

ORIGINAL ARTICLE

Screening for undiagnosed human immunodeficiency virus infection in Spanish emergency departments: current attitudes, inclination, and perception of obstacles related to the implementation of measures to improve detection

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Objectives. To describe current attitudes toward screening for undiagnosed human immunodeficiency virus (HIV) infection in Spanish hospital emergency departments (EDs). To describe staff willingness to implement screening protocols and the obstacles they foresee.

Methods. Structured survey of all chiefs of hospital EDs seeing adults 24 hours per day within the Spanish national health system. The ED chiefs were asked about their departments' routine HIV screening practices, their willingness to screen, and the perceived obstacles to implementing measures to improve screening. Findings were compared according to hospital size (large hospitals, ≥ 500 beds; small-medium hospitals, < 500 beds), ED caseload (high, ≥ 200 patients/d; low, < 200 patients/d), and Spanish autonomous community.

Results. The chiefs of 250 of the 282 EDs (88.7%) responded. Fifty-nine (23.6%) were in large hospitals, and 114 (45.6%) had high caseloads. HIV serology for suspected HIV infection is never or hardly ever ordered in 65.2% of the EDs. If serology is ordered, 17.6% request rapid processing. Nearly half (47.8%) thought that EDs should not screen for undiagnosed HIV infection; in Asturias, Castile and Leon, Extremadura, and Navarre over 75% of respondents expressed that opinion. Three of the 9 proposed measures to improve HIV screening in EDs were considered quite difficult or very difficult to implement. One measure that was considered problematic was nurse identification of high-risk patients during triage (for 61% of respondents overall and $> 75\%$ in the communities of Madrid and Valencia, Murcia, Aragon, and Navarre). A second foreseen difficulty was gaining hospital directors' and administrators' acceptance of universal HIV screening (for 59% overall and $> 75\%$ in Madrid, Aragon, and Navarre). The third was gaining emergency physicians' acceptance of screening (57% overall and $> 75\%$ in Madrid, Navarre, Basque Country, and Extremadura). In the remaining autonomous communities, fewer than 35% of the ED chiefs foresaw difficulties. ED chiefs in large hospitals and with high caseloads accepted HIV screening more readily, both in terms of current practice and the implementation of improved screening protocols.

Conclusions. There is considerable room for improvement in hospital ED screening for undiagnosed HIV infection. Some measures aimed at better screening would be more acceptable to the surveyed EDs, but there are marked differences in attitudes between autonomous communities.

Keywords: Human immunodeficiency virus (HIV). Diagnosis. Emergency department. Serology. Street drugs.

Detección de pacientes con infección desconocida por VIH en los servicios de urgencias españoles: actitud actual y predisposición y dificultades percibidas para implementar acciones de mejora

Objetivo. Conocer la actitud actual de los servicios de urgencias hospitalarios (SUH) españoles para detectar pacientes con infección por VIH no conocida, así como su predisposición y las potenciales dificultades para implantar medidas que mejoren esta detección.

Método. Encuesta estructurada a los responsables de todos los SUH públicos españoles que atienden adultos 24 horas/día. Se preguntó sobre rutinas asistenciales en urgencias para cribaje de infección oculta por VIH, y sobre la predisposición y dificultades percibidas para implementar medidas de mejora. Los resultados se comparan según tamaño del hospital (grande vs medio-pequeño: ≥ 500 vs < 500 camas) y afluencia en urgencias (alta vs media-baja: ≥ 200 vs < 200 pacientes/día) y se detallan por comunidad autónoma.

Resultados. Respondieron 250 de los 282 SUH españoles (88,7%): 59 correspondían a hospitales grandes (23,6%) y 114 (45,6%) eran SUH de alta afluencia. El 65,2% casi nunca o infrecuentemente solicita serología VIH en sospecha de infección oculta (si lo hace, el 17,6% recibe el resultado de forma urgente) y un 47,8% cree que urgencias no debe participar en programas de detección de infección oculta por VIH ($> 75\%$ de SUH en Asturias, Castilla y León, Extremadura y Navarra). Tres de las nueve medidas encuestadas encaminadas a mejorar la detección del VIH en ur-

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gencias fueron consideradas de implementación difícil: participación de enfermería en detectar pacientes en riesgo durante el triaje (61% de SUH consideraron su dificultad bastante alta o muy alta; > 75% en Madrid, Comunidad Valenciana, Murcia, Aragón y Navarra) y la aceptación de cribado universal por parte de gerencia/dirección del centro (59%; > 75% en Madrid, Aragón y Navarra) y *urgenciólogos* (57%; > 75% en Madrid, Navarra, País Vasco y Extremadura); en las seis medidas restantes < 35% de SUH consideraron su implementación difícil. Se constata una mayor implicación de hospitales grandes y SUH con alta afluencia en la detección de infección oculta por VIH, tanto actual como en la implementación de medidas de mejora.

Conclusión. Existe un margen importante de mejora en los SUH en cuanto a la detección de la infección oculta por VIH. La implementación de ciertas medidas conseguiría una mejor aceptación de las estrategias de detección precoz por los colectivos implicados, aunque con diferencias notables entre comunidades autónomas.

Palabras clave: VIH. Diagnóstico. Urgencias. Serología. Drogas.

Introduction

An estimated 150,000 people in Spain are infected with HIV and 14% of these are unaware of their condition^{1,2}. Problems arising from the lack of diagnosis of HIV infection are manifold. Among them are the loss of opportunity for these patients to receive antiretroviral treatment at an early stage (late diagnosis multiplies the risk of death by 5 times compared to early diagnosis)³⁻⁵, the increase in healthcare costs (due to greater morbidity and hospitalization of patients diagnosed late)⁶ and the spread of HIV infection to other uninfected persons (it is estimated that the transmission rate is 3.5 times higher in persons who are unaware of their infection)⁷⁻⁹. In fact, some studies have estimated that this percentage of patients who are unaware of their serological status could be responsible for up to 50% of new infections⁸.

Under this scenario, all diagnostic opportunities that these patients with unknown HIV have should be taken advantage of and, as far as possible, should not be missed. Most of these opportunities occur during the patient's interaction with the different healthcare services. It is not uncommon that, prior to diagnosis, many patients have been evaluated on several occasions by physicians for various reasons, including care in the hospital emergency department (ED), without the infection having been detected. A study conducted in Aragon showed that among the 435 new HIV diagnoses made between 2011 and 2015, 86% of them had at least one missed diagnostic opportunity (ODP) the previous 3 years, and 28% of these ODPs occurred in the ED¹⁰. On the other hand, in 2 recent studies carried out in the Community of Madrid that screened the seroprevalence of occult HIV infection in the ED, it was observed to be between 0.6% and 0.9%^{11,12}. Although these studies applied certain general exclusion conditions, the universe of patients tested was sufficiently broad and heterogeneous to highlight that this situation is undoubtedly not uncommon in the ED, which are facilities that in the Spanish public health network attended 23 million consultations in 2018¹³.

Accordingly, EDs are necessary actors in any plan to improve the detection of occult HIV infection. It is therefore necessary to determine their current sensitivity and attitude in dealing with this problem, and to assess the plausibility and predisposition to adopt specific

measures aimed at increasing the number of diagnoses of HIV infection in Spanish EDs. In fact, to date there is no study that has been designed with a national scope, beyond some single-center experience or limited to an autonomous community¹⁰⁻¹². In response to these unmet information needs, the present study was designed with the main objective of finding out the approach taken in Spanish EDs to patients who present some circumstances that allow suspicion of HIV infection, as well as to detect predisposition and potential difficulties in implementing measures to improve the early detection of HIV infection, both for Spain as a whole and broken down by autonomous community. As a secondary objective, this study investigates whether there are differences in this approach depending on the size of the hospital and the number of patients in the ED.

Method

Survey design

The present study is based on an opinion survey, with mutually exclusive closed responses, prepared by the investigators OM and JGC and which collected, on the one hand, generic data on the hospitals (reference population, number of hospital beds, existence of a specific infectious disease unit or service, existence of an infectious disease unit or service, existence of an infectious disease specialist and microbiologist on permanent duty throughout the year) and their EDs (number of daily attendances), and on the other hand, specific data on the current attitude of these EDs regarding the detection of hitherto undiagnosed cases of HIV infection. With regard to this block of questions, we asked about the possibility of urgently requesting and obtaining the result of an HIV serology in the event of a suspected diagnosis, the microbiology procedure in the event of a positive HIV serology in a discharged patient, whether HIV serology is requested from patients who consult the emergency department for suspected sexually transmitted infection (STI) and whether when requested the result is obtained urgently, whether post-exposure prophylaxis (PEP) is performed in the emergency department or in the center, the care dynamics followed with these patients, and whether there are requests for pre-exposure prophylaxis in the emer-

gency department. For the questions that could be graded, there were four possibilities: hardly ever, rarely (< 25% of the time), frequently (25%-75% of the time) and almost always (> 75% of the time). As an exception, the estimate of the request for pre-exposure prophylaxis was graded into three possibilities: hardly ever, rarely (some cases monthly) or frequently (cases almost every week).

In addition, those responsible for Spanish EDs were asked about their perception of the current relevance of undiagnosed HIV infection in Spain, as well as their opinion on the need to modify the current practice in the ED, the usefulness of requesting HIV serology in different clinical situations that may be associated with a higher prevalence of infection (quantitative scale from 0 to 10, with 0 being the least useful and 10 the most useful) and the degree of difficulty they believed the implementation of nine measures to enhance this detection could have. For the latter, the gradation was: very low difficulty (will be easily implementable), some difficulty (will be achievable), fairly high difficulty (will be difficult to achieve) and very high difficulty (practically impossible to implement).

The preparation of the survey was carried out during the months of September-October 2020. The data requested referred to the last complete year, 2019, which also avoided the effect that the COVID pandemic could have had on the care activity of the ED¹⁴ and on the dynamics of care for patients with suspected HIV infection.

Scope of the study

The scope of the study consisted of all EDs in Spain of the public health system that attended adult patients in general emergencies, 24 hours a day and every day of the week during 2019. The study was designed based on an intention of total inclusion. The source of centers was the 2019 National Hospital Catalog¹⁵. This catalog contains 924 centers, 323 of which were eliminated because they did not correspond to general hospitals. In addition, 250 non-charitable private hospitals without agreements, 65 charitable private hospitals without agreements, 2 military hospitals, and 2 EDs that were not open during the study period were excluded. The universe of EDs to be surveyed was 282.

Search strategy

Once the survey content was completed and agreed upon, the survey was prepared in an online format by completing an electronic form on a restricted-access website using an RSA-encrypted connection via the SS/TLS 1.2 protocol. The survey was addressed to the head of the ED, following a strategy previously developed by the authors to obtain the maximum number of responses. To this end, a professional interviewer with experience in previous similar work with our research groups^{16,17} was trained in the objectives of the present study, and subsequently obtained the e-mail

address and telephone number of those responsible through direct telephone contact with the switchboard of the hospitals where the EDs were located. We then proceeded to contact the person in charge of the ED personally to explain the project and request his/her collaboration, with the subsequent sending of a link to the online survey. The survey in pdf format was also sent to them by e-mail in case they preferred to answer the survey on paper and send it scanned (the surveyor was responsible, in these cases, for transporting their answers to the general database). Initially, respondents were given 2 weeks to complete the survey. If no response was received, there were up to 3 subsequent contacts with the person in charge before considering that ED as a non-responder. The interviews were conducted during the months of December 2020 and January-February 2021, and the database was finally closed on February 14, 2021 at 23:59 hours.

Statistical analysis

Continuous data are presented as median and interquartile range (IQR), while discrete data are presented as absolute values and percentages. In order to compare different behaviors according to hospital size and ED activity, centers were grouped according to their number of beds (large if ≥ 500 beds; medium or small if < 500 beds) and EDs according to patient flow (high if ≥ 200 patients/day; medium or low if < 200 patients/day) following the definition of previous work¹⁷. Comparison between the groups was performed using the nonparametric Mann-Whitney test if the variables were continuous and the chi-square test if the variables were discrete (using the linear trend test in the case of ordinal values). Finally, and for strictly descriptive purposes, the data are presented by autonomous community, although in this case no statistical comparisons were made given the large number of units to be compared (17 communities and 2 autonomous cities) and the fact that in many cases the number of EDs per unit is very low.

Ethical considerations

Due to its characteristics, namely a survey of health care personnel without patient participation, this study was not evaluated by a Clinical Research Ethics Committee. The confidentiality of individual data was guaranteed and verbal approval was requested for voluntary participation in the study. The data were analyzed and interpreted by the authors. In no case were the particular actions of the ED analyzed, and all the considerations presented in the article are made from the perspective of the ED as a whole.

Results

Of the 282 ED managers contacted, 250 responded (88.7%). In all the autonomous communities, more

than 80% of their EDs responded, with the exception of the Autonomous Community of Navarra, Extremadura and the Balearic Islands (Table 1). These 250 EDs corresponded to 59 large hospitals (23.6%; median number of beds: 800, IQR: 600-1000) and 114 of these EDs were classified as having a high level of activity (45.6%; median number of daily attendances: 170, IQR: 100-295). The total population assigned was 19.5 million inhabitants in the large hospitals (median population per hospital: 0.35, IQR: 0.30-0.46).

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A total of 43.6% of Spanish EDs can request HIV serology urgently and receive the result during patient care in the ED. On the other hand, 65.2% of EDs do not usually (hardly ever or infrequently) request HIV serology in patients attended for suspicion of occult infec-

Table 1. Geographical distribution of the Spanish emergency departments that responded to the survey

	Services emergency public existing (N)	Services emergency public participants (N)	Participation (%)
Catalonia	54	50	92.6
Andalusia	53	44	83.0
Valencian Community	26	25	96.2
Community of Madrid	25	25	100
Galicia	16	14	87.5
Castilla y León	15	14	93.3
Castilla-La Mancha	14	12	85.7
Canary Islands	13	11	84.6
Basque Country	12	10	83.3
Aragon	10	9	90.0
Principality of Asturias	9	9	100
Region of Murcia	9	8	88.9
Extremadura	8	5	62.5
Balearic Islands	7	4	57.1
Cantabria	4	4	100
Comunidad Foral de Navarra	3	2	66.7
La Rioja	2	2	100
Autonomous Cities of Ceuta and Melilla	2	2	100
Total	282	250	88.7

tion (and when it is requested, 82.4% hardly ever or infrequently have the result urgently) and 16.0% of EDs that attend PEP hardly ever or infrequently request it. Detailed information on the usual clinical practice in these and other circumstances questioned in the survey is shown in full in Table 2.

Those responsible for Spanish EDs put the percentage of HIV-infected patients who are unaware of their HIV status in Spain at a median of 20% (IQR 10-30), and 47.8% of them think that the detection of HIV in

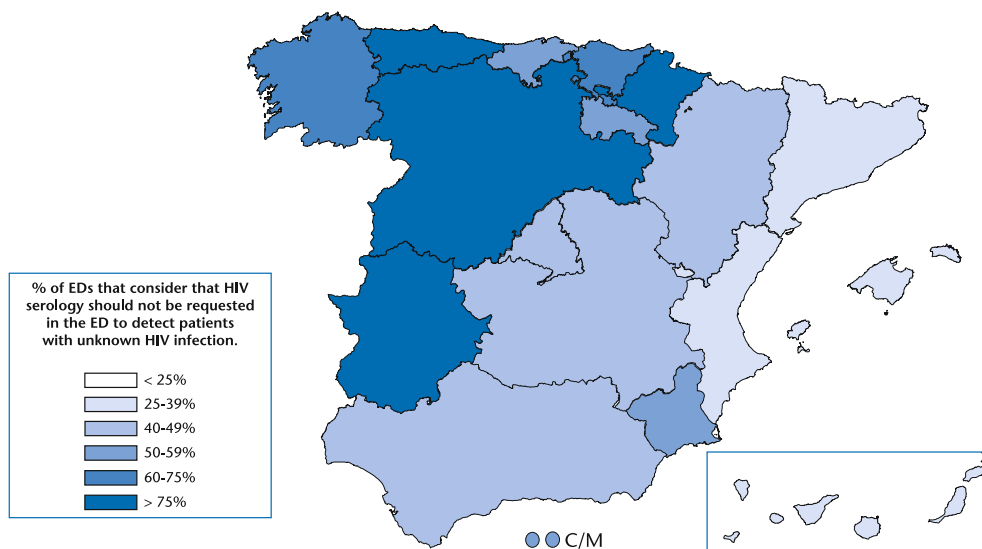


Figure 1. Detailed analysis by autonomous community of the percentage of emergency department managers who believe that HIV serology should not be requested in the emergency department to detect patients with unknown HIV infection.

Table 2. Hospital characteristics, ED care of suspected HIV infection and perceived need for ED involvement in the diagnosis of unknown HIV infection

	Total N = 250 n (%)	Missing data n (%)
Characteristics of the hospital		
Number of inpatient beds [median (IQR)]	250 (122-480)	0 (0)
Annual number of emergencies attended (in thousands) [median (IQR)]	66 (35-106)	2 (0.8)
Infectious disease service/unit available	114 (45.8)	1 (0.4)
HIV unit available	104 (41.8)	1 (0.4)
Microbiologist on call 24/7	83 (33.3)	1 (0.4)
24/7 on-call infectologist available	12 (4.8)	1 (0.4)
Characteristics of emergency care		
It is possible to request urgent HIV serology and receive the result urgently.	109 (43.6)	0 (0)
When an HIV serology is positive and the patient has been discharged, microbiology reports to:		2 (0.8)
Specifically the requesting emergency physician.	41 (16.5)	
The emergency department (in generic form)	41 (16.5)	
The infectious disease/internal medicine department	68 (27.4)	
Does not communicate (understands that the requesting or primary care will do it)	98 (39.2)	
PEP care is provided		1 (0.4)
In the ED	192 (77.1)	
In the center, but not in the ED	25 (10.0)	
Not performed, referred to another facility	32 (12.9)	
In emergency departments that attend to PEP in the ED (N = 192)		
Number of requests per week [median (IQR)]	1 (0-1)	2 (1.0)
There is an explicit protocol of action for PEP	160 (84.2)	2 (1.0)
Rapid HIV test is performed	80 (42.1)	2 (1.0)
HIV serology is requested	160 (84.2)	2 (1.0)
Results are immediately available (N = 160)	57 (35.6)	0 (0)
Facility to which referral is made after emergency department care		3 (1.6)
Infectious disease consultations	81 (42.9)	
Internal medicine consultations	49 (25.9)	
Primary care	27 (14.3)	
Day hospital	10 (5.3)	
STI monographic consultation	6 (3.2)	
Dermatology consultation	1 (0.5)	
Very variable, Discretionary according to ED physician	15 (7.9)	
Pre-exposure prophylaxis requested in the emergency department		0 (0)
Never or almost never	152 (60.8)	
Infrequently (some cases monthly)	76 (30.4)	
Frequent (cases almost every week)	22 (8.8)	
When an STI is treated, HIV serology is requested		0 (0)
Almost never	77 (30.8)	
Infrequently. in certain cases (< 25% of cases)	86 (34.4)	
Frequently (25-75% of the cases)	42 (16.8)	
Almost always (> 75% of cases)	45 (18.0)	
When HIV serology is requested. the result is obtained		0 (0)
Almost never urgently	128 (51.2)	
In certain cases urgently (< 25% of cases)	78 (31.2)	
Frequently urgently (25-75% of cases)	18 (7.2)	
Almost always urgent (> 75% of cases)	26 (10.4)	
Perception of the need for emergency department action		
What proportion of patients in Spain believe they are HIV-infected and do not know it?	20 (10-30)	3 (1.2)
Should HIV serology be requested in the ED to diagnose unknown cases?		0 (0)
No, It is not an emergency department problem	119 (47.6)	
Yes, but with a selective screening strategy	115 (46.0)	
Yes, with a universal screening strategy	16 (6.4)	

HIV: human immunodeficiency virus; PEP: postexposure prophylaxis; STI: sexually transmitted infection; IQR: interquartile index.

these patients is not a problem in which the ED should be involved (Table 2). This perception exceeds 75% in the case of ED managers in Asturias, Castilla y León, Extremadura and Navarra, while it occurs in less than 40% of EDs in Catalonia, Valencia, the Balearic Islands and the Canary Islands (Figure 1).

The degree of perceived difficulty in implementing the nine surveyed measures aimed at improving HIV detection in the ED varied (Figure 2), with three measures considered to be the most difficult: the acceptance of an interview aimed at the detection of risk situations by nurses during the triage process (61% of EDs con-

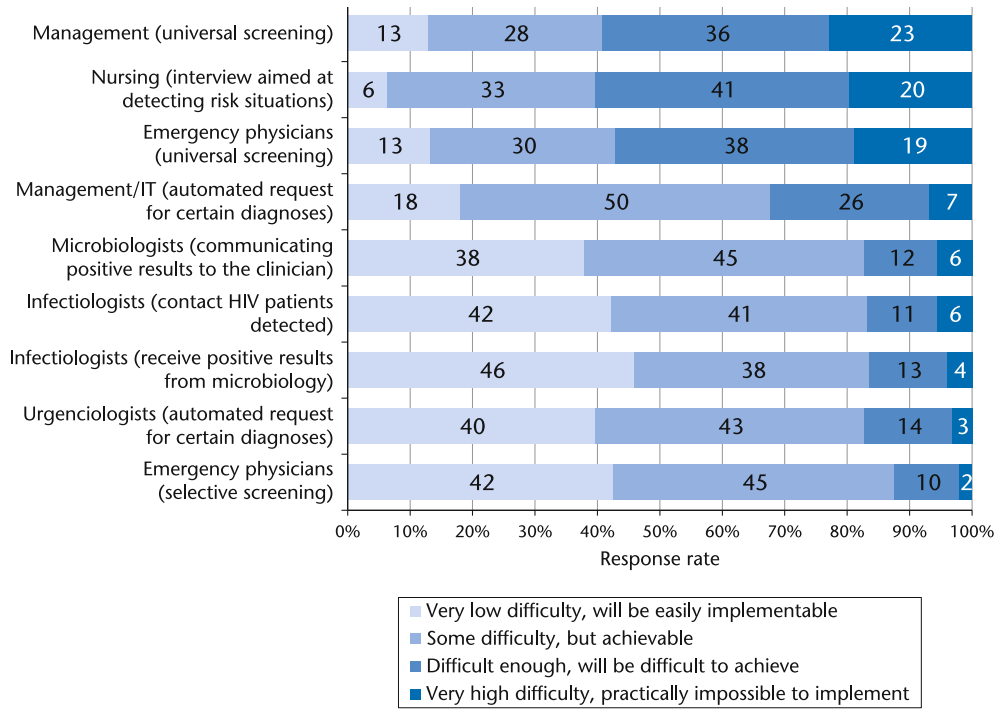


Figure 2. Degree of difficulty perceived by those responsible for Spanish hospital emergency departments regarding the implementation of different strategies to increase ED detection of cases of HIV infection unknown to the patient.

The term infectiologist refers to the physician who provides care to HIV patients in the hospital.

sidered that it would entail fairly high or very high difficulty; > 75% in the case of EDs in the communities of Madrid, Valencia, Murcia, Aragón and Navarra) and the acceptance of universal screening by the management/direction of the center (59% fairly high or very high difficulty; > 75% in the communities of Madrid, Aragón and Navarra) and by emergency physicians (57% fairly high or very high difficulty; > 75% in the communities of Madrid, Navarra, Basque Country and Extremadura) (Figure 3). For most of the remaining measures evaluated, the percentage of EDs that considered the difficulty of implementation to be quite high or very high was less than 20%, and the measure that they considered to be easiest to implement was the acceptance by ED physicians of selective HIV screening of patients in the ED for certain clinical conditions (only 12% of EDs considered it to be quite high or very high difficulty) (Figure 2). When asked about the potential usefulness of this selective screening in each of the 9 particular circumstances, the highest perceived usefulness was for patients consulting in the context of chemsex and the lowest for patients consulting for herpes zoster (Figure 4).

When comparing the routine practice of HIV screening in Spanish EDs according to the size of the hospital and the number of patients in the ED, we observed some statistically significant differences (Table 3). These differences were predominantly in the sense of a greater involvement of large hospitals and EDs with high affluence in requesting HIV serology in situations of occult HIV infection. This group of hospitals and EDs

more frequently see patients requesting PEP and pre-exposure prophylaxis, and more frequently refer patients to hospital devices for subsequent follow-up, while medium-small hospitals and medium-low affluence EDs more frequently refer them to primary care. Finally, the position regarding the role that EDs should play in detecting occult HIV infection and the estimated difficulty in implementing some measures also differed according to the characteristics of the hospital and its ED (Figure 5). Thus, in small-medium hospitals and EDs with medium-low affluence, it is more common for their ED managers to think that the detection of occult HIV infection is not a problem that should be solved in the ED. In addition, in these types of hospitals and EDs it would be more difficult than in large hospitals and high-flow EDs for microbiologists to communicate the results of HIV-positive serologies requested in the ED to the hospital physicians in charge of HIV patients, and for these physicians to receive this information and contact these patients for subsequent follow-up.

Discussion

The main contributions of the present study are fourfold. First, the current involvement of Spanish EDs in the detection of occult HIV infection is neither widespread nor deeply rooted. Second, when it comes to improving this detection, certain difficulties are perceived, including the thought that this is not a problem in which the EDs should be involved in its improve-

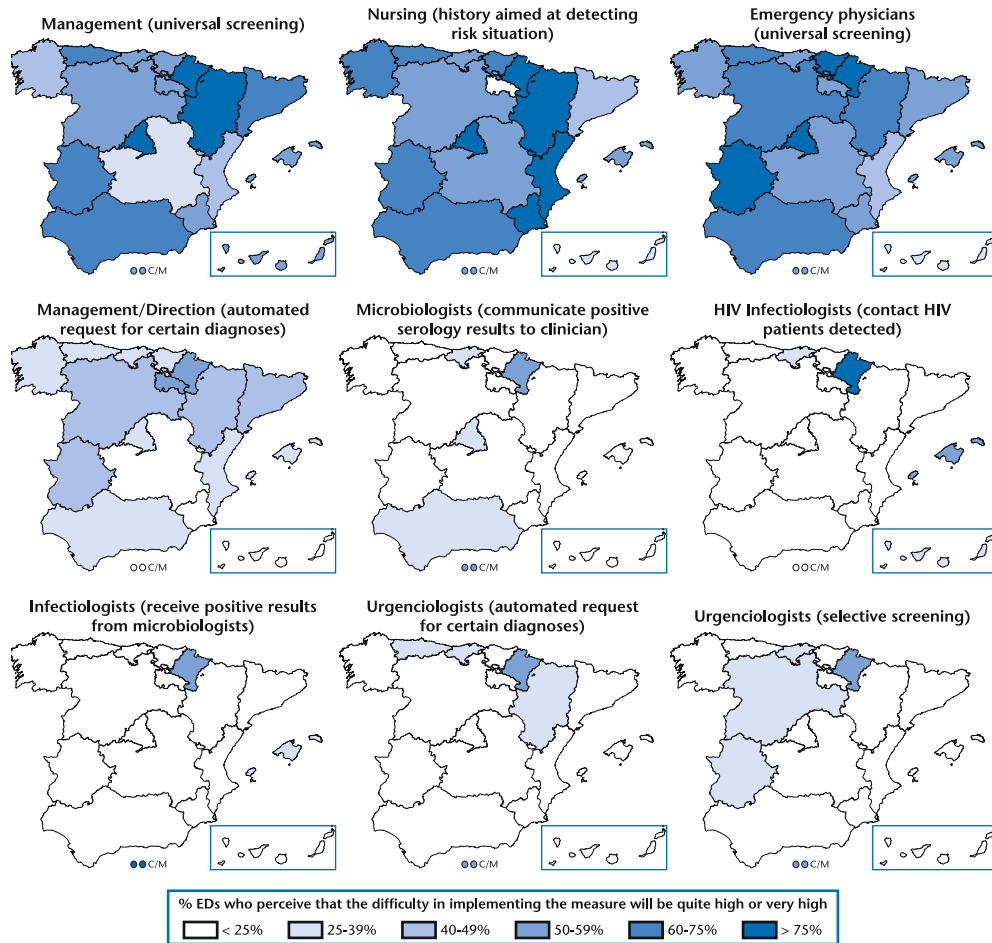


Figure 3. Detailed analysis by autonomous community of the difficulty perceived by those responsible for emergency departments in carrying out strategies to increase the detection in the emergency department of cases of HIV infection not known to the patient. The term infectiologist refers to the physician who provides care to HIV patients in the hospital.

ment. In addition, certain strategies are perceived as difficult to implement, such as universal screening and the participation of nurses in the detection of situations of higher prevalence of hidden HIV infection. Third, the difficulty of implementing measures in Spanish EDs can be very different depending on the autonomous community. Fourth, the current attitude, the predisposition to improve detection and the ease of implementation of improvement measures are more favorable in large hospitals and in EDs with a high prevalence than in small-medium hospitals and in EDs with a medium-low prevalence, respectively.

Despite the publication in 2014 of a consensus document aimed at improving the early detection of HIV infection, the situation in the ED does not seem to have changed substantially¹⁸. This consensus document, which was developed among multiple societies involved, but did not include the Spanish Society of Emergency Medicine (SEMES), recommended that HIV serology could be performed in the ED based on clinical criteria of a clinical history compatible with HIV infection or when the patient had a risk exposure. However, as our study shows, this is not currently

standard clinical practice in most Spanish EDs: almost one third of the EDs rarely request HIV serology in patients who consult for suspected STIs, and almost one sixth of the EDs that treat patients for PEP do not request such serology in the ED. With the aim of trying to improve these practices, SEMES and the AIDS Study Group (GESIDA) of the Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC) have recently agreed on a document specifically aimed at the detection of hidden HIV infection in the ED¹⁹. This document opts for a selective HIV screening strategy in the ED, limited to six situations: STIs, PEP, chemsex, mono-nucleoside syndrome, recurrent community-acquired pneumonia, and herpes zoster. The reasons for selecting these diseases or syndromes are multiple: they are frequent and easily identifiable situations in the ED, with a higher prevalence of hidden HIV infection than in the rest of the population or with high contagiousness or transmission in one of these scenarios^{19,22}. It is noteworthy that ED managers perceived six of the nine situations surveyed for selective screening in this consensus document as the most useful (mean score > 5), while herpes zoster infection was considered to be the

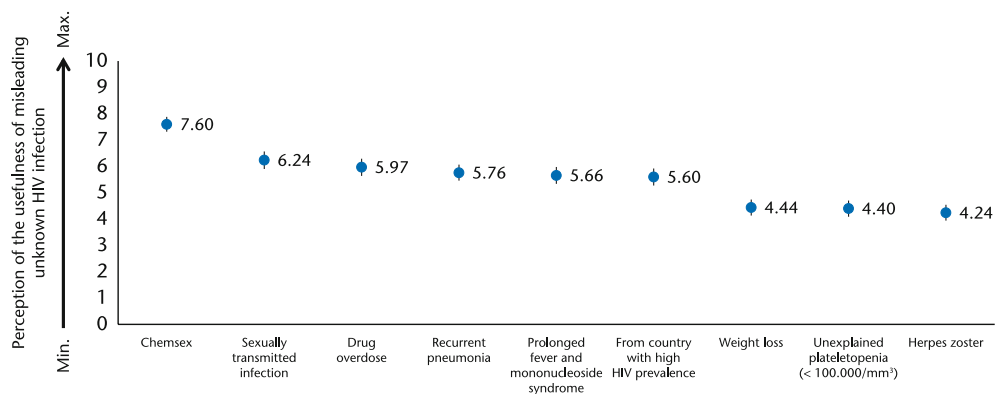


Figure 4. Perception of those responsible for Spanish emergency departments regarding the usefulness of screening for occult HIV infection in patients with different reasons for consultation or diagnosis in the emergency department.

The dots represent the mean score given by those responsible for Spanish hospital emergency departments and the bars represent the 95% confidence interval for the mean estimate.

least useful. This clashes with the available evidence, since around 10% of patients with a new diagnosis of HIV had herpes zoster prior to diagnosis and between 56% and 100% of these cases were diagnosed late^{10,23}. One explanation could be that the possibility of HIV infection is underestimated in patients with herpes zoster who are older, where this condition is more frequent as a consequence of immunosenescence²⁴. For this reason, the SEMES recommendations support screening in this condition only in patients < 65 years of age¹⁹. All this suggests that ED physicians should work in a targeted manner to raise awareness of this situation, which is indicative of potential HIV infection.

An important aspect of trying to improve the situation in Spain in the early detection of HIV infection is raising awareness of the important role that EDs can play, as currently about half of the ED managers think that the ED should not be involved in it. In addition, they believe that both ED management and ED physicians will not show strong support for a strategy of universal HIV screening in the ED, i.e., that every patient undergoing a blood test, regardless of the reason, should have an HIV serology. Studies in other countries suggest that HIV testing is cost-effective for the health care system when the prevalence of undiagnosed HIV is higher than 0.1%²⁵⁻²⁷. Some pilot experiences carried out in some hospitals in the Community of Madrid have shown that this prevalence could be close to 1% in Spanish EDs, although this was not universal screening and included certain limitations^{11,12}. This makes the ED an environment where this universal screening could be cost-effective for the health system. However, strategies for implementing screening limited to certain clinical scenarios, as proposed in the SEMES and GESIDA consensus document, appear to be much more welcomed. On the other hand, the inclusion of emergency nurses, especially those who perform triage, in a global strategy to improve HIV screening in the ED is difficult at present. There is some previous experience in Spain with satisfactory results and we believe that this would

be a fundamental point on which to intervene, since all patients arriving at the ED undergo triage which, if it included a directed, structured, short and validated interview (which does not currently exist) would possibly allow a significant number of cases to be discovered.

Difficulties in implementing improvements are not expected to be homogeneous in Spanish EDs. On one side of the spectrum would be Asturias, Navarra, Castilla-León and Extremadura, whose EDs are highly reluctant to intervene in the ED to improve the detection of occult HIV infection, while on the other would be the Community of Valencia, Catalonia and the Balearic Islands, whose EDs are the most predisposed. Given that SEMES has recently initiated an awareness campaign in Spanish EDs (Leave your footprint: ask for an HIV serology), it is possible that a different degree of penetration of this campaign and an asymmetric implementation of training and awareness-raising activities may have influenced the different opinions of ED managers and that, therefore, the differences found are not really structural (physical or in the personnel working in the ED). On the other hand, in certain autonomous communities it is more difficult than in other communities to implement many of the strategies analyzed, as is the case of Navarra, Madrid, Aragón, Extremadura or the autonomous cities of Ceuta and Melilla, while others show greater ease of implementation than the rest, such as Castilla-La Mancha, La Rioja, Catalonia, the Canary Islands or Murcia. It is possible that the specific characteristics of the organization of the health systems in each community influence this perception of those responsible for the EDs. It should be borne in mind that health care provision in the Spanish public health system is carried out by the autonomous communities, which means that there may be differences between them in specific organizational aspects²⁷, and these are once again evident in the present study. However, beyond these differences, we believe that when implementing these measures to improve the detection of occult HIV infection in a given autonomous community, our data allow us to identify

Table 3. Comparison of characteristics regarding ED care of patients with suspected HIV infection and perceived need for involvement and difficulty in possible measures to increase ED diagnosis of unknown HIV infection

	According to the size of the hospital			According to emergency care activity		
	Big (≥ 500 beds) N = 59 n (%)	Medium-Small (< 500 beds) N = 190 n (%)	p*	High (≥ 200/day) N = 114 n (%)	Medium-Small (< 200/day) N = 135 n (%)	p*
Characteristics of the hospital						
Number of inpatient beds [median (IQR)]	800 (600-1000)	170 (100-295)	< 0.001	500 (323-800)	134 (88-235)	< 0.001
Annual number of emergencies attended (in thousands) [median (IQR)]	138 (105-170)	53 (31-80)	< 0.001	110 (90 (149)	39 (26-55)	< 0.001
Infectious disease service/unit available	53 (89.8)	61 (32.1)	< 0.001	87 (76.3)	27 (20.0)	< 0.001
HIV unit available	51 (86.4)	53 (27.9)	< 0.001	77 (67.5)	27 (20.0)	< 0.001
Microbiologist on call 24/7	41 (69.5)	42 (22.1)	< 0.001	57 (50.0)	26 (19.3)	< 0.001
24/7 on-call infectologist available	9 (15.3)	3 (1.6)	< 0.001	10 (8.8)	2 (1.5)	0.007
Characteristics of emergency care						
It is possible to request urgent HIV serology and receive the result urgently. The result can be received urgently	39 (66.1)	70 (36.6)	< 0.001	69 (60.5)	40 (29.4)	< 0.001
When a serology is positive and the patient is discharged Microbiology notifies the emergency physician			0.680			0.687
Specifically the requesting emergency physician	9 (15.3)	32 (19.6)		17 (14.9)	24 (17.9)	
The emergency department (in a generic way)	9 (15.3)	32 (16.9)		16 (14.0)	25 (18.7)	
The infectious disease/internal medicine department	23 (39.0)	45 (23.8)		39 (34.2)	29 (21.6)	
Does not communicate (understands that they will be done by the requesting participants or primary care)	18 (30.5)	80 (42.3)		42 (36.8)	56 (41.8)	
PEP care is provided			< 0.001			< 0.001
In the ED	57 (96.6)	135 (12.1)		105 (92.1)	87 (64.4)	
At the center, but not in the ED	2 (3.4)	23 (12.1)		6 (5.3)	19 (14.1)	
Not performed, referred to another center	0 (0)	32 (16.8)		3 (2.6)	29 (21.5)	
In emergency departments that provide PEP care, it is performed in the ED (N = 192)						
Number of requests per week [median (IQR)]	1 (1-2)	1 (0-1)	< 0.001	1 (1-2)	0.25 (0-1)	< 0.001
There is an explicit protocol for PEP	57 (100)	103 (77.4)	< 0.001	101 (96.2)	4 (3.8)	< 0.001
Rapid HIV test is performed	23 (40.4)	57 (42.9)	0.748	48 (45.7)	32 (37.6)	0.263
HIV serology is requested	49 (86.0)	111 (83.5)	0.664	92 (87.6)	68 (80.0)	0.152
Results are immediately available (N = 160)	15 (30.6)	42 (37.8)	0.379	39 (42.4)	18 (26.5)	0.038
At discharge, the patient is referred to a hospital facility	51 (89.5)	96 (72.7)	0.011	91 (86.7)	56 (66.7)	0.001
At discharge, the patient is referred to primary care	3 (5.3)	24 (18.2)	0.020	9 (8.6)	18 (21.4)	0.012
At discharge, referral is discretionary according to ED physician	3 (5.3)	12 (9.1)	0.372	5 (4.8)	10 (11.9)	0.071
Pre-exposure prophylaxis is requested in the ED:			< 0.001			< 0.001
Hardly ever	27 (45.8)	125 (65.4)		50 (43.9)	102 (75.0)	
Infrequently (some cases monthly)	18 (30.5)	58 (30.4)		45 (39.5)	31 (22.8)	
Frequently (cases almost every week)	14 (23.7)	8 (4.2)		19 (16.7)	3 (2.2)	
When an STI is treated, HIV serology is requested:			0.001			0.002
Hardly ever	11 (18.6)	66 (34.6)		24 (21.1)	53 (39.0)	
Infrequently (< 25% of cases)	18 (30.5)	68 (35.6)		41 (36.0)	45 (33.1)	
Frequently (25-75% of cases)	12 (20.3)	30 (15.7)		23 (20.2)	19 (14.0)	
Almost always (> 75% of cases)	18 (30.5)	27 (14.1)		26 (22.8)	19 (14.0)	
When HIV serology is requested, the result is obtained:			0.184			0.001
Hardly ever urgently	26 (44.1)	102 (53.4)		46 (40.4)	82 (60.3)	
In certain cases urgently (< 25% of cases)	19 (32.2)	59 (30.9)		39 (34.2)	39 (28.7)	
Frequently urgently (25-75% of cases)	7 (11.9)	11 (5.8)		12 (10.5)	6 (4.4)	
Almost always urgently (> 75% of cases)	7 (11.9)	19 (9.9)		17 (14.9)	9 (6.6)	

*Calculated using the chi-square test for linear trend in those categorical variables with ordinal significance.

HIV, human immunodeficiency virus; PEP, postexposure prophylaxis; STI, sexually transmitted infection; IQR, interquartile index.

areas in which a priori a more in-depth or targeted intervention will be necessary.

The predisposition to improve detection and the ease of implementation of improvement measures are more favorable in large hospitals and in EDs with high affluence than in medium-small hospitals and in EDs with medium-low affluence, respectively. This finding is, to some extent, understandable, since given their great-

er availability of resources, they may be better able to develop more or better strategies. However, we believe that some of the implementations may be simple enough to be within the reach of any Spanish ED, regardless of the size of the center in which it is located or the number of patients it receives. Furthermore, these EDs in smaller hospitals support more than half of the Spanish population, so they should not be excluded

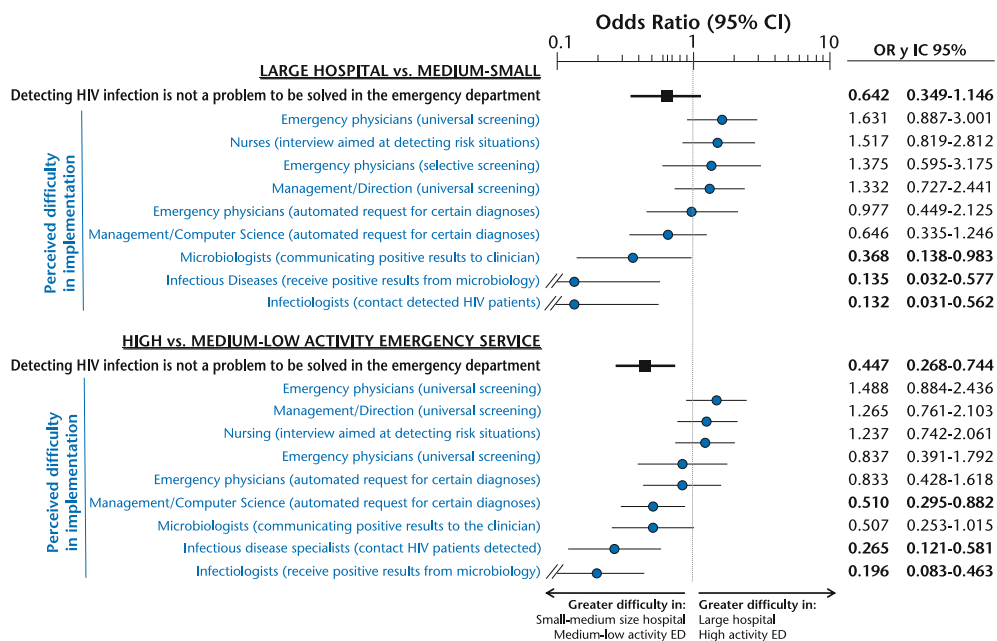


Figure 5. Comparison of the perception of those responsible for Spanish emergency departments according to the size of the hospital and ED care activity with respect to the role that the ED should play in the detection of patients who are unaware of their HIV infection and the difficulty of implementing different measures to improve detection in the ED. The term infectiologist refers to the physician who provides care to HIV patients in the hospital.

from any action on a situation, occult HIV infection, which is ubiquitous and whose detection in the ED does not require high technology.

Finally, it should be noted that 17.6% of EDs can receive the result urgently. Urgent determination of HIV is necessary when opportunistic diseases are suspected, since this data can determine the final diagnosis of the acute process, therapeutic management and the decision to admit the patient. This approach is different from screening, since in this case the result will not condition the decision making during the evaluation in the emergency department.

The present study has some limitations. First, the results are based solely on the opinion of the person in charge of the ED and not on that of a sample of professionals working in them. Both groups' opinions may not always coincide^{28,29}. We chose this option because the survey mostly referred to issues known to the head of the ED and because, in addition, it allowed us to define the exact universe to be surveyed. This avoids the bias of overestimating the results of certain centers in which there is a greater number of responses when the survey is open to all professionals. Second, complete recruitment of the entire sample was not achieved, although participation was very high, close to 90%, so that we consider the results obtained to be reliable and representative of the situation in Spanish EDs. Third, due to the design of the study, hospitals that selectively attend specific obstetric-gynecologic emergencies were excluded, so that the situation and estimation of the possibilities of improving the detection of occult HIV infection in women may have been somewhat underesti-

mated. Fourth, some of the autonomous communities, given their size, were represented by only a few centers, and the estimation of the situation in these smaller communities may have been more biased by the lack of response from some of them.

Despite these limitations, we can conclude that this study offers a picture very close to the healthcare reality of ED participation in the detection of patients with HIV infection, which was not known until now. We believe that the information gathered may be useful for implementing improvement measures, which should be directed towards a selective screening strategy as a preliminary step to more generalized screening strategies, and to ensure adequate follow-up of the cases detected. The inclusion of emergency nurses in the improvement strategies is an important link, although its implementation seems difficult at present. The recently published SEMES and GESIDA consensus document contains the key elements for implementing these strategies²¹.

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