCV

Patient Characteristics ¹	HIV Status Negative/Unknown ² (n= 375)		HCV Status Negative/Unknown ² (n= 231)	
	No ED HIV Test (n = 316)	ED HIV Test (n = 59)	No ED HCV Test (n = 209)	ED HCV Test (n = 22)
Demographics				
Age – mean (SD), years	38.8 (11.6)	37.2 (11.7)	38.7 (11.6)	34.4 (10.5)
Male– n (%)	221/316 (69.9)	39/59 (66.1)	146/209 (69.9)	17/22 (77.3)
Race/Ethnicity – n (%)				
Hispanic/Latino	40/313 (12.8)	7/59 (11.9)	31/208 (14.9)	0/22 (0.0)
Black/African American	88/316 (27.8)	20/59 (33.9)	81/209 (38.8)	11/22 (50.0)
White/Caucasian	177/316 (56.0)	31/59 (52.5)	97/209 (46.4)	10/22 (45.5)
Education 12 years– n (%)	214/316 (67.7)	37/59 (62.7)	143/209 (68.4)	13/22 (59.1)
Unstable Housing past 12 months – n (%)	175/316 (55.4)	35/59 (59.3)	110/209 (52.6)	12/22 (54.5)
Prior Incarceration past 12 months – n (%)	105/315 (33.3)	23/59 (39.0)	57/208 (27.4)	7/22 (31.8)
Access to Medical Care – n (%)				
Health Insurance – n (%)	277/316 (87.7)	50/59 (84.7)	182/209 (87.1)	17/22 (77.3)
Usual Provider for Medical Care– n (%)	118/315 (37.5)	16/59 (27.1)	83/208 (39.9)	5/22 (22.7)
Came seeking addiction treatment – n (%)	50/316 (15.8)	9/59 (15.3)	42/209 (20.1)	4/22 (18.2)
Current Substance Use – n (%)				
Opioid Use Disorder Severity Level				
<i>Moderate</i>	45/316 (14.2)	6/59 (10.2)	39/209 (18.7)	2/22 (9.1)
<i>Severe</i>	271/316 (85.8)	53/59 (89.8)	170/209 (81.3)	20/22 (90.9)
Tobacco	290/316 (91.8)	52/59 (88.1)	187/209 (89.5)	21/22 (95.5)
Alcohol	125/316 (39.6)	27/59 (45.8)	96/209 (45.9)	9/22 (40.9)
<i>tried and failed to curb use</i>	67/125 (53.5)	12/27 (44.4)	51/96 (53.1)	3/9 (33.3)
Cannabis	176/316 (55.7)	33/59 (55.9)	116/209 (55.5)	14/22 (63.6)
<i>strong desire to use</i>	96/176 (54.5)	17/33 (51.5)	72/116 (62.1)	10/14 (71.4)
Stimulants	221/316 (69.9)	41/59 (69.5)	135/209 (64.6)	14/22 (63.6)
<i>use more than once per week</i>	174/221 (78.7)	28/41 (68.3)	105/135 (77.8)	11/14 (78.6)
Sedatives	67/316 (21.2)	12/59 (20.3)	45/209 (21.5)	3/22 (13.6)
<i>strong desire to use</i>	34/67 (50.7)	8/12 (66.7)	26/45 (57.8)	2/3 (66.7)
Mental Health – n (%)				
Lifetime history outpatient or inpatient treatment	171/314 (54.5)	33/59 (55.9)	115/208 (55.3)	10/22 (45.5)
HIV/Sexual Risk– n (%)				
HIV Risk-Taking Behavior Score				
<i>Drug use score– mean (SD)</i>	6.2 (7.2)	7.1 (8.5)	4.4 (6.5)	5.3 (7.9)
<i>Sex score– mean (SD)</i>	4.6 (4.6)	5.2 (4.9)	4.8 (4.9)	4.4 (3.7)
More than one sex partner in past month	62/315 (19.7)	12/59 (20.3)	46/208 (22.1)	4/22 (18.2)

Patient Characteristics ¹	HIV Status Negative/Unknown ² (n= 375)		HCV Status Negative/Unknown ² (n= 231)	
	No ED HIV Test (n = 316)	ED HIV Test (n = 59)	No ED HCV Test (n = 209)	ED HCV Test (n = 22)
Injection Drug Use in past month	185/315 (58.7)	33/59 (55.9)	89/208 (42.8)	9/22 (40.9)
<i>Used needle after someone else</i>	50/185 (27.0)	15/33 (45.5)	23/89 (25.8)	5/9 (55.6)

¹Proportion denominators indicate patients with available data; some indicate subgroups for whom presented data is relevant

²Cohorts defined by self-reported of negative or unknown HIV or HCV status without other information available to confirm; a given individual may be represented in either the HIV columns, HCV columns, or both as the cohorts partially overlap

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