

SORT IT KB Key Population

The reporting of the mode of transmission among HIV-positive men who have sex with men in Lviv oblast, Ukraine, 2014-2018

Maryana Sluzhynska¹, Olga Denisiuk², Ruzanna Grigoryan³, Yulia Sereda⁴, Gennadiy Slabkiy⁵, Olena Levytzka¹, Volodymyr Vozniuk¹

¹ Lviv Regional Public Health Center, Lviv, Ukraine

² The International Charitable Foundation “Alliance for Public Health”, Kyiv, Ukraine

³ TB Research and Prevention Center NGO, Yerevan, Armenia

⁴ Independent consultant, Kyiv, Ukraine

⁵ Uzhhorod National University, Department of Public Health, Uzhgorod, Ukraine

Abstract

Introduction: Men who have sex with men (MSM) are one of the key populations driving HIV/AIDS epidemic globally. To date, MSM is the only population in Ukraine where the prevalence and incidence of HIV is increasing. As HIV-positive MSM might feel uncomfortable to report homosexual intercours as a possible mode of transmission (MoT) of HIV, they prefer being registered as patients with heterosexual or non-defined MoT. This study aimed to calculate the proportion of misclassified MoT among HIV-positive MSM registered in Lviv oblast, Ukraine, during 2014-2018.

Methodology: Cross-sectional study with 127 HIV-positive MSM patients from Lviv region for the period of 2014-2018.

Results: Out of 127 HIV-positive MSM included in the study, 110 (86.6%) were from urban areas. In addition, 52 patients (40.9%) were diagnosed with stage 1 HIV, 16 (12.6%) – stage 2, 19 (15%) – stage 3, and 36 (28.3%) – stage 4. CD4 count < 200 cells/μL was found in 35 (27.6%) patients. Mean time from registration to antiretroviral therapy initiation was 80 days. During the first visit to medical doctor out of those 48 patients who had previously reported “other modes” of HIV transmission, 33 patients (68.7%) disclosed homosexual MoT of HIV. The remaining 15 (31.3%) patients disclosed their homosexual MoT of HIV later – during their regular follow-up visits to the doctor.

Conclusion: Special measures are needed to improve the reporting of homosexual MoT which can potentially strengthen the HIV care among MSM.

Key words: HIV; AIDS; MSM; SORT IT; Stigma.

J Infect Dev Ctries 2020; 14(11.1):122S-127S. doi:10.3855/jidc.11967

(Received 27 August 2019 – Accepted 14 December 2019)

Copyright © 2020 Sluzhynska *et al.* This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction

Globally, men who have sex with men (MSM) are one of the key populations driving HIV/AIDS epidemic; they account for 18% of new HIV infections [1]. About 40% of HIV diagnosis are attributed to MSM in Europe [2]. Ukraine has the second-largest HIV epidemic in Eastern Europe and Central Asia with over 240,000 people living with HIV [1]. In 2017, 13,000 new HIV cases were recorded, and 55% (7,200) of them were attributed to men [1]. In Ukraine, HIV epidemic is concentrated among key populations (KP), with the following HIV prevalence: people who inject drugs (PWID) – 22.6%, MSM – 7.5%, sex workers (SW) – 5.2% [3]. To date, MSM is the only KP with increasing HIV prevalence and incidence. The estimated population of MSM in Ukraine is about 181,000, and only half of them (56.8%) is aware of their HIV status [1].

Laws penalizing same-sex relationship have never existed in Ukraine. However, MSM population is often neglected by authorities due to stigmatization of male-to-male sex, ignorance and/or lack of adequate information. HIV-positive MSM might feel uncomfortable to report homosexual intercours as a possible mode of HIV transmission, hence, they prefer being registered as patients with heterosexual or non-defined mode of transmission (MoT) [4].

There was only one study in Ukraine, which looked at the misclassifications in registered MoT of HIV [5]. According to this study, up to 40% of reported cases of heterosexual transmissions among men may be misclassified and represent MSM or PWID.

Our study aimed to measure the rate of homosexual MoT in Lviv at the diagnosis and identify how it changes over the treatment period. We hypothesized that registered HIV-positive MSM who receive care

may disclose their sexual orientation during the follow-up visits to the Infectious Disease doctor. Therefore, we aimed to calculate the proportion of misclassified MoT among HIV-positive MSM registered in the Lviv oblast during 2014-2018. The specific objectives of the study were: a) to determine demographic and clinical characteristics of HIV-positive MSM; b) to calculate the homosexual MoT reported at the diagnosis and report its' change over the treatment period; c) to find out the associations between demographic and clinical characteristics and disclosure of MoT.

Methodology

Study design

This is a cross-sectional study among HIV-positive MSM registered in the Lviv region during 2014-2018.

Study Setting

General Setting

Ukraine is a country in Eastern Europe with a population of about 43.9 million people. The country is divided into 27 regions that are also called oblasts [6]. Lviv oblast is located in the western Ukraine with a population of 2,534,174. The administrative center of the oblast is the city of Lviv, which has officially registered population of around 760,000 people [7].

Specific settings

HIV response in Ukraine: the national response to the HIV epidemic in Ukraine is organized under the leadership and ownership of the Government of Ukraine and is coordinated by the Center for Public Health, Ministry of Health [8].

HIV-response in Lviv oblast: HIV-related health care services are provided at the Lviv Regional Public Health Center that had 4,000 HIV-positive people registered with HIV in 2018. The latest estimation shows that there are around 10,600 MSM living in the oblast [9].

Registration of MoT

The first time when the MoT of HIV appears in the patients' medical records is when the voluntary testing and counseling for HIV (VCT) is conducted. The next time when MoT is reflected in the medical records is during the patient's registration in the HIV care system, (registration Form 502-1/o). This Form contains special code assigned to register the way of HIV transmission. During the following HIV-related services provision data on patients' treatment and care is reflected in the "patient card 025". The "patient card 025" includes patient's anamnesis and possible way of HIV

transmission and is being continuously filled in during the whole duration of HIV care and treatment. The way of HIV transmission reflected in this form may differ from the code assigned to register the way of HIV transmission in the registration Form 502-1/o. All data on registered HIV-positive patients is reflected in the electronic and paper-based forms.

HIV diagnostics is conducted according to the National HIV Treatment Protocols [10], which are in line with WHO recommendations [11]. During the HIV diagnosis HIV clinical stage is established and reflected in all medical records.

HIV-positive patients visit HIV doctor for the regular check-up every 3-6 months, which results in at least two visits per year. During these visits medical doctor can potentially establish trustful connection with the patient and update information on the KP group and the possible way of HIV transmission in the "patient card 025".

If the patient reports homosexual transmission of HIV, health care provider may refer him to the local Non-Governmental Organization (NGO), which has HIV prevention services, like risk reduction counseling, condoms provision, social support which constitute standard.

Data collection and data analysis

Study population included all participants who met inclusion criteria of: 18 years of age or older, men diagnosed with HIV and registered in Lviv Public Health Center; at least two (2) visits to the AIDS center (visiting an infectious disease doctor).

The following data was extracted from the Medical Information System (MIS) to Microsoft Excel spreadsheet: patient's ID; place of residence; patient's age; CD4 count; Viral Load (VL); antiretroviral therapy (ART); date of registration; number of visits to the Infectious Disease doctor; registered mode of HIV transmission in the registration form (heterosexual, homosexual, parenteral, unknown) and in the patient card.

Data on the changed mode of HIV transmission over the treatment period was extracted from the "patient card 025" and entered into Microsoft Excel spreadsheet.

Data presented using descriptive statistics

Frequencies, proportions, measures of central tendency (mean), and variation (standard deviation). The associations were tested via chi square test and Student's t-test with significance level at 5%. Data analysis was done using Easystat, a web-based

statistical application (EasySTAT. Available: <https://easystat.app>).

Ethics Issues

Ethical approval was obtained from the Ethics Committee of the State Institution “Ukrainian Institute for Strategic Studies of the Ministry of Health of Ukraine”.

Results

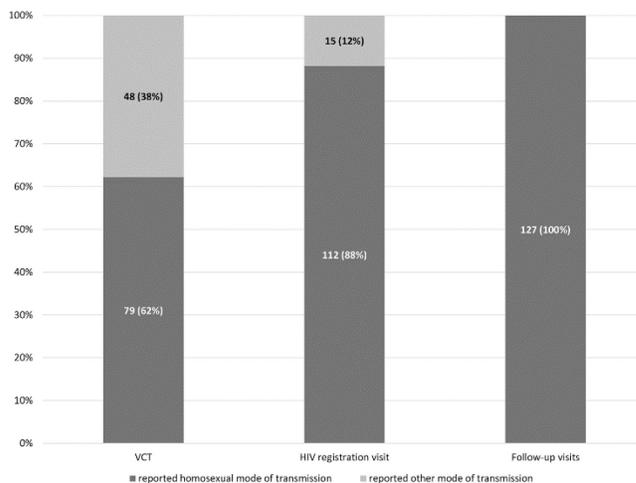
Demographic and clinical characteristics of HIV-positive MSM registered in Lviv region during 2014-2018.

A total of 127 HIV-positive MSM were registered in Lviv Regional AIDS Center during 2014-2018 (Table 1). Overall, 110 (86.6%) were from urban areas, 52 (40.9%) patients were diagnosed with HIV stage 1, 16 (12.6%) – stage 2, 19 (15%) – stage 3, and 36 (28.3%) – stage 4. Four patients did not have data on HIV staging.

CD4 count test was done for 118 patients. CD4 count < 200 cells/μL was available for 35 (27.6%) patients, CD4 count with 200-349 cells/μL for 35 (27.6%) patients, 350-499 cells/μL for 26 (20.5%) patients, and > 500 cells/μL for 22 (17.3%) patients. Mean time from registration to ART initiation was 79.72 ± 137.27 days. Mean age at registration was 33.13

± 13.83 years old. During the VCT of all 127 patients, 79 (62.2%) reported homosexual transmission of HIV. During the first visit to medical doctor for the registration out of 48 patients who had previously reported “other modes” of HIV transmission – 33 (68.7%) disclosed homosexual MoT of HIV. The remaining 15 patients disclosed their homosexual MoT

Figure 1. Changes in the registration of the HIV MoT from the VCT to the follow up visits among HIV-positive MSM registered in Lviv region during 2014-2018.



MoT – Mode of Transmission; VCT – voluntary counseling and testing.

Table 1. Demographic and clinical characteristics of HIV-positive MSM registered in Lviv region during 2014-2018.

Variable	Level	Total N = 127 n (%) or mean ± SD
Residential area, n (%)	Rural	17 (13.4%)
	Urban	110 (86.6%)
Age at registration, years	-	33.13 ± 13.83
	No data	4 (3.1%)
	Stage 1	52 (40.9%)
HIV stage at diagnosis, n (%)	Stage 2	16 (12.6%)
	Stage 3	19 (15%)
	Stage 4	36 (28.3%)
	No data	9 (7.1%)
	< 200 cells/μL	35 (27.6%)
CD4 count, n (%)	> 500 cells/μL	22 (17.3%)
	200-349 cells/μL	35 (27.6%)
	350-499 cells/μL	26 (20.5%)
	-	79.72 ± 137.27
Time to ART initiation, days	Homosexual	79 (62.2%)
	Other	48 (37.8%)
Patient reported MoT at VCT, n (%)	Homosexual	112 (88.2%)
	Other	15 (11.8%)
Cumulative patient-reported MoT at test and the first visit to doctor, n (%)	Homosexual	127 (100.0%)
	Other	0 (0.0%)
Cumulative patient- and doctor-reported MoT at test, at the first visit and over the follow-up, n (%)	From VCT to first visit	33
	From first visit to follow-up	15
Change of reported homosexual MoT, n	-	48 (37.8%)

ART – AntiRetroviral Therapy; MoT – Mode of Transmission; SD – Standard Deviation; VCT – Voluntary Counseling and Testing.

of HIV during their regular follow-up visits to medical provider. Figure 1 shows changes in the registration of the MoT of HIV from the VCT to the clinical follow-up visits.

Associations between clinical, demographic characteristics and reported MoT of HIV

There were no statistically significant associations between clinical and demographic characteristics and reported MoT of HIV starting from the VCT and over the follow-up treatment period (Table 2).

Discussion

This is the first study in Ukraine that evaluates changes in registered MoT of HIV among MSM over the entire treatment period.

The study showed that every third study participant did not disclose their MoT of HIV during the VCT. This finding may particularly indicate the fear of judgmental behavior from the health care staff, patients' concerns about confidentiality or the insufficient quality of counseling during the VCT. There are multiple studies which show the influence of homosexuality-related stigma and low quality of counselling on building trustful relations between counselor and MSM patient, which further influence timely access to ART and HIV care (medical and social) [12,13]. This kind of non-disclosure leading to misclassification of homosexual MoT of HIV was found in different countries. Phylogenetic studies in the UK estimated that about 19% of MSM were clustered within patients registered with heterosexual MoT [14,15].

Despite the fact that many patients did not disclose their MoT at the stage of VCT, 33 patients have provided updated information to medical provider during the next visits related to HIV registration and 15 patients during the follow-up visits. This shows that it takes time to establish trustful relations with a patient. We were not able to evaluate how long did it take for patients to disclose their MoT and we do not know how many patients registered with other MoT had homosexual MoT. Timely registration of the correct MoT would be beneficial for MSM patients, as relevant HIV prevention services could be provided on time.

Even though we did not find any statistically significant associations between MoT of HIV disclosure and clinical and demographic characteristics, our routine data raises significant concern in regard to timely access to HIV treatment among MSM, since 43% of all study participants were registered with advanced stages of HIV infection. In addition, the mean time from diagnosis to ART initiation was 80 days. This demonstrates that MSM might face multiple challenges regarding HIV prevention and care, starting from the willingness to undergo regular HIV testing to ART initiation.

It is known that vulnerable populations tend to experience intersecting forms of stigma [16], which may influence different aspects of life including their health seeking behavior. HIV-related stigma in particular is very common within the MSM community [17], which creates additional fears and becomes a barrier to HIV testing and partners' notification for those who received HIV-positive tests result [18,19]. There is also a high level of self-stigma faced by MSM,

Table 2. Associations between clinical, demographic characteristics and reported modes of HIV transmission among HIV-positive MSM registered in Lviv region during 2014-2018.

Variable	Level	Total N = 127 n (%) or mean ± SD	Change in MoT, n = 48	No change in MoT, n = 79	OR / MD	95% CI	p value
Residential area, n (%)	Rural	17 (13.4%)	4 (8.3%)	13 (16.5%)	0.46	0.1, 1.63	0.283
	Urban	110 (86.6%)	44 (91.7%)	66 (83.5%)	1	-	-
	Stage 1	52 (40.9%)	17 (35.4%)	35 (44.3%)	Inf	0.29, Inf	0.303
HIV stage at diagnosis, n (%)	Stage 2	16 (12.6%)	5 (10.4%)	11 (13.9%)	Inf	0.21, Inf	0.53
	Stage 3	19 (15%)	6 (12.5%)	13 (16.5%)	Inf	0.23, Inf	0.539
	Stage 4	36 (28.3%)	20 (41.7%)	16 (20.3%)	Inf	0.71, Inf	0.106
	No data	4 (3.1%)	0 (0%)	4 (5.1%)	-	-	-
	No data	9 (7.1%)	3 (6.2%)	6 (7.6%)	1	-	-
CD4 levels, n (%)	< 200 cells/μL	35 (27.6%)	18 (37.5%)	17 (21.5%)	2.08	0.37, 14.95	0.462
	> 500 cells/μL	22 (17.3%)	6 (12.5%)	16 (20.3%)	0.76	0.11, 6.19	1
	200-349 cells/μL	35 (27.6%)	12 (25%)	23 (29.1%)	1.04	0.18, 7.58	1
	350-499 cells/μL	26 (20.5%)	9 (18.8%)	17 (21.5%)	1.06	0.17, 8.1	1
Time to ART initiation, days	-	79.72 ± 137.27	75.03 ± 125.54	82.06 ± 143.62	-7.03 ± 24.28	-62.2, 48.14	0.8 (0.634)

ART – AntiRetroviral Therapy; CI – Confidence Interval; Inf – infinity; MD – Mean Difference; MoT – Mode of Transmission; OR – Odds Ratio; SD – Standard Deviation.

which force to hide sexual orientation [20,21]. MSM-positive health care providers can be very much involved in the process of breaking both LGBT and HIV stigma in the community through the peer support [22].

On another note, correct reporting of the MoT of HIV is important for better understanding of the current HIV epidemic patterns. This kind of discrepancies in the reporting of MoT may also indicate the underreporting of HIV among MSM. This data is very crucial for better understanding the needs of HIV prevention programs and developing targeted intervention.

The study has several limitations, such as small sample size, which could possibly influence the ability to detect associations; there was missing data in the patient cards in terms of clinical characteristics due to potential biases in data collection which were out of our control. The third cutoff for the data collection on the MoT was done using data from patients cards where data is reported randomly and not reflected in the MIS.

The main strength of the study is the use of personalized data to compare the registered mode of transmission at the diagnosis with the data from the follow-up visits. We also followed the STROBE guidelines for reporting of observational research.

Conclusion

Implementation of special measures improving the trust between healthcare providers and the patients, like trainings on counselling, engagement of social workers and other could be useful for receiving higher reporting of homosexual MoT and hence better provision of treatment and preventive services. More general programs reducing the stigma towards HIV infection among MSM could further improve the reporting, treatment and prevention of the transmission. Further qualitative research is needed to address the issue of trust between health care providers and patients in order to inform health care services for MSM in Ukraine.

Acknowledgements

The authors thank the National TB Control Center of Armenia for defining research questions and providing data for this study, and the secretariat of the European TB Research Initiative (ERI-TB) at the WHO Regional Office for organizing the Structured Operational Research Training (SORT-TB) for 6 east European countries supported by the USAID-WHO regional partnership project to End TB in east Europe (RP). SORT-TB curriculum was an adaptation to the east European context of the TDR's SORT IT course.

Authors' contributions

Maryana Sluzhynska, Yulia Sereda and Olga Denisuk conceived the study aims; Maryana Sluzhynska, Olena Levytska, Volodymyr Vozniuk led the data collection; Maryana Sluzhynska, Yulia Sereda, Ruzanna Grigoryan, and Olga Denisuk designed and executed the analysis; Maryana Sluzhynska and Olga Denisuk wrote the first draft of the manuscript; All authors provided feedback to the first draft of the manuscript.

Funding

This study was funded by United States Agency for International Development. The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

References

1. Joint United Nations Programme on HIV/AIDS (2018) 2017 Global HIV statistics. Available: https://www.unaids.org/sites/default/files/media_asset/HIV_estimates_from_1990-to-present.xlsx. Accessed: DD Month YYYY.
2. World Health Organization Office for Europe (2017) HIV/AIDS surveillance in Europe 2017. Available: https://ecdc.europa.eu/sites/portal/files/documents/20171127-Annual_HIV_Report_Cover%2BInner.pdf. Accessed: 20 August 2019.
3. President's Emergency Plan for AIDS Relief (2018) Ukraine 2018 country operational plan strategic direction summary. Available: <https://www.pepfar.gov/documents/organization/285850.pdf>. Accessed: 20 August 2019.
4. Dindia K, Allen M (1992) Sex differences in self-disclosure: A meta-analysis. *Psychol Bull* 112: 106-124.
5. Čakalo JI, Božičević I, Vitek C, Mandel JS, Salyuk T, Rutherford GW (2015) Misclassification of men with reported HIV infection in Ukraine. *AIDS Behav* 19: 1938-1940.
6. World Population Review (2019) Ukraine Population 2019. Available: <http://worldpopulationreview.com/countries/ukraine-population/>. Accessed: 10 July 2019.
7. Ministry of Foreign Affairs of Ukraine (2019) Lviv Region. Available: <https://mfa.gov.ua/en/about-ukraine/info/regions/6-lviv>. Accessed: 10 July 2019.
8. Ministry of Health of Ukraine (2019) Center for Public Health. Available: <https://phc.org.ua/en>. Accessed: 20 May 2019.
9. Health A for P (2017) Behavior and HIV prevalence monitoring among men, who practice sex with men. Available: <https://www.avert.org/professionals/hiv-around-world/eastern-europe-central-asia/ukraine>. Accessed: 20 August 2019.
10. Ministry of Health of Ukraine (2019) National protocol for HIV treatment and Care. Available: <https://moz.gov.ua/article/ministry-mandates/nakaz-moz-ukraini-vid-05062019--1292-pro-zatverdzhennja-novogo-klinichnogo-protokolu-iz-zastosuvannja-antiretrovirusnih-preparativ-dlja-likuvannja-ta-profilaktiki-vil-infekcii>. Accessed: 10 July 2019.

11. World Health Organization (2016) Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Available: <https://www.who.int/hiv/pub/arv/arv-2016/en>. Accessed: 10 July 2019.
12. Jemmott JB, Zhang J, Croom M, Icard LD, Rutledge SE, O'Leary A (2019) Barriers and facilitators to engaging African American men who have sex with men in the HIV care continuum. *J Assoc Nurses AIDS Care* 30: 352-361.
13. Lyons C, Stahlman S, Holland C, Ketende S, Van Lith L, Kochelani D, Mavimbela M, Sithole B, Maloney L, Maziya S, Baral S (2019) Stigma and outness about sexual behaviors among cisgender men who have sex with men and transgender women in Eswatini: a latent class analysis. *BMC Infect Dis* 19: 211.
14. Ragonnet-Cronin M, Hue S, Hodcroft EB, Tostevin A, Dunn D, Fawcett T, Pozniak A, Brown AE, Delpech V, Brown AJL (2018) Non-disclosed men who have sex with men in UK HIV transmission networks: phylogenetic analysis of surveillance data. *Lancet HIV* 5: e309-e316.
15. Hue S, Brown AE, Ragonnet-Cronin M, Lycett SJ, Dunn DT, Fearnhill E, Dolling DI, Pozniak A, Pillay D, Delpech VC, Leigh Brown AJ (2014) Phylogenetic analyses reveal HIV-1 infections between men misclassified as heterosexual transmissions. *AIDS* 28:1967-1975.
16. Friedland BA, Sprague L, Nyblade L, Baral SD, Pulerwitz J, Gottert A, Amanyeiwe U, Cheng A, Mallouris C, Anam F, Jackson A, Geibel S (2018) Measuring intersecting stigma among key populations living with HIV: implementing the people living with HIV Stigma Index 2.0. *J Int AIDS Soc* 21: e25131.
17. Stahlman S, Bechtold K, Sweitzer S, Mothopeng T, Taruberekera N, Nkonyana J, Baral S (2015) Sexual identity stigma and social support among men who have sex with men in Lesotho: a qualitative analysis. *Reprod Health Matters* 23:127-135.
18. Dowshen N, Binns HJ, Garofalo R (2009) Experiences of HIV-related stigma among young men who have sex with men. *AIDS Patient Care STDS* 23: 371-376.
19. Wei C, Cheung DH, Yan H, Li J, Shi L, Raymond HF (2015) The impact of homophobia and HIV stigma on HIV testing uptake among chinese men who have sex with men. *J Acquir Immune Defic Syndr* 71: 87-93.
20. Altman D, Aggleton P, Williams M, Kong T, Reddy V, Harrad D, Reis T, Parker R (2012) Men who have sex with men: Stigma and discrimination. *Lancet* 380: 439-445.
21. Courtenay-Quirk C, Wolitski RJ, Parsons JT, Gómez CA (2006) Is HIV/AIDS stigma dividing the gay community? Perceptions of HIV-positive men who have sex with men. *AIDS Educ Prev* 18: 56-67.
22. Shangani S, Escudero D, Kirwa K, Harrison A, Marshall B, Operario D (2017) Effectiveness of peer-led interventions to increase HIV testing among men who have sex with men: a systematic review and meta-analysis. *AIDS Care* 29: 1003-1013.

Corresponding author

Maryana Sluzhynska, MD
 Director, Lviv Regional Public Health Center
 45 Lysenko str., 79008 Lviv, Ukraine
 Phone: +380503158418
 Fax: +380322752131
 Email: mssluzhynska@gmail.com

Conflict of interests: No conflict of interests is declared.