Brief report

Targeting fast-track goals: Missed opportunities for HIV testing in the Community of Madrid[☆]

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ABSTRACT

Introduction: In Spain HIV testing is recommended to people with risk behaviors for HIV and with indicator conditions (IC) related to HIV infection. Missed diagnostic opportunities (MO) are defining as situations where these recommendations are not followed.

Objective: To characterize MO due to risk behaviors (directed) and due to IC (indicated) among people diagnosed with HIV in the Region of Madrid.

Methods: A total of 109 participants newly diagnosed with HIV were recruited from 7 health centers (April 2018-March 2019) by a telephone survey. Diagnostic opportunities were defined as any contact with the healthcare system in which an HIV test should have been carried out. Frequency of MO was calculated within the previous 2 years from HIV diagnosis.

Results: Of the 32 directed and indicated diagnostic opportunities, 96.9% and 57.8% respectively resulted in MO. Overall, 83.8% of diagnostic opportunities resulted in MO.

Conclusion: MO, both directed and indicated, are an important area for improvement to reduce late diagnosis.

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Identificando objetivos fast-track: oportunidades perdidas en el diagnóstico de VIH en la Comunidad de Madrid

RESUMEN

Introducción: La oferta dirigida de la prueba de VIH está recomendada en personas con prácticas de riesgo y en enfermedades indicadoras de VIH. Las oportunidades diagnósticas perdidas (OP) son aquellas donde no se cumplen estas recomendaciones.

Objetivo: Conocer el porcentaje de OP según práctica de riesgo (OP dirigidas) y condiciones indicadoras (OP indicadas) en la Comunidad de Madrid.

Métodos: Se reclutaron 109 personas con nuevo diagnóstico de VIH en 7 centros sanitarios (abril 2018-marzo 2019) mediante encuestas telefónicas. Se definió oportunidad diagnóstica como cualquier contacto con el sistema sanitario en el que debería haberse realizado la prueba de VIH. Se calculó la ocurrencia de OP en los 2 años anteriores al diagnóstico de VIH.

Resultados: De 32 oportunidades diagnósticas dirigidas e indicadas, un 96,9% y 57,8% respectivamente derivaron en OP. Globalmente, el 83,8% de las oportunidades diagnósticas resultaron en OP.

Conclusión: Las OP son una importante área de mejora en el diagnóstico precoz de VIH.

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Introduction

Human immunodeficiency virus (HIV) infection is a persistent public health problem in Spain. Every year, 3,500−4,500 new diagnoses are reported, and nearly half are late diagnoses[1].

The impact of late diagnosis on morbidity and mortality in patients with HIV and the contribution thereof to new infections have been extensively described[2,3]. To improve early diagnosis of HIV, in 2014, the Spanish Ministry of Health published guidelines with healthcare recommendations that included testing for HIV in people with clinical criteria consistent with HIV infection (called indicator conditions [ICs]) and in people who engage in practices that could represent a higher risk of becoming infected with HIV[4]. Despite these recommendations, missed opportunities (MOs) for diagnosis — occasions on which people who meet the above requirements have contact with the health system and are not offered HIV testing — remain common[5,6].

New diagnoses of HIV in the Autonomous Community of Madrid (ACM) account for approximately 23% of all cases reported annually in Spain[1], and around 40% of diagnoses are made when the patient has a CD4 count below 350 cells/μl[7].

The objective of this study was to analyse MOs due to ICs (indicated) and due to risk practices (directed) among new HIV diagnoses in the ACM.

Methods

This was a cross-sectional study in people over 16 years of age residing in the ACM and diagnosed with HIV between 1 April 2018 and 31 March 2019. Participants were selected by convenience sampling between June and September 2019 at the Centro de ITS Montesa [Montesa STI Centre], Centro Sanitario Sandoval [Sandoval Health Centre], Hospital Universitario La Paz [La Paz University Hospital], Hospital Universitario Ramón y Cajal [Ramón y Cajal University Hospital], Hospital Universitario Gregorio Marañón [Gregorio Marañón University Hospital], Hospital Universitario 12 de Octubre [12 de Octubre University Hospital] and Hospital Clínico San Carlos [San Carlos Clinical Hospital]. Those whose command of Spanish prevented them from completing the survey were excluded.

A telephone interview with 34 questions adapted from preexisting questionnaires was conducted[6,8]. The following variables were collected: (a) sociodemographic variables; (b) variables related to risk practices calling for directed testing (gay, bisexual or other men who have sex with men [GBMSM]; transsexual women who have sex with men; three or more sexual partners; engagement in sex work; injected drug use or sexualised drug use [chemsex]) and disclosure thereof; (c) nature of test leading to diagnosis; and d) opportunities for diagnosis (ODs) of HIV and MOs (considering disclosure to be a dichotomous variable, with "yes" meaning disclosure to the different resources used and "no" meaning concealment from any of them).

An OD was defined as any contact with a healthcare resource in the two years prior to diagnosis in which HIV testing was recommended[5], classified as follows:

- *OD for directed testing:* if the person had engaged in any risk practice calling for testing. Participants with multiple instances of contact were asked about the most recent.

- *OD due to an IC:* visit for general signs or symptoms (fever of unknown origin for more than a month, idiopathic chronic diarrhoea that was recurrent and/or lasted longer than a month, unexplained weight loss exceeding 10%), mucocutaneous signs (herpes zoster, candidiasis or idiopathic lymphadenopathy), pulmonary tuberculosis or an STI (hepatitis A, B or C; syphilis; gonorrhoea; chlamydia, genital herpes; human papillomavirus; lymphogranuloma venereum; genital mycoplasma; or trichomoniasis).

- *MO:* any OD that did not result in testing being offered. ODs that occurred in the three months prior to HIV diagnosis were considered potentially related to said diagnosis and therefore not included in the analysis.

A descriptive analysis of the participants who completed the entire questionnaire was performed. In those having had any contact with the health system in the two years prior to their diagnosis, a bivariate analysis was performed to determine whether there were any differences with regard to the occurrence of MOs by gender identity, age, region of origin, place of residence, years of residence in the ACM, level of education or occupational status. In people who engage in risk practices calling for directed testing, the possibility of a relationship between the disclosure of said practices and MOs was assessed. The study was approved by the Instituto de Salud Carlos III [Carlos III Health Institute] Independent Ethics Committee (HIP-CI-CEI-PI-20_2019v3) and funded by Madrid Salud [Madrid Health].

Results

Of the 144 participants screened, 111 (77.1%) completed the entire questionnaire. Two transsexual women who had sex with men were excluded from the analysis for lack of a larger sample of such individuals. Ultimately, the sample consisted of 109 participants (Table 1).

More than 90% of them engaged in any risk practice calling for directed testing (78.9% were GBMSM, 74.3% had three or more sexual partners and 24.8% practised chemsex). Two or more of these practices were reported by 68.8% of the participants. The healthcare resources with the highest rates of disclosure were STI centres (83.8% in GBMSM, 80.0% in people with ≥3 partners and 68.8% in chemsex users). These rates were lower in accident and emergency departments (37.1% in GBMSM, 17.2% in people with ≥3 partners and 19.1% in chemsex users). The lowest rate of disclosure corresponded to chemsex in primary care (13.6%).

Fifty-two men (53.1%) and five women (45.5%) were diagnosed with HIV as a result of an IC-related visit (p = 0.076) (Table 2). Primary care centres were the healthcare resources in which the participants were most commonly diagnosed with HIV, followed by centres for STIs in men (20.4%).

Forty-nine participants (45.0%) experienced at least one OD. Of them, 41 stated that they had not been offered the test, representing a rate of 83.8% (95% confidence interval [CI] 70.3–92.7) of MOs for this group (88.4% in men and 75.0% in women, p = 0.624). No significant differences were found between those who experienced MOs and those who did not. In total, there were 57 MOs: one in 28 people, two in 10 people and three in three people.

Of the 32 directed ODs, 50% occurred in primary care. Out of all ODs, 96.9% (95% CI 83.8–99.9) resulted in MOs for directed testing (all in men). The highest rates of MOs for directed testing were seen in primary care (15 MOs, 100%), hospital visits (6 MOs, 100%) and accident and emergency departments (6 MOs, 85.7%).

Table 1

Sociodemographic characteristics of the participants (n = 109).

Sex, n (%)	
Male	98 (89.9)
Female	11 (10.1)
Age in years, median (interquartile range)	35 (30−45)
Age groups in years, n (%)	
20−34	54 (49.5)
35−44	25 (22.9)
45−54	24 (22.0)
More than 54	6 (5.5)
Region of origin, n (%)	
Spain	55 (50.5)
Latin America or Caribbean	50 (45.9)
Other origin	4 (3.7)
Place of residence, n (%)	
Madrid (capital)	95 (87.2)
Other major city in the ACM	8 (7.3)
Small city or town in the ACM	3 (2.8)
Other Autonomous Community	3 (2.8)
Years of residence in the ACM[a], n (%)	
Born in the ACM	22 (20.2)
<1	10 (9.2)
1−5	32 (29.4)
6−10	16 (14.7)
11−20	20 (18.4)
>20	6 (5.5)
Level of education, n (%)	
Primary or no education	8 (7.3)
Secondary or technical education	54 (49.5)
University or higher education	47 (43.1)
Occupational status, n (%)	
Active	82 (75.2)
Student	5 (4.6)
Unemployed, retired or on occupational leave	22 (20.2)

ACM: Autonomous Community of Madrid.

[a] Represent only those residing in the ACM.

Thirty-four participants had 44 ODs due to ICs. More than half (n = 23) took place in primary care. The rest occurred in accident and emergency departments (n = 6), STI centres (n = 3), hospital visits (n = 1) or other (n = 3). These ODs resulted in an MO in 59.1% (n = 26) of cases (45% in men and 60% in women). ODs resulted in MOs at rates of 60.9% (n = 14) in primary care, 72.7% (n = 8) in visits to other types of healthcare resources and 50% (3) in accident and emergency departments, and the only OD in a hospital visit resulted in an MO. None of the three ODs due to ICs that occurred at STI centres resulted in an MO.

No statistically significant differences were found (Table 3).

The highest numbers of MOs occurred due to fever of unknown origin (23.1%) or chronic diarrhoea (19.2%) (Table 2). The rate of MOs was higher in ICs other than an STI (78.3% versus 38.1%) (Table 3).

Table 3

Differences between occurrences of opportunities by exposure variables among participants who had any contact with the health system in the two years prior to their HIV diagnosis (n = 80).

	No MO, n (%)	MO, n (%)	
Sex			
Male	8 (17.0)	39 (83.0)	0.688
Female	1 (25.0)	3 (75.0)	
Age in years			
20−34	4 (18.2)	18 (81.8)	0.286
35−44	1 (7.7)	12 (92.3)	
45−54	2 (16.7)	10 (83.3)	
>54	2 (50.0)	2 (50.0)	
Region of origin			
Spain	5 (16.1)	26 (83.9)	0.578
Latin America or Caribbean	4 (23.5)	13 (76.5)	
Other origin	0 (0.0)	3 (100.0)	
Place of residence			
Within the city of Madrid	8 (17.0)	39 (83.0)	0.688
Outside of the city of Madrid	1 (25.0)	3 (75.0)	
Years of residence in the ACM[a]			
Born in Madrid	3 (20.0)	12 (80.0)	0.117
5 or fewer	5 (31.3)	11 (68.8)	
6 or more	1 (5.0)	19 (95.0)	
Level of education			
Primary or no education	2 (25.0)	6 (75.0)	0.701
Secondary or technical education	3 (13.0)	20 (87.0)	
University or higher education	4 (20.0)	16 (80.0)	
Occupational status			
Active	5 (13.5)	32 (86.5)	0.235
Student	0 (0.0)	2 (100.0)	
Unemployed, retired or on occupational leave	4 (33.3)	8 (66.7)	
Disclosure of being GBMSM[b]			
Yes	6 (18.2)	27 (81.8)	0.702
No	1 (12.5)	7 (87.5)	
Disclosure of number of partners[b]			
Yes	6 (16.7)	30 (83.3)	0.459
No	2 (28.6)	5 (71.4)	
Disclosure of injected drug use[b]			
Yes	1 (50.0)	1 (50.0)	0.386
No	0 (0.0)	1 (100.0)	
Disclosure of chemsex[b]			
Yes	21.43 (0.0)	78.57 (0.0)	0.468
No	0 (0.0)	2 (100.0)	

ACM: Autonomous Community of Madrid; GBMSM: gay, bisexual and other men who have sex with men; HIV: human immunodeficiency virus; MO: missed opportunity.

[a] Represent only those residing in the ACM.

[b] Among the participants who engaged in this risk practice.

Discussion

The overall rate of MOs was consistent with those found in other countries[8,9], and the overall rate of MOs due to ICs (59.1%) was similar to that found in Spanish GBMSM in 2013 (52.8%)[5].

Table 2

Reason for visit leading to HIV diagnosis, by sex. Multiple responses.

	Men (n = 98)	Women (n = 11)	Total (n = 109)
Indicator conditions			
FUO lasting longer than a month	28 (28.6)	2 (18.2)	30 (17.0)
Chronic or recurrent diarrhoea	25 (25.5)	2 (18.2)	27 (15.3)
Weight loss equal to or exceeding 10%	20 (20.4)	4 (36.4)	24 (13.6)
Herpes zoster	5 (5.1)	0 (0)	5 (2.8)
Oral candidiasis	7 (7.1)	1 (9.1)	8 (4.5)
Pulmonary tuberculosis	1 (1.0)	0 (0.0)	1 (0.6)
Sexually transmitted infection	7 (7.1)	0 (0.0)	7 (4.0)
Hepatitis	3 (3.1)	0 (0.0)	3 (1.7)
Other disease or reason for visit	34 (34.7)	3 (27.3)	7 (20.9)
Other situation			
None of the above situations	31 (31.6)	3 (27.3)	34 (19.2)
Unknown	1 (1.0)	1 (9.1)	1 (0.6)

FUO: fever of unknown origin; HIV: human immunodeficiency virus.

The rate of disclosure of risk practices was low, especially in primary care, which might reflect barriers such as lack of privacy, lack of time, cultural competences and fear of discrimination[10,11]. Awareness of matters related to sexuality must be raised among health professionals. Training interventions have been shown to have a positive impact on testing in our context[12].

The rate of MOs was higher for ICs other than an STI, especially in nonspecific conditions such as fever of unknown origin and chronic diarrhoea, consistent with findings from other authors[6]. This points to a need to improve training on ICs so that professionals have a high degree of suspicion in the event of their onset.

The importance of primary care is reflected in the finding that it was the resource where the most diagnoses were made, but where most of the ODs occurred. The types of resources with the highest rate of MOs were those categorised as "other"; most were private centres, so their role may be relatively significant.

Other studies have found a relationship between the disclosure of risk practices and a lower rate of MOs[13]. Our study did not find this relationship or any other. This could be due to its sample size.

Moreover, the low number of cases in women also precluded an in-depth analysis in this group. Our sample nevertheless represents approximately 10% of new diagnoses reported annually. Information was only collected on the most recent contact with a healthcare resource for directed ODs; this might have resulted in underestimation of rates of ODs and MOs. Another limitation of our study was its use of convenience sampling. A strength of the study was that it broadened the knowledge of MOs in the ACM.

Reducing MOs represents a clear opportunity to improve control of the HIV epidemic. It also entails opportunities to offer personalised prevention counselling, promote condom use and provide information on pre- and post-exposure prophylaxis to candidates for the use thereof.[14] Diagnostic testing has been proposed as a strategy for linking people with negative results to preventive measures that is as effective as the cascade of care.[15] Both strategies leverage HIV diagnostic testing as a starting point for patients who engage in risk practices. Reducing MOs is crucial for seizing this opportunity.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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Appendix A. Annex

Members of the Fast-Track Madrid Working Group for the Study of Missed Opportunities: Teresa Valverde Higueras, Francisco Bru Gorraiz, David Rial-Crestelol, Santos del Campo, Isabel Gutiérrez Cuéllar, Oskar Ayerdi Aguirrebengoa, Vicente Estrada, Ana Delgado, Marta Rava, Asunción Díaz, Cristina Moreno and Inmaculada Jarrín.

References

1. Unidad de Vigilancia de VIH, ITS y hepatitis, Available from: https://www.mscbs.gob.es/ciudadanos/enfLesiones/enfTransmisibles/sida/vigilancia/Informe_VIH_SIDA_20201130.pdf, 2020.
2. Croxford S, Kitching A, Desai S, Kall M, Edelstein M, Skingsley A, et al. Mortality and causes of death in people diagnosed with HIV in the era of highly active antiretroviral therapy compared with the general population: an analysis of a national observational cohort. Lancet Public Health. 2017;2:e35–46, http://dx.doi.org/10.1016/S2468-2667(16)30020-2 [Accessed 20 February 2021] Available from: https://doi.org/10.1016/S2468-2667(16)30020-2
3. Skarbinski J, Rosenberg E, Paz-Bailey G, Hall HI, Rose CE, Viall AH, et al. Human immunodeficiency virus transmission at each step of the care continuum in the United States. JAMA Intern Med. 2015;175:588–96, http://dx.doi.org/10.1001/jamainternmed.2014.8180.
4. Ministerio de Sanidad, Servicios Sociales e Igualdad. Plan Nacional sobre Sida. Guía de recomendaciones para el diagnóstico precoz de VIH en el ámbito sanitario. Madrid: MSCBS; 2014.
5. Espinel M, Belza MJ, Cabeza-de-Vaca C, Arranz B, Guerras JM, Garcia-Soltero J, et al. La prueba del VIH orientada por condiciones indicadoras: oportunidades perdidas para adelantar el diagnóstico de la infección en hombres que tienen sexo con hombres. Enferm Infecc Microbiol Clin. 2018;36:465–71, http://dx.doi.org/10.1016/J.EIMC.2017.07.010.
6. Agustí C, Montoliu A, Mascort J, Carrillo R, Almeda J, Elorza JM, et al. Missed opportunities for HIV testing of patients diagnosed with an indicator condition in primary care in Catalonia, Spain. Sex Transm Infect. 2016;92:387–92, http://dx.doi.org/10.1136/sextrans-2015-052328.
7. Dirección General de Salud Pública, Consejería de Sanidad, Madrid. [Accessed 20 February 2021]. Available from: https://www.comunidad.madrid/sites/default/files/doc/sanidad/epid/informe_vih2017.pdf, 2019.
8. Champenois K, Cousien A, Cuzin L, Le Vu S, Deuffic-Burban S, Lanoy E, et al. Missed opportunities for HIV testing in newly-HIV-diagnosed patients, a cross sectional study. BMC Infect Dis. 2013;13:200, http://dx.doi.org/10.1186/1471-2334-13-200.
9. Traynor SM, Rosen-Metsch L, Feaster DJ. Missed opportunities for HIV testing among STD clinic patients. J Community Health. 2018;43:1128–36, http://dx.doi.org/10.1007/s10900-018-0531-z.
10. Gil Estevan MD, Solano Ruíz MC. [Application of the cultural competence model in the experience of care in nursing professionals Primary Care] Spanish. Aten Primaria. 2017;49:549–56, http://dx.doi.org/10.1016/j.aprim.2016.10.013.
11. Zeeman L, Sherriff N, Browne K, McGlynn N, Aujean S, Pinto N, et al. State-of-the-art study focusing on the health inequalities faced by LGBTI people D1.1 State-of-the-Art Synthesis Report (SSR). Brussels: European Union; 2017.
12. Sanz JM, Elías MJP, Muriel A, Ayerbe CG, Gallego MJV, Conde MS, et al. Outcome of an HIV education program for primary care providers: screening and late diagnosis rates. PLoS One. 2019;14:e0218380, http://dx.doi.org/10.1371/journal.pone.0218380.
13. Qiao S, Zhou G, Li X. Disclosure of same-sex behaviors to healthcare providers and uptake of HIV testing for men who have sex with men: a systematic review. Am J Mens Health. 2018;12:1197–214, http://dx.doi.org/10.1177/1557988318784149.
14. Ayerdi Aguirrebengoa O, Vera García M, Portocarrero Nuñez JA, Puerta López T, García Lotero M, Escalante Garcia C, et al. Implementing pre-exposure prophylaxis could prevent most new HIV infections in transsexual women and men who have sex with men. Rev Clin Esp (Barc). 2019;219:360–6, http://dx.doi.org/10.1016/j.rce.2019.02.001.
15. Schaefer R, Gregson S, Fearon E, Hensen B, Hallett TB, Hargreaves JR. HIV prevention cascades: a unifying framework to replicate the successes of treatment cascades. Lancet HIV. 2019;6:e60–6, http://dx.doi.org/10.1016/S2352-3018(18)30327-8.