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## Internet use and uptake of a Web-based prevention and risk reduction intervention for persons who use drugs in New York City – WebHealth4Us Study (2013–2016)

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### Abstract

**Background:** Data on internet utilization is needed, particularly during a time when in-person services are limited or only available virtually. The purpose of this study was to identify characteristics of internet use among persons who use drugs and assess adoption of an interactive, risk reduction informational website - *WebHealth4Us*.

**Methods:** Participant recruitment occurred in pharmacies participating in the New York State pharmacy syringe access program (n=209). ACASI surveys were conducted on-site to ascertain internet use and related sociodemographics and risk behaviors. Internet users (use once/month) were shown a website *WebHealth4Us* highlighting social services and risk reduction information on 4 topic areas: mental health, HIV, HCV, and other STI; users could also sign-up for weekly text messages for any topic area. Follow-up ACASI occurred at 4-weeks to assess user experiences and website adoption.

**Results:** Study sample (n=196) was mostly male (60%), average age 46, black/Latinx (76%), had a history of incarceration (79%), and reported past/current injection (53%) or non-injection (51%) drug use. Internet use was high (79%), accessed >4 times/week (60%) most commonly for: housing (61%), health issues (54%), and drug treatment (45%). Over one-third accessed *WebHealth4Us* during follow-up, and 35% of those opted for weekly text messages (mental health most common topic selected). After adjustment, younger age (AOR=0.96) and alcohol use (AOR=2.26) predicted *WebHealth4Us* access.

**Conclusion:** Internet use was high with considerable *WebHealth4Us* access, and specifically for mental health needs. Web-based interventions warrant large-scale investigation in high-risk communities, prioritizing social determinants and behavioral health.

### Keywords

mHealth; drug use; risk reduction; web-based interventions; mental health; social determinants

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### Introduction

An estimated 53.2 million Americans 12 years and older (approximately 1 in 5) use illicit drugs<sup>1</sup>, and those who use injection as a route of administration experience a higher prevalence of HIV, Hepatitis (HCV), and psychiatric comorbidities<sup>2-9</sup>. Non-injection drug use also carries a higher likelihood of medical and psychiatric sequelae compared to the general population and is more common than injection drug use<sup>1,10-13</sup>. Improved access to public health services including risk reduction, primary prevention, and secondary prevention education and counseling, can help improve health outcomes among persons who use drugs (PWUD), particularly among persons who have been historically denied access to quality care and resources<sup>14,15</sup>. For instance, drug use-related stigma (and other intersectional stigmatizing statuses) and limited availability of behavioral health services in many U.S. communities coupled with cost of care, and lack of information about available resources persist as barriers to needed medical and social services for PWUD<sup>16-21</sup>. Web-based technologies can be utilized as a cost-effective and easily accessible means of removing some of the longstanding structural barriers to prevention and treatment resources for the most vulnerable PWUD<sup>22-26</sup>.

Mobile phone access is ubiquitous with 96% of US adults reporting ownership<sup>27</sup>. Further, most smartphone owners are comfortable using their phones to seek health information and phone-based health interventions have been shown to improve disease management, care coordination as well as motivate behavior change by facilitating affordable, accessible, and efficient delivery and utilization of healthcare<sup>28-31</sup>. Studies suggest that mobile phone access among PWUD has increased and recent data show internet utilization rates to be similar to that of the general population<sup>32-35</sup>. Many urban cities have increased internet access in communities such as New York City's wifi access program LinkNYC providing not only smartphone charging capability, but also phone dial pad access, and touchscreen internet browsing station.

A meta-analysis of 35 internet interventions among adults reporting illicit drug use revealed that internet-based interventions demonstrated effectiveness at reducing opioid use<sup>36</sup> among

treatment seeking populations. The results of this meta-analysis also noted that high attrition rates among intervention participants remain a challenge and new strategies should be explored to retain those lost to follow-up who tend to be the most vulnerable. Finally, these web-based interventions have not been assessed for impact on other salient outcomes outside of treatment access and engagement, such as risk reduction and prevention services, and other drug use-related public health needs among PWUD (e.g., STI's, HCV, mental health services). One notable exception are mHealth studies conducted among high risk communities with HIV and therefore, interventions were focused on treatment adherence and retention in care (e.g. sending appointment reminders via text messages), with the exception of a few case studies<sup>37,38</sup>. Investigations among PWUD and that focus on the use of technology to provide more comprehensive risk reduction information and that facilitates access to prevention resources is scant, particularly in the U.S. Thus, identifying factors associated with uptake of internet-based public health interventions among a vulnerable sample of PWUD is needed and has been suggested in previous reports. Specifically, more research is needed to not only determine efficacy, but to better understand and identify strategies related to reach, adoption, implementation, and maintenance in both clinical and community settings<sup>39</sup>.

Herein, we conducted a community-based study with PWUD to 1) document internet general use, and 2) assess feasibility and user experiences of a web-based intervention (*WebHealth4Us*) designed to provide HIV prevention and related risk reduction information. This website included pertinent information including where to access services for PWUD in low-income, majority Black and Latinx communities heavily burdened with HIV and street-marketed drug use. The purpose of this study was first to identify demographic, social and behavioral factors associated with internet use among PWUD. Second, after identifying and initiating active internet users to the *WebHealth4Us* website and a 4-week follow-up period, we aimed to assess adoption, user experience, and social and behavioral predictors of website use which included the option to 'sign-up' for weekly public health text messages related to mental health, HIV, HCV, and STI prevention and risk reduction.

## Methods

### Participant recruitment and enrollment

Between the years of 2013 – 2016, we implemented targeted street outreach in communities with high prevalence of illicit drug use in New York City (NYC), New York. Research outreach staff conducted street outreach and engaged potential participants on the streets of previously selected high risk communities in Upper Manhattan and South Bronx<sup>40</sup>, informed them of the study, and provided them with a study flyer with study information for setting up an appointment for participation, or if time permitted, scheduled an appointment at the time of engagement using a study phone. Flyers were also placed in local community organizations, pharmacies, methadone programs, and needle exchange programs. To compliment this recruitment strategy and similar to our earlier work<sup>41,42</sup>, we also trained staff at a local study-enrolled pharmacy registered with the New York State (NYS) Expanded Syringe Access Program (ESAP) to help facilitate enrollment of syringe-purchasing customers, and their peers. The pharmacy study site also provided

private partitioned space for data collection activities. Use of pharmacies that participate in syringe access programs have proven to be more amenable to participant retention when implementing community studies involving follow-up since participants are accustomed to patronizing these spaces for syringe access<sup>43,44</sup>.

Potential participants were administered a 10-item screener to determine eligibility. To reduce the occurrence of false report to gain entry into the study, the screener included questions on a range of topics to mask the exact selection criteria. Individuals were considered eligible if they were 18 years of age or older, and used heroin, crack, and/or cocaine at least once in past month. After eligibility was determined, participants underwent informed consent. At the time of data collection, this study was approved by Columbia University Medical Center, Institutional Review Board for Human Subject Research. The Nathan Kline Institute for Psychiatric Research, Institutional Review Board also approved this study during the data analysis phase and manuscript development.

### **WebHealth4Us intervention**

After consent, participants were invited to complete a baseline audio computer-assisted self-interview (ACASI) on the same day of enrollment or scheduled within one week. All active internet users (defined as participants who reported internet use at least once a month) were selected to view the *WebHealth4Us* website at the end of the ACASI baseline visit on the same notebook used for ACASI and were followed over time. The *WebHealth4Us* viewing included two components. First, the interviewer set up a secure login and a password selected by the participant. Second, the interviewer assisted the participant with the navigation of the site, highlighting each of the public health four risk topics on the site (i.e., HIV, HCV, STI's and mental health), as well as the social services information available in their community. The *WebHealth4Us* site was developed by our research team in collaboration with community partners. Information for each topic included education and available resources in the community pertaining to risk reduction, prevention and treatment, as well as access information on drug treatment, housing, and food availability (e.g., green markets, food banks, food pantries). Additionally, users who visited *WebHealth4Us* and had access to a cell phone could click on a tab to receive text messages related to any of the four primary topic areas. This functionality was highlighted during the study visit when the interviewer and study participant were together reviewing study functionality. Those opting for text messages would receive a message consisting of an 8–12 worded risk reduction message delivered weekly, for four weeks.

At the end of the visit, participants were asked to return for follow-up in 4 weeks and given an appointment. All surveys were administered at the study pharmacy and participants were compensated for their time (\$20 for the baseline and \$25 for the 4-week follow-up ACASI). To further minimize attrition, research staff made at least 2 calls to participants to remind them of their follow-up appointment, with additional tracking efforts for those who missed their follow-up appointment. (see Figure 1)

## Measures of interest

The baseline survey ascertained participant demographic characteristics, social and health risk behaviors, device and frequency of internet use, and past internet queries related to social services and health needs. Demographic measures were collapsed into the following variables: gender (male, female), race/ethnicity (Black/Latinx, White/other), age, and sexual orientation (lesbian/gay/bisexual/other, straight). Several social factors were examined and included educational attainment (high school/GED or higher, less than high school), past year legal income (\$5,000 or less, more than \$5,000), recent (past 3 months) homelessness (yes, no), lifetime carceral system involvement (never, jail, prison, or jail and/or prison) and current regular doctor (yes, no).

Behavioral risk variables included justice system involvement (never, jail only, prison), lifetime crack/cocaine, heroin, and injection drug use (yes, no), use of non-medically prescribed opioids or other pills (yes, no) past 3 months, presence of binge drinking symptomology (yes, no) measured as frequency of having 6 drinks in one occasion in past 3 months (ever vs. never) and high risk sexual behavior (yes, no) defined as self-report of multiple sex partners, sex in exchange for drugs, money, or food, and/or same sex behavior among men in past 3 months.

Current internet use (never, less than once a month, once a month, 2–3 days/month, once a week, 2–3 days/week, 4–6 days/week, or everyday) was also assessed to identify the intervention sample which was defined as using at least once a month or more. Participants reporting at least monthly internet use were asked how they accessed the internet (desktop/laptop or tablet, smartphone, at-home access), reasons for health-related internet use (e.g., communicate with a health provider, general or specific health information, find a provider, insurance information), reasons for social services-related internet use (e.g., seeking information on drug treatment or syringe exchange, resources for housing or food), and willingness to receive health-related information via mobile phone (yes, no).

The follow-up survey ascertained participant experiences using the *WebHealth4Us* website. This included whether they found the educational resources on the site useful (yes, no), relevancy of website by content area (e.g., HIV, HCV, STI, mental health, and other related social services including housing, food availability, and drug treatment), and because of the sensitive topic areas covered on the site, participants were asked whether reading about specific content areas (e.g., disease prevention, drug treatment, etc.) made them uncomfortable (yes, no).

## Analysis plan

First, we present a descriptive summary of study participants with respect to demographics, social and behavioral characteristics, and their internet use. Using chi-squared tests of association for categorical variables and independent sample t-tests for continuous variables, we identified statistically significant correlates of internet use at baseline. Then, among study participants exposed to the website intervention, we contrasted participant characteristics and internet use behavior by *WebHealth4Us* access (logged onto site or not) using simple logistic regression analyses to identify characteristics with crude

associations with site access. Characteristics identified in bivariate analyses were included in a multivariable regression model predicting visiting the intervention website. Finally, we summarized user experiences related to the *WebHealth4Us* site. All analyses were conducted using SAS v9.4 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY). This study was approved by Columbia University Medical Center, NYU School of Medicine, and the Nathan Kline Institute for Psychiatric Research.

## Results

Table 1 provides the distribution for participant characteristics overall and by internet use. Of the 209 enrolled participants, 94% (n=196) had responses on all measures of interest. Study participants were mostly male (58.7%), Black or Latinx (76%), and 46 years of age, on average. About 18% identified as lesbian, gay, bisexual, or other sexual orientation; approximately one-third had less than a high school education (34.2%), over 70% had annual income less than \$5,000, 36.7% had experienced recent homelessness, and 80% reported past carceral experience. With respect to drug use, 91% reported lifetime crack/cocaine use, 77.6% reported lifetime heroin use, 60.2% reported recent non-medically prescribed opioid use or other pill use, and one-in-three reported binge drinking (34.7%). With respect to HIV risk behaviors, over half (53.6%) reported injection drug use and one-third reported high risk sexual behavior (33.7%). Internet use was high in this study sample with over three-quarters (78%) reporting past month internet use, and fairly frequent among all reporting any internet use in past 30 days (8% used less than 1 time/month; 20% used 1–3 times/month; 21% used 1–3 days/week; 59% used 4 or more days/week). Importantly, internet use did not differ by social or risk behavior measures and younger age being the sole demographic factor that was significantly correlated with past month internet use ( $p<0.05$ ).

Among the 146 participants who reported past month internet use, 86.3% (n= 126) returned and completed the 4-week follow-up survey (Table 2). The distribution of demographics, social, and behavioral characteristics was similar to the overall sample. With respect to internet access, 24.6% accessed the internet on a desktop, laptop, or tablet, 70.6% via smartphones, and the large majority accessed internet away from home (79.4%). The most frequently reported health or social services internet searches were to access information on housing resources (61.9%), a specific medical condition (60.3%), treatment or procedure (57.1%), and to find a doctor or other health professional (54.8%). Most respondents reported using their mobile phones for health-related purposes (66.7%), and most often for seeking health or medical information (60.6%). Importantly, nearly all study participants who reported internet use were willing to receive health information via their cell phone (84.9%). Finally, just over one-third of follow-up survey respondents (n=44) reported accessing *WebHealth4Us* at least once in the four-week follow-up period.

Table 2 also provides regression analysis results of significant predictors of *WebHealth4Us* access. After adjustment, older pharmacy customers had lower odds of accessing site with each year increase in age estimated to be associated with a 6% decrease in the odds of accessing the site (AOR=0.94,  $p<0.05$ ). Participants who used the internet for social services related to places to get free food were twice as likely to log on to *WebHealth4Us*



as compared to participants who did not use the internet for this purpose (AOR=2.14;  $p<0.06$ ). Participants with binge drinking symptomology had more than 2-fold increase in the odds of accessing *WebHealth4Us* as compared to those who did not report binge drinking symptomology (AOR=2.26,  $p<0.05$ ).

In Table 3, user satisfaction metrics for the *WebHealth4Us* site for pharmacy customers who logged onto the site are presented. In general, users found the website information useful and nearly all (93.2%) reported that they would revisit the site or recommend it to others. Further, despite its focus on sensitive topics, only one participant felt uncomfortable or offended by the website content, namely social services resources information, and none felt uncomfortable with the disease prevention information provided. Finally, among those who reported logging onto the *WebHealth4Us* website, 34% ( $n=15$ ) clicked on the sign-up tab and entered their cell phone number to receive health-related text messages: 8 signed up for mental health messages, 6 for HIV prevention messages, 6 for STI messages, and 5 for HCV prevention messages.

## Discussion

Among a majority Black and Latinx community-based sample, heavily burdened with street-marketed illicit drug use, we highlight a noticeably high proportion of internet use, typically through the use of a smartphone as opposed to a desktop, laptop or tablet. This rate of internet access was similar to the national averages during the time of the study (2013–2016), for persons with income less than \$30,000 (72%–79%), and among general populations of Black (79%–88%), and Latinx populations (80%–88%), respectively<sup>45</sup>. Interestingly, there were no significant differences with respect to social and behavioral risk characteristics when comparing those who used the internet (at least once/month) vs. those who did not. Additionally, after 4-week follow-up among active internet users, slightly more than one-third logged onto the *WebHealth4Us* intervention, and a third of those individuals opted for weekly risk reduction text messages. To our knowledge, internet use, type, and frequency among a socioeconomically vulnerable community sample of persons actively using heroin, crack and/or cocaine has not been previously reported. The only exceptions are study samples from substance abuse treatment settings and/or persons with HIV infection, both of which have a connection to social and/or medical services and does not reflect the social condition of the current study population. Thus, documenting internet use and adoption of a web-based intervention in this community has high public health significance for this vulnerable, high-need population of PWUD.

Those who logged onto the intervention website were characterized by heavier polydrug use as indicated by binge drinking symptomology (i.e., alcohol use in addition heroin, crack and/or cocaine use), and a tendency to have greater social needs as indicated by reporting internet use to contend with food insecurity as opposed to risk reduction/prevention, treatment or other health-related information. While this relationship carried a strong crude association, it dampened statistically after adjustment; however, the clinical and public health value of this relationship elevates its significance and warrants further study, particularly among highly vulnerable populations. While uptake of the intervention was modest, this study revealed a highly successful community-based recruitment strategy,

namely the use of community pharmacies who participate in a public health syringe access program, and located in low-income, high risk neighborhoods coupled with community outreach. Furthermore, while retention of participants actively using street-marketed drugs is typically challenging, we observed a relatively high follow-up rate (86.3%) which is also largely due to the use of community pharmacies for recruitment and data collection activities, and known to have trusting ties with the community.<sup>46,47</sup>

### **WebHealth4Us and interactive option to receive text messaging**

Those who visited *WebHealth4Us* expressed high satisfaction with the behavioral health, risk reduction and social services content available, indicated they would recommend the website to peers, and revisit the site after study end. However, it is unknown if those who did not log onto the site felt similarly. Low uptake by more than half the sample could be due to a lack of prioritizing risk reduction, prevention, and other health-related services above attending to basic daily needs which was a significant challenge for this population. In fact, among the 35% who were able to access the site, seeking information on access to food pantry's suggests extreme social disadvantage. This suggests it may be unrealistic to expect higher uptake of risk reduction, prevention and treatment for HIV, HCV, STI's and/or mental health when basic social needs are unmet. While content on the availability of social services was a component of *WebHealth4Us*, the focus of the intervention content was risk reduction information, infectious disease prevention, and mental health services access. It still remains a possibility that study participants did not log onto *WebHealth4Us* because the site may not have been appealing or useful. These data support investigation of a web-based intervention that emphasizes social determinants of health as a primary public health strategy which may, in turn, result in greater public health impact.

### **Characteristics of internet use and WebHealth4Us**

Internet access was also fairly frequent, with the majority of participants (80%) accessing the internet at least weekly. This result also aligns with prior studies during the same study period (2013–2016) and highlights high and frequent access among adults with substance use disorders<sup>22,34</sup>, reinforces the need to enhance access to devices with web-browsing capabilities, and to eliminate costs through free wifi access points. In this study, it is important to note that those who did not report internet use (or use less than once per month) were not targeted for the *WebHealth4Us* intervention due to the time constraints of study funding and the need to recruit a sizable population for feedback on user experiences. For this reason, our findings only reflect active internet users, however, it is unlikely that a website would significantly increase website adoption in this study population. Instead, before assessing adoption of a website among infrequent/never internet users, social and structural barriers to internet use should be addressed and considered as either a primary focus of a separate intervention or in combination with a website such as *WebHealth4Us* and is currently underway.

Additional unexpected and encouraging findings of this study was the more common use of mobile phone platforms to access the internet than computers, and that internet use and *WebHealth4Us* adoption was not differentiated by high risk behavior or demographics (with the exception of younger age for website adoption). This could be beneficial when designing



intervention studies which could show potential effectiveness more broadly among this population.

## Conclusion

These promising findings underscore the importance of harnessing web-based interventions targeting PWUD to address social and economic disparities that have persisted in low-income Black and Latinx urban communities. These data provide successful strategies for community-based study recruitment and retention, which can directly inform large-scale studies involving web-based services or interventions in low-income heavy drug-involved communities. However, web-based public health strategies to address inequities in prevention and treatment access warrant investigations that prioritize social and structural determinants of health instead of expending resources on strategies that solely focus upon or prioritize individual risk behavior.

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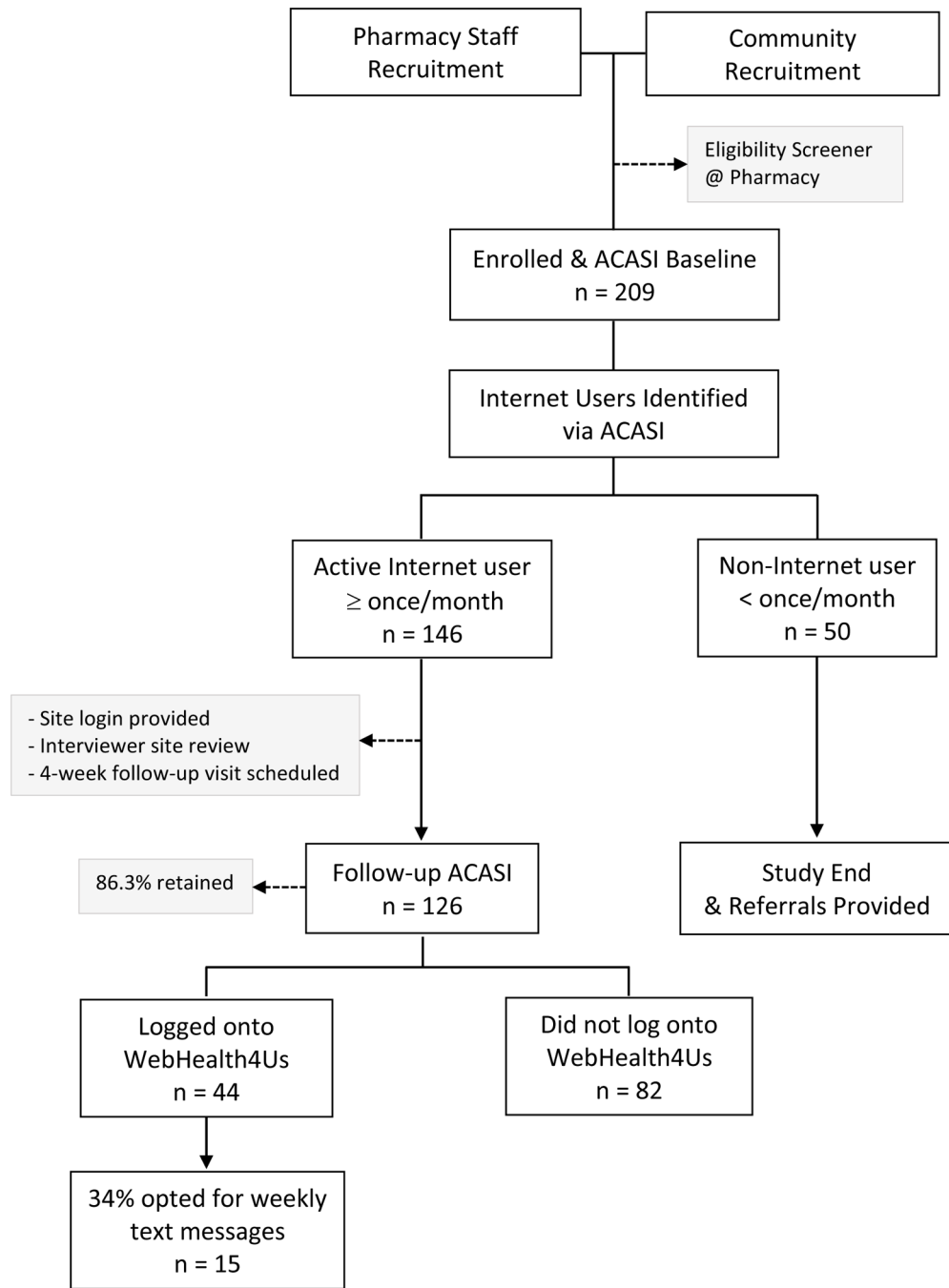
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**Figure 1.**  
WebHealth4Us Study Flow

**Table 1.**

Baseline demographic, social, and behavioral characteristics of internet use once per month among persons with a history of drug use in New York City (n=196), 2013–2016.

Measures	Total n (%)	Internet Use n (%)
All	196	146 (74.5)
Sex		
Male	115 (58.7)	84 (73.0)
Female	81 (41.3)	62 (76.5)
Race/ethnicity		
Black/Latinx	149 (76.0)	107 (71.8)
White/other	47 (24.0)	39 (83.0)
Age (mean±SD)	46.3 (±10.0)	44.1 (±9.70)*
Sexual orientation		
Lesbian/gay/bisexual/other	36 (18.4)	26 (72.2)
Straight	160 (81.6)	120 (75.0)
Educational attainment		
High school or GED or more	129 (65.8)	99 (76.7)
Less than HS	67 (34.2)	47 (70.2)
Legal income in past year		
\$5000 or less	140 (71.4)	102 (72.9)
More than \$5000	56 (28.6)	44 (78.6)
Homeless in past 3 months		
Yes	72 (36.7)	53 (73.6)
No	124 (63.3)	93 (75.0)
Has a regular doctor		
Yes	129 (90.3)	129 (73.3)
No	19 (9.74)	17 (89.5)
Carceral involvement		
Never	39 (19.9)	29 (74.4)
Jail only	64 (32.6)	52 (81.3)
Prison	93 (47.4)	65 (69.8)
Lifetime crack/cocaine use		
Yes	179 (91.3)	133 (91.1)
No	17 (8.67)	13 (8.9)
Lifetime heroin use		
Yes	153 (77.6)	114 (78.1)
No	44 (22.5)	32 (21.9)
NMPO/other pills in past 3 months		
Yes	118 (60.2)	91 (77.1)
No	78 (40.0)	55 (70.5)
Ever had injection drug use		

Measures	Total n (%)	Internet Use n (%)
Yes	105 (53.6)	85 (81.0)
No	91 (46.40)	61 (67.0)
Binge drinking symptomology		
Yes	68 (34.7)	53 (36.3)
No	128 (65.3)	93 (63.7)
Sexual risk behaviors		
Yes	66 (33.7)	52 (78.8)
No	130 (66.3)	94 (72.3)

\*  
p<0.05

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**Table 2.**

Internet use characteristics associated with accessing *WebHealth4Us* site at follow-up among persons with a history of drug use in New York City (n=126), 2013–2016.

Measures	Total n (%)	n (%)	Logged on to WebHealth4Us	
			Crude OR (95% CI)	Adj OR (95% CI)
Total Sample	126	44 (34.9)	--	--
<b>Demographics</b>				
Sex				
Male	74 (58.7)	24 (54.6)		
Female	52 (41.3)	20 (45.5)		
Race/ethnicity				
Black/Latinx	94 (74.6)	31 (70.5)		
White/other	32 (25.4)	13 (29.6)		
Age (mean±SD)	44.0 (±9.87)	40.5 (±9.90)**	0.94 (0.91 – 0.98)**	0.94 (0.91 – 0.98)**
Sexual orientation				
Lesbian/gay/bisexual/other	26 (20.6)	12 (27.3)		
Straight	100 (79.4)	32 (72.7)		
Educational attainment				
Less than HS	38 (30.2)	12 (27.3)		
High school or GED or more	88 (69.8)	32 (72.7)		
Annual legal income				
\$5000 or less	82 (66.7)	32 (76.2)		
More than \$5000	41 (33.3)	10 (23.8)		
Homeless (past 3 months)				
Yes	44 (34.9)	14 (31.1)		
No	82 (65.1)	30 (68.2)		
Carceral involvement				
Never	26 (20.6)	9 (34.6)		
Jail only	40 (31.8)	17 (42.5)		
Prison	60 (47.6)	18 (30.0)		
<b>Internet use</b>				
Access using desktop/laptop or tablet				
Yes	31 (24.6)	8 (18.2)		
No	95 (75.4)	36 (81.8)		
Access using smartphone				
Yes	89 (70.6)	32 (72.7)		
No	37 (29.4)	12 (27.3)		
Has internet access at home				
Yes	26 (20.6)	16 (36.4)		
No	100 (79.4)	28 (63.6)		
Health-related internet use <sup>a</sup>				

Measures	Total		Logged on to WebHealth4Us	
	n (%)	n (%)	Crude OR (95% CI)	Adj OR (95% CI)
Receive medical test results	21 (16.7)	10 (47.6)		
Communicate with provider	42 (33.3)	18 (42.9)		
General health issues	52 (41.3)	16 (30.8)		
Specific disease or condition	76 (60.3)	28 (36.8)		
Certain treatment or procedure	72 (57.1)	28 (38.9)		
Find a doctor or other professional	69 (54.8)	30 (43.5)		
HIV-related information	38 (30.2)	11 (28.9)		
Health insurance	56 (44.4)	22 (39.3)		
Social services related internet use <sup>a</sup>				
Housing	78 (61.9)	29 (37.2)		
Drug treatment	59 (46.8)	24 (40.7)		
Places to get free food	51 (40.5)	23 (45.1)	2.11 (1.00 – 4.46) **	2.14 (0.97 – 4.71) *
Safe injection sites	26 (20.6)	8 (30.8)		
Use mobile phone for health-related purposes				
Yes	84 (66.7)	31 (36.9)		
No	42 (33.3)	13 (31.0)		
Health-related mobile phone internet use <sup>a</sup>				
Health or medical information	60 (60.6)	27 (45.0)		
Track or manage health via applications	32 (26.9)	14 (43.8)		
Communicate with health care providers	40 (31.8)	17 (42.5)		
Willing to receive health information via cell phone <sup>b</sup>				
Yes	107 (84.9)	40 (37.4)		
No	19 (15.1)	4 (21.1)		
<b>Drug use and risk behaviors</b>				
Lifetime crack/cocaine use				
Yes	115 (91.3)	38 (33.0)		
No	11 (8.73)	6 (54.5)		
Lifetime heroin use				
Yes	99 (78.6)	32 (32.3)		
No	27 (21.4)	12 (44.4)		
Ever had injection drug use				
Yes	77 (61.1)	24 (31.2)		
No	49 (38.9)	20 (40.8)		
NMPO/other pills (past 3 months)				
Yes	76 (60.3)	28 (36.8)		
No	50 (39.7)	16 (32.0)		
Binge drinking (past 3 months)				
Yes	43 (34.1)	21 (48.8)	2.49 (1.16 – 5.36) **	2.26 (1.01 – 5.05) **
No	83 (65.9)	23 (27.7)		
High risk sexual behavior (past 3 months)				

Measures	Total	Logged on to WebHealth4Us	
	n (%)	n (%)	Crude OR (95% CI)    Adj OR (95% CI)
Yes	46 (36.5)	15 (32.6)	
No	80 (63.5)	29 (36.3)	

\*\*  
p<0.05

\*  
p<0.10

<sup>a</sup>categories not mutually exclusive

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**Table 3.**

User experiences among study participants who logged onto *WebHealth4Us4Us* site in New York City (n=44), 2013–2016.

Measures	n (%)
All	44 (100)
Found disease prevention educational resources useful	42 (95.5)
Disease prevention resources by topic ( <i>categories not mutually exclusive</i> )	
HIV	41 (95.4)
Hepatitis C	37 (90.2)
Other sexually transmitted diseases	40 (95.2)
Found social services informational resources useful	41 (93.2)
Social services resources by topic ( <i>categories not mutually exclusive</i> )	
Mental Health Resources	36 (97.3)
Drug treatment	40 (90.9)
Felt uncomfortable or offended by disease prevention information	
Yes	0
No	44 (100)
Felt uncomfortable or offended by social services resources	
Yes	1 (2.3)
No	42 (97.7)
Would recommend <i>WebHealth4Us</i> to others	
Yes	41 (93.2)
No	3 (6.8)
Will revisit <i>WebHealth4Us</i> site after the end of the study	
Yes	41 (93.2)
No	3 (6.8)