

Barriers of Linkage to Hepatitis C Care and Treatment Among People Who Inject Drugs in Georgia

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Abstract

Background: People who inject drugs (PWID) in Georgia have a high prevalence of hepatitis C virus antibody (anti-HCV). Access to care among PWID could be prioritized to meet the country's hepatitis C elimination goals. This study assesses barriers of linkage to hepatitis C care among PWID in Georgia.

Methods: Study participants were enrolled from 13 harm reduction centers throughout Georgia. Anti-HCV positive PWID who were tested for viremia (linked to care [LC]), were compared to those not tested for viremia within 90 days of screening anti-HCV positive (not linked to care [NLC]). Participants were interviewed about potential barriers to seeking care.

Results: A total of 500 PWID were enrolled, 245 LC and 255 NLC. LC and NLC were similar with respect to gender, age, employment status, education, knowledge of anti-HCV status, and confidence/trust in the elimination program ($p>0.05$). More NLC (13.0%) than LC (7.4%) stated they were not sufficiently informed what to do after screening anti-HCV positive ($p<0.05$). In multivariate analysis, linkage to care was associated with perceived affordability of the elimination program (adjusted prevalence ratio=8.53; 95% confidence interval: 4.14-17.62).

Conclusions: Post testing counselling and making hepatitis C services affordable could help increase linkage to care among PWID in Georgia.

Background

Georgia, with a high burden of hepatitis C (Walker et al., 2020), embarked on a national program in 2015 to eliminate hepatitis C, with an overall goal of 90% reduction in hepatitis C virus (HCV) prevalence by 2020 (Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs of Georgia, 2017). The country has one of the highest rates of injection drug use in the world (Degenhardt et al., 2017), and 66.2–92.0% HCV antibody (anti-HCV) prevalence among people who inject drugs (PWID) (Bouscaillou et al., 2014) representing 25% of all HCV cases in the country (Luhmann et al., 2015; Kikvidze et al., 2017). Increasing access to hepatitis C screening, care and treatment among PWID is important if Georgia is to be successful in eliminating hepatitis C from the country.

As of April 30, 2019, 56,294 patients had initiated hepatitis C treatment within the program, though there has been a gradual decline in the number of people initiating treatment since late 2016 (Averhoff et al., 2019). Despite extensive national screening activities, including among PWID at harm reduction (HR) centers, nearly half of Georgians with HCV infection are not aware of their HCV status (Averhoff et al., 2019). In addition, among those who have screened positive, a significant proportion have not received viremia testing to confirm active HCV infection, and among those with confirmed viremia, a significant proportion have not initiated antiviral treatment (Averhoff et al., 2019). PWID bear a disproportionate share of the HCV burden in the country (Chikovani et al., 2019) and ensuring access to treatment for this marginalized population is critical for achieving elimination in the country. However, barriers to accessing care in the national hepatitis C elimination program among anti-HCV-positive PWID are not well understood. The objective of this study was to assess barriers of linkage to HCV care among PWID in Georgia.

Methods

All screening, viremia testing and treatment monitoring data are entered into the national elimination program database (Averhoff et al., 2019). Access to the database through a unique 11-digit national identification number (NIN) allows for tracking individuals across the whole continuum of care, from screening through treatment and testing for sustained viral response (SVR), i.e. cure.

Study population

There is a total of 13 HR centers in the country (Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs of Georgia, 2019). Since 2017, anti-HCV test results among PWIDs who agree to disclose their NIN are recorded in the elimination program database. During 2017–2018, a total of 2780 HR center clients with positive test results for HCV antibody were identified in the program database by their NIN (Stvilia et al. 2019).

We compared PWIDs who were linked to HCV care (LC) with those who were not linked to care (NLC). Linkage to care was defined as receipt of HCV viremia testing within 90 days from the date of a positive anti-HCV result recorded in the hepatitis C elimination program database. Convenience samples of LC (n = 263) and NLC (n = 275) individuals were drawn from the elimination program database by having hepatitis C screening performed and recorded by an HR center using beneficiaries' NIN. LC were selected for having a positive anti-HCV result dated between August 1, 2017 and January 31, 2018, while inclusion dates for NLC were between January 1, 2017 and January 31, 2018. The selection period for NLC had to be extended for 7 months to allow for more study participants with available and valid contact information.

Data collection

We conducted a telephone survey of LC and NLC PWID inquiring about potential barriers to obtaining viremia testing, and/or enrolling in the national hepatitis C elimination program. Interviews were conducted from September 1, 2018 to December 20, 2018. Interviewers were recruited from HR center staff (HIV voluntary counseling and testing counselors) and trained prior to the study. Five attempts were made to reach each study participant. We calculated the proportion of individuals that were not reached via phone and those who refused to participate in the survey. The study protocol was approved by the Institutional Review Board of the Health Research Union (IRB00009520; IORG0005619).

Survey tool

The telephone questionnaire was developed and pilot tested among five respondents and adapted based on user feedback prior to administration. The questionnaire collected information about demographics and barriers to HCV care linkage. The social demographic characteristics included age, residence (capital city vs other regions), education, employment, family and personal income. Data collected on HCV included diagnostic test types available in the country, participant's HCV status and reasons for not being tested. The questionnaire also included questions about current use of HR services (some respondents who were HR center beneficiaries at the time of their anti-HCV test may no longer be receiving HR services at the time of interview), availability of medications, and procedure for enrollment in the program. Participants were also asked about affordability of the program; during the first three years (May 2015 – August 2018) when patients

had a co-payment for diagnostic evaluations which was approximately 300 USD at the beginning of the program and later decreased to approximately 100 USD. We also gathered information on respondent preferences for type and source of information about HCV infection.

Data analysis

Following removal of identifying information, data were entered in Microsoft® Excel at study sites and imported in SPSS v.23 statistical software by the study statistician. Descriptive and bivariate analyses of factors associated with linkage to care were conducted. We calculated unadjusted and adjusted prevalence ratios (PR) with 95% confidence intervals (CI) to assess the associations between LC and NLC using logistic regression models.

Results

Participation

Out of the 538 participants drawn from the elimination program database that were approached, a total of 500 PWID participated in the study (refusal rate of 7.1%); 245 were linked to care and 255 were not linked to care. The participation rates were similar when we compared LC and NLC.

Demographic characteristics of study participants

Overall, 91.2% of study subjects were males, 81.4% were older than 35 years, 63.8% were unemployed, and 34.9% had a university/college degree. No significant differences were found between the two groups (LC and NLC) by age, gender, residence, family income, employment status, education level, and confidence/trust in the hepatitis C elimination program (Table 1).

Table 1
Comparison of linked to care (LC) and not linked to care (NLC) among people who inject drugs by different characteristics, Georgia

Characteristic	Linked to care (LC)		Not linked to care (NLC)		Prevalence Ratio (PR) and 95% CI	Adjusted Prevalence Ratio (aPR) and 95% CI
	N	%	N	%		
Gender						
Male	224	91.4	232	91.0	1.01 (0.95–1.06)	1.09 (0.380–3.18)
Female	21	8.6	23	9.0	1	1
Age						
≤ 35	38	15.5	55	21.6	1.20 (0.99–1.46)	1.23 (0.56–2.69)
> 35	207	84.5	200	78.4	1	1
Residence (district)						
Tbilisi	105	42.9	127	49.8	1	1
Regions	140	57.1	128	50.2	1.14 (0.97–1.34)	0.8 (0.36–1.80)
Level of education*						
University/Post-graduate	80	33.3	91	36.4	1	1
Other	160	66.7	159	63.6	1.05 (0.92–1.19)	1.96 (0.94–4.11)
Employment*						
Employed	92	38.0	87	34.4	1	1
Unemployed	150	62.0	166	65.6	0.95 (0.83–1.08)	1.26 (0.65–2.57)
Family income (per month)*						
≤ 1000 GEL	122	87.8	133	90.5	0.97 (0.89–1.05)	1.21 (0.42–3.52)
> 1000 GEL	17	12.2	14	9.5	1	1
Affordability of HCV Elimination Program*						

Characteristic	Linked to care (LC)		Not linked to care (NLC)		Prevalence Ratio (PR) and 95% CI	Adjusted Prevalence Ratio (aPR) and 95% CI
	N	%	N	%		
Yes	182	75.5	105	41.8	1.81 (1.53–2.12)	8.53 (4.14–17.62)
No	59	24.5	146	58.2	1	1
Who notified you about the screening test result?*						
Person who conducted the test	64	33.2	56	28.3	1.17 (0.87–1.58)	1.02 (0.67–1.23)
Physician/Consultant	129	66.8	142	71.7	1	1
Do you feel that you received sufficient information to know what to do next after screening test?*						
Yes	226	92.6	220	87.0	1.07 (1.01–1.13)	0.61 (0.17–1.99)
No	18	7.4	33	13.0	1	1
Trusting HCV elimination program*						
Yes	231	95.1	236	92.5	1	1
No	12	4.9	19	7.5	0.66 (0.33–1.33)	0.73 (0.13–4.09)
Do you currently use the services in HR centers?*						
Yes	111	48.7	90	37.3	1.31 (1.07–1.61)	1.21 (0.91–1.52)
No	117	51.3	151	62.7	1	1
Would it be more comfortable if HCV treatment were available in HR centers?*						
Yes	169	84.9	190	86.4	0.98 (0.91–1.06)	0.65 (0.32–1.29)
No	30	15.1	30	13.6	1	1

Characteristic	Linked to care (LC)		Not linked to care (NLC)		Prevalence Ratio (PR) and 95% CI	Adjusted Prevalence Ratio (aPR) and 95% CI
	N	%	N	%		
*Missing values not shown						
Abbreviations: CI = confidence interval, HCV = hepatitis C virus, GEL = Georgian lari, HR = harm reduction						

Knowledge of HCV and elimination program

Most of the study participants (98.2%) were aware of their HCV infection. Of the surveyed individuals, 391 (78.2%) reported that they had been informed about HCV test results from a health care worker (HCW).

When we looked at reasons why the NLC group did not receive viremia testing, 21.7% stated that the reason was cost of the testing, and 42.9% of the NLC group stated that a free laboratory test would improve enrollment in the program. A quarter (24.5%) of NLC participants expressed willingness to receive more information about HCV infection and the hepatitis C elimination program, preferring television and the internet as sources of information.

Association of linkage to care with different factors

In bivariate analysis, when comparing those linked and not linked to HCV care, 13.0% of NLC compared to 7.4% of LC stated they did not receive sufficient information to know what to do next after their positive screening test (PR = 1.07; 95% CI: 1.01–1.13). More NLC (58.2%) than LC (24.5%) reported that enrollment was not affordable (PR = 1.81; 95% CI: 1.53–2.12). Ongoing engagement in HR services was associated with linkage to care (PR = 1.31; 95% CI: 1.07–1.61). Nearly 85% of LC and 86.4% of NLC think that it would be more comfortable if HCV treatment were available at HR centers (PR = 0.98; 95% CI: 0.91–1.06). However, in multivariate analysis, the only independent predictor of linkage to care was affordability of the program (adjusted PR = 8.53; 95% CI: 4.14–17.62) (Table 1).

Discussion

This is the first quantitative study in Georgia to examine barriers to HCV treatment among PWID, which represents a priority for the program. Mathematical modeling suggests that for countries with a large burden of injection drug use, HCV treatment for PWID is critical to achieving HCV elimination (Pitcher et al., 2019). We found that barriers to linkage to care among anti-HCV positive PWID include perceived high cost of care and a lack of information on what to do after a positive screening.

The eligibility criteria for HCV-infected individuals to enroll in the hepatitis C elimination program in Georgia are simple i.e., a person must be a citizen of Georgia aged ≥ 18 years. At the beginning of the program (April 28, 2015 to June 9, 2016) only patients with advanced liver fibrosis level were eligible for treatment (Mitruka et al., 2015). However, since June, 2016, the program has been expanded to all HCV-viremic individuals regardless of disease severity (Nasrullah et al., 2017). This expansion resulted in an increase in the number of enrolled individuals, but enrollment gradually declined after its peak in September 2016. Exact reasons for this

decline are not known but high cost of diagnostics earlier in the program may be attributed to this decline. In our analysis, affordability of the program was the only independent predictor of linkage to care.

Although all PWID interviewed were utilizing HR services at the time they were screened, more than half of study participants were no longer receiving HR services at the time of interview. Disengagement with HR services was one of the factors associated with poor linkage to care. Research suggests engagement in opioid substitution therapy and other HR services increases linkage to care among PWID (Bouscaillou et al., 2018). Our data seem to correlate with this finding.

One important finding of this study was that more than 20% of respondents did not indicate they were informed of their test results by a HCW. Ensuring counseling to communicate screening test results and the need and procedure for follow-up viremia testing among those with positive screening results may result in increased linkage to care. Further, standardized counseling procedures need to be developed and implemented at all HR facilities to inform anti-HCV-positive patients about the need for HCV viremia testing to improve linkage to care.

This study is subject to limitations. Firstly, our findings are not representative of all PWID in the country. We were unable to include those PWID in our study who were not enrolled in HR service at the time of anti-HCV testing and who did not agree to provide NIN to be registered in the elimination program database. Individuals not enrolled in HR services are likely among the hardest to reach, and we were not able to survey this population. Secondly, these findings are self-reported and are subject to recall and social desirability biases. Another limitation of the study is different selection period for NLC and LC groups (longer selection period for NLC), which could lead to information bias, as awareness of the study participants could change over time.

Interventions to improve linkage to hepatitis C care among PWID have been identified by different studies. One study found increased enrollment rates and adherence to treatment among PWID with advanced liver fibrosis level when hepatitis C screening is done on-site (at the HR center) and when peer navigation services are available (Kikvidze et al., 2018).

Because of technical advisory group (TAG) recommendations in Georgia and our study findings, the government has made all diagnostics free of charge since September, 2018. Other services, such as on-site viremia testing and treatment have also been shown to be effective (Chihota et al., 2018), and could help the country to reach elimination.

Conclusions

Post testing counselling and making hepatitis C services affordable could help increase linkage to care among PWID in Georgia. Reducing barriers for PWID is critical, and data from this study may be useful for other countries with a high HCV prevalence and where injection drug use is a major route of HCV transmission.

Abbreviations

HCV – Hepatitis C virus

HIV – Human Immunodeficiency Virus

HR – Harm Reduction

LC – Linked to Care

NIN – National Identification Number

NLC – Not Linked to Care

PWID – People Who Inject Drugs

TAG – Technical Advisory Group

USD – United States Dollar

Declarations

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the U.S. Centers for Disease Control and Prevention.

Ethics approval and consent to participate: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The study was approved by institutional review board of Health Research Union (IRB#00009520).

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Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: MB developed the study design and supervised data collection, analysis and manuscript preparation activities; TA and LG participated in data collection, entry and analysis and manuscript writing; TK developed study instrument; MG supervised pilot testing among study respondents; GK verified the analytical methods and performed statistical analysis; The concept for the study was developed with LG, TK, IT and MT; All authors contributed to interpretation of results, writing report, edited and approved the final manuscript.

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