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New HIV Diagnoses among Older Adults in the EU/EEA: Missed Opportunities and Barriers to Testing

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Abstract

The rate of HIV diagnoses among older adults in the European Union/European Economic Area (EU/EEA) is increasing. We performed a literature review to investigate factors associated with HIV infection, diagnosis and test-seeking behaviour among older adults in the EU/EEA.

We defined older adults as ≥ 50 years. We searched Embase and PubMed to identify studies on socio-demographic and clinical characteristics associated with new HIV diagnosis and factors influencing provision and uptake of HIV testing among older adults in EU/EEA and other high-income countries using the concepts of HIV infection and disease; older adults, and; testing and attitude towards testing. We included original papers or systematic reviews published from 2000 onwards and reporting data on the following themes: Patterns of HIV test uptake and attitudes, barriers and enablers influencing offer and uptake of HIV testing.

Published evidence indicated large proportion of late diagnoses and a low likelihood of HIV testing among older adults, although results varied widely between studies. HIV test uptake was a function of several factors related to patient and provider, including perception of one's risk. The active offer of an HIV test by the health care provider was the most significant factor positively associated with having a test. Scaling up HIV testing opportunities targeting older adults and the adult population at large is needed.

Keywords: HIV testing; Antiretroviral therapy

Introduction

Recent UNAIDS estimates point toward a steady increase in HIV prevalence among people aged 50 years and older in the past years, in particular in Central and Western Europe and North America [1,2]. This trend is likely to be the result of: An increased number of people seroconverting at an older age and increasing life expectancy among people living with HIV (PLHIV) on antiretroviral therapy (ART) [1-3]. A recent publication from the European Centre for Disease Prevention and Control shows significantly increasing trends in new HIV diagnoses among people aged 50 and older in the European Union and European Economic Area (EU/EEA). The majority of older adults diagnosed with HIV were native to the reporting country and infected due to heterosexual transmission or due to sex between men [4].

Still, the success of anti-retroviral treatment (ART) and the progressive scale up of treatment coverage have shifted the HIV paradigm from that of a deadly disease to a chronic infection and have move the frontier of clinical research toward the concept of "aging with HIV". However, it has been shown that aging PLHIV are subject to an increased level of multimorbidity as compared to the general population, encompassing increased risk of various conditions such as cardiovascular diseases, osteoporosis, chronic obstructive pulmonary disease (COPD), hypertension, types 2 diabetes mellitus and non-AIDS defining cancers [5-7]. While people with longer duration of HIV infection show an increased risk for multimorbidity as compared to people that acquire the infection at older age [8], older adults infected with HIV are at increased risk of short-term mortality, particularly if diagnosed at an advanced stage of the disease [9,10].

Late diagnosis is a generalised challenge for HIV control efforts in the EU/EEA [11] and even more so for older adults. Late diagnosis is associated with age and is as high as 63% among people aged 50 and over [4]. Methods to address late diagnosis include increasing awareness about HIV, reducing stigma and expanding the coverage and uptake of HIV testing to promote early diagnosis among older adults [12,13].

The identification of HIV-infected patients at an earlier stage and their effective treatment is crucial for the patient's health as well as for a wider public health strategy to reduce HIV transmission in the community [14].

In order to identify socio-demographic and clinical characteristics associated with HIV diagnosis, attitudes, barriers and enabling factors that may influence the provision and uptake of HIV testing among older adults, we reviewed the scientific literature. The findings from our study may support the design of effective interventions to increase and scale up testing among older adults and to inform policy decision-making in the EU/EEA.

Methods

A literature search was performed to address the following research questions: What are the socio-demographic and clinical (CD4 T-cell count) characteristics associate with HIV diagnosis among older adults in the EU/EEA? And, what is HIV testing offer and uptake among older adults in the EU/EEA and other high income countries and what are the factors that influence it?

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A combined search strategy was developed for PubMed and Embase using the concepts of HIV infection and disease; older adults and; testing and attitude towards testing. Controlled vocabulary available in the bibliographic databases (i.e., MeSH and Emtree terms) and natural vocabulary in multiple field search combinations were used to represent the concepts in the search strategies (Web Annex Tables 1-7). The results were limited to the records published from 2000 onwards; no language limits were applied. The search strategies were developed by an informatics professional and peer reviewed by a second informatics professional using the PRESS (Peer Review of Electronic Search Strategies) instrument. The searches were run in March, 2016. Hand picking technique (e.g. review of included article references) was used to complement the search. The search results were saved in an Endnote© library. De-duplication was performed in two consecutive rounds, using Endnote built-in tool, followed by a manual check.

The retrieved records were screened by title/abstract, followed by full-text screening by a single researcher to capture only original papers or systematic reviews published from 2000 onwards and reporting data on the following themes: Socio-demographic and clinical characteristics associate with HIV diagnosis and patterns of HIV test uptake (theme 1) and; attitudes, barriers and enablers influencing offer and uptake of HIV testing (theme 2) among older adults in the EU/EEA and other high income countries (i.e., Australia, Canada, New Zealand, Switzerland and the United States of America). Articles were excluded if they reported data on a high-risk population only (e.g. people who inject drugs, homeless); self-reported (i.e., unconfirmed) HIV diagnoses only, and; if they were case reports, opinion papers, editorial pieces, guidelines or recommendations.

A pre-defined set of variables were extracted from included studies, including general information (e.g. author, year of publication, country, type of publication, study design) and theme-specific variables (Web Annex Tables 1-7). In brief, data on socio-demographic characteristics, transmission mode and CD4 T-cell count, proportion of HIV testing uptake, positivity rate and proportion of late diagnoses were extracted for theme 1.

Data on attitudes, barriers and enablers (theme 2) were extracted and classified according to the following framework, adapted from Davis et al. [13]:

- Provider factors: Factors influencing service providers attitude, knowledge and practice towards the provision of HIV testing interventions among older adults;
- Patient factors: Factors influencing older adults' attitude, knowledge and practice towards the uptake of HIV testing interventions and their health-seeking behaviour at large.

Results

The database searches yielded 1374 hits. Additional 14 records were identified through manual search. After de-duplication, 1188 records were screened by title/abstract, 168 were included for full/text review and 164 screened. A total of 65 articles were selected for data extraction (Figure 1). Articles were mostly excluded because they did not report data on the study population or they did not report primary data.

Of the 65 included studies, 46 reported data on theme 1, patterns of new HIV diagnosis and HIV test uptake; 27 on theme 2, attitude, barriers and enablers influencing offer and uptake of HIV testing; and 3 were systematic literature reviews [15-17].

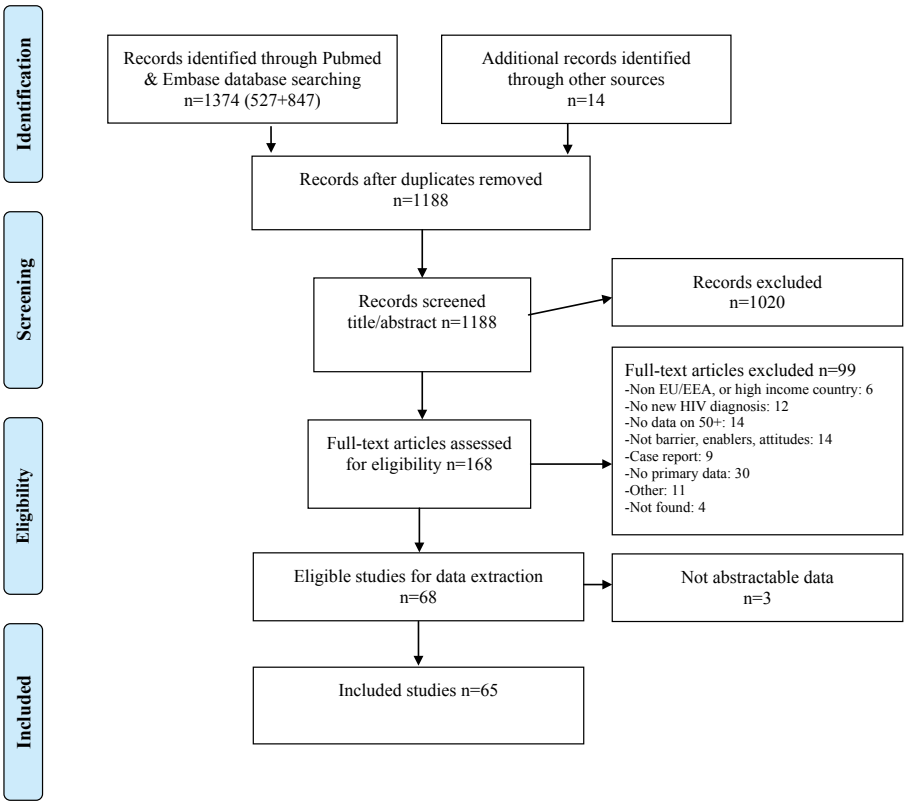

Figure 1: Literature review flowchart.

Patterns of new HIV diagnosis and HIV test uptake

The 46 records retrieved for theme 1 were further grouped in studies reporting data on epidemiological and socio-demographic characteristics on newly diagnosed older adults [18] (Web Annex Table 5) and those reporting data on HIV testing uptake [15] (Web Annex Table 6).

Of the 25 records reporting data on newly diagnosed older adults, 15 were performed within the EU/EEA (Web Annex Table 5). Of these, five studies conducted in five different MS, analysed correlates of late presentation at diagnosis among HIV patients [19-22]. Invariably the findings indicated older age to be an independent risk factor for late diagnosis. Where comparably reported, CD4 cell counts at diagnosis was <350 cells/mm^3 in more than 60% of cases [13,20,22,23]; and <200 cells/mm^3 in more than 40% of cases [13,20,24,25].

Additional 8 studies conducted in 5 different EU/EEA countries compared the epidemiological and socio-demographic characteristics of older adults newly diagnosed with HIV (or with AIDS) against younger age groups [13,14,23-28]. There was high concordance among the findings. All the studies identified newly diagnosed older adults to be predominantly males and of Caucasian origin. Patterns of transmission in general differed significantly across age groups, with older adults having a higher proportion of sexual transmission. Most of the studies [23-26] identified heterosexual route of sexual transmission to be predominant among older adults, as compared to sex between men [13]. Blood transfusion was mentioned as more frequent transmission route among older adults in at least one article [28]. Finally, few studies indicated a significantly higher proportion of cases with unknown route of transmission among older adults [24,27,28]. When mortality was included among the outcome of interest, older age was significantly associated with shorter survival post diagnosis [13,22-24].

A similar picture is described in studies from the USA [29-37]. Additionally, some of these findings indicated that older adults are more likely to be diagnosed as inpatients [29,32,35].

Among the 19 primary studies reporting data on HIV test uptake, six were performed in the EU/EEA [38-43],one in Australia [44] and the remainder in the USA [31,45-55] (Web Annex Table 6). Generally, the findings pointed at a lower frequency of HIV test uptake among older adults as compared to younger age groups, even if the actual proportion of tested individuals varied greatly between studies. Two European [38,40] and several non-EU surveys [44,45,47,51,53,55] reported that 50% to less than 5% older adults, with majority around 25%, had tested for HIV. Three studies reported the level of testing among patients diagnosed with an indicator-condition [39,43,54] to be low generally and significantly lower in older adults than in the younger age groups. Two studies from the USA described testing in emergency department to be effective in targeting older population, with 22% of all new diagnosis in this age group [31] despite higher rates of refusal [49].

Attitude, barriers and enablers influencing offer and uptake of HIV testing

Among the 27 articles reporting data on attitude, barriers and enablers to HIV testing, six were performed in an EU/EEA country and 21 in the USA (Web Annex Table 7). Included records were highly heterogeneous with respect to study design, objectives, population studied and setting. Five articles reported on age-specific interventions tailored to improve health care services for older adults and case finding [50,56-59].

Relevant findings are summarised in Table 1 according to the patient and provider barrier/enabler framework.

Systematic reviews

A comprehensive scoping review to explore available literature on the topic of older adults and HIV was published in 2015 by Chambers et al. [16]. The scope of this review was broader to include also aspects of primary and tertiary prevention. It identified a large number of primary studies (n=202) and two previous systematic reviews [15,60]. The findings suggested that research focusing on older HIV-positive populations is a relatively new area of study and much of the available studies are observational. Another recent review published by Tillman et al. [61] focuses on testing for HIV and STI among older adults, examining frequency and factors promoting testing offer and uptake in this population. The review identified 20 primary articles and concluded that frequency of testing is low among older adults, due to low perceived risk and limited encouragement from the health care provider coupled with lack of routine sexual histories assessment. Finally, Sankar et al. [15] performed a systematic review to assess the state of knowledge of the sociocultural and behavioural factors associated with aging with HIV. The review covers the themes of prevention and risk among older adults including sexuality and risk-taking behaviour; and ageism and stigma.

Discussion

We performed a literature review to explore the intersection between HIV, testing and age, with an emphasis on barriers and enablers to testing uptake among older adults and factors associated with diagnosis in older age.

	Barriers	Enablers
Patient	Limited health literacy and knowledge about HIV [13,16,17] Misconceptions about and low self-perception of the risk to acquire HIV [13,18-20] Lack of discussion about sexuality and sexual health with health care provider [21-23] Alternative explanations to account for disease's symptoms [24]	Being at higher risk of transmission (i.e., MSM, IDU) [19,25,26] High frequency of health care services contact [13,18,23,26] Provider-initiated testing [18,19] Provider-initiated partner notification services [27] Higher level of education [25] Engage in discussion about sexual health with health care provider [28] Physical symptoms [19]
Provider	Missed opportunities to offer HIV to patients, including those presenting with indicator-conditions or risk-factors [17,29-36] No routine collection of sexual history and risk assessment [13,17,36-38] Lack of specific professional education [13,17,39] Lack of specific guidelines and information material [13,16] Ageism and low perception of risk [13] Limited time availability [13,17] Low priority [13]	Tailored professional education [38,40-42] Prompts or other alerts [40] Good attitude and rapport with patient [13,39] Request for erectile dysfunction medication [13,36] Universal screening guidelines recommendation (CDC) [13,43] Implementation of partner notification services [27]

Table 1: Barriers and enablers to HIV testing among people aged 50 years and older and their health service providers.

Evidence from Europe and other high-income settings [2-4,1,42] point towards a steady increase in the rate of new HIV diagnoses among older adults and an increased proportion of older adults among all PLHIV.

According to our findings from national studies, newly diagnosed older adults are predominantly native to the country where they were diagnosed with HIV [9,10,43] with men being more predominant in the older age group [9,43-47], in accordance with recent analyses [4]. However, increasing rate of new HIV diagnoses among older women has been observed in non-EU Eastern European countries [48] as well as in the USA and Canada [41,42,49,50]. Within the EU/EEA, this may be a phenomenon primarily affecting eastern countries, thus explaining why published scientific literature, largely deriving from western EU/EEA countries, did not report this trend.

According to our findings, transmission was generally reported as predominantly sexual, with heterosexual transmission more prevalent [10,44,45,47,51]. Evidence from some EU/EEA countries suggests risks related to commercial sex [46,47] and travel abroad [9] among heterosexual males. Risk behaviours among older adults, such as condomless sex with non-regular partners, are also reported several studies [16,20,52-56]. Injecting drug use was a less common mode of transmission among older adults in few national studies including Spain, notwithstanding this transmission route being a driving factor in the epidemic in that country [45,47].

Presenting with a late diagnosis, was significantly associated with older age in in the literature generally [9,10,47,57-60,62-66], with very few exceptions [49,51]. Such large proportion of late presenters among older adults is possibly the result of insufficient testing opportunities for this population group and it is of great concern as it associated with higher mortality rate as compared to younger people [9,10,51,63]. According to published evidence, newly diagnosed older adults were more likely to have never been tested [47] and to be diagnosed incidentally while hospitalised [64-66]. Numerous studies across settings and population groups report on how uncommon HIV testing is among older adults [16,18,20,22,32,47,52,53,67,68]. However, as expected those older adults belonging to well-defined high-risk groups such as PWID and MSM were more likely to be tested for HIV [15,18,22]. Monitoring of testing activities in the EU/EEA is very limited and scarce information are available to assess the coverage and targeting of existing interventions [69].

Our analysis indicates that low self-perception of risk and limited knowledge about HIV and its transmission are common reasons for older adults not to seek HIV test [13,15,16,29,67,70]. Even considering the heterogeneity of the evidence, provider initiated testing, which is the active offer of a HIV test by the health care provider, was the most significant factor positively associated with having a test [23,25,61,67].

However healthcare providers have been reported to be reluctant to take older patients' sexual history, assess their risk, advise on sexual health and offer HIV testing [13,61]. In addition, age-related stigma and the perception that older adults may not be at risk for HIV transmission is common among health workers that care for them [13,61,71,72],despite existing divergent findings from the literature [16,19,20,23,30,53]. As a result, older adults may only be diagnosed after multiple visits to their health care providers [28,30,31,73,74], creating unnecessary strain on the health care system and delaying the provision of appropriate care to the individual.

Our findings point towards a number of interventions that could promote HIV test offer. These range from the existence of specific guidelines (e.g. universal testing) [13,40,75] to automatic pop-up alert for medical charts [37]. Certain testing approaches have been shown to successfully target older adults, such as opt-out testing in primary health care or in emergency departments [30,49,76,77] and the indicator-condition guided testing, a very promising approach [78,79], that may warrant scale-up in this population group [24,26,80].

It is important to note that the literature review may not have succeed in retrieving all relevant articles due to search strategies' inherent limitations such as the choice to limit the search to article published from 2010 onwards or to search only PubMed and Embase. In addition the screening of retrieved articles performed by a single rater may have resulted in a sub-optimal sensitivity. Finally inaccuracy during data extraction and analysis may also have impacted the validity of the results.

Increasing trends in new HIV diagnoses among older adults point towards the compelling need to deliver more targeted prevention interventions for this age group and increase awareness among health care providers, while fostering a culture of HIV test "normalization". In particular, evidence shows that provider-initiated, opt-out testing approaches are effective and acceptable in targeting older adults in the EU/EEA and in other high-income countries. The present study contributed to collating and synthetizing the body of evidence on HIV testing approaches and providers' and clients' pathways to HIV testing offer and uptakes. Based on the available findings demonstration studies could be designed and implemented to identify optimal strategies to increase testing coverage and uptakes among older adults. Also, such studies and their findings could be shared among EU/EEA countries to foster exchange of experiences and good practices in the region.

Authors' Contribution

LT developed the project idea and study protocol, performed the literature review and drafted the manuscript; AP and GM contributed to the manuscript drafting. All authors reviewed and approved the final version.

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