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HIV-2 infection in Europe – persistence by migrant flows from West Africa but low spillover into the native population

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SUMMARY

HIV-2 was isolated in 1986 in AIDS patients with negative or indeterminate HIV-1 antibodies. Most HIV-2 patients initially reported were West African migrants living in Europe. Independence wars during the 1960s for French colonies and, in the 1970s, for Portuguese colonies, fueled population exchanges, including military personnel. The Ivory Coast and Guinea-Bissau acted as the respective epicenters of HIV-2 spillover into France and Portugal. Other European countries (i.e., Belgium, the Netherlands, Spain, Italy, Germany, etc.) reported HIV-2 cases in the late 1980s. Although the majority were migrants from West Africa, there were also natives who had traveled to or had sex partners from there. By 1990, nearly 500 cases of HIV-2 infection had been confirmed in Europe. By 2010, nearly 2,000 cases had been reported only in Portugal.

National surveillance data across Europe remain scarce, hindering precise and up-to-date estimates of HIV-2 infection. Spain is a notable exception, as it has maintained a register since 1989, with 428 HIV-2 cases reported by the end of 2025. Current consensus indicates that new HIV-2 infections are declining across Europe. Migrants from West Africa continue to be the largest contributors, with no evidence of significant HIV-2 spread into the native European population. This ongoing pattern underscores both the importance of surveillance and the limited transmission of HIV-2 beyond migrant communities.

Keywords: HIV-2, AIDS, West Africa, Europe, migrants, antiretroviral therapy, HIV-1 coinfection.

INTRODUCTION

Human immunodeficiency virus type 2 (HIV-2) was first isolated in 1986 in patients with AIDS in whom the serology for HIV-1 was negative or indeterminate [1]. Circulation of a virus closely related but distinct from HIV-1 had been suspected for a while in West Africa [2]. The com-

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plete genome sequence of HIV-2 was reported in 1987 and showed 55% nucleotide divergence from HIV-1 [3]. Individuals with HIV-2 infection began to be reported in France and Portugal, and surveys in their former West African colonies suggested that the virus was widely circulating there [4-6].
Viral replication in individuals with HIV-2 infection is lower than in HIV-1 carriers [7, 8]. It results in slower CD4 count decline, lower transmissibility, delayed progression to AIDS, and lower mortality in HIV-2 compared to HIV-1 infection [9]. Approximately 10% of individuals with HIV-2 infection are classified as 'elite controllers' [10]. They show undetectable viremia and CD4 counts above 500 cells/mm^3 after more than 10 years of infection, even without antiretroviral therapy.
In an early reconstruction of HIV-2's spread into Europe, nearly 500 cases had been confirmed by 1990 [11]. Most were reported in France and Portugal, and the majority were linked to former West African colonies. Ivory Coast and Senegal were the primary sources of HIV-2 infections for France [5, 11, 12]. Guinea-Bissau was the epicenter for HIV-2 cases identified in Portugal [6, 13, 14]. Significant migrant flows, including military personnel during the independence wars in the 1960s and 1970s, fueled the initial European spread of HIV-2 [15, 16].
In this narrative review, we aim to update about the current circulation of HIV-2 infection in Europe and discuss epidemiological trends. We provide insights and future prospects for the HIV-2 epidemics in Europe after deeper examination of the situation in Spain, using a nationwide database of HIV-2 cases. The searching methodology was based on articles published in PubMed during the last four decades, including the word 'HIV-2' and resembling expressions.

HIV-2 in France

In France, HIV-2 infections were examined in new HIV diagnoses twenty years ago [17]. From a total of 10,184 new HIV-infected individuals reported over three years, 186 (1.8%) were infected with HIV-2. Coinfection with HIV-1 was found in 22 of them. The serological diagnosis of dual infection was based on similar high antibody binding affinity to the respective immunodominant epitopes of the transmembrane protein [18, 19].
Up to 65% of individuals infected with HIV-2 (n=121) diagnosed in France had been born in West Africa, mainly Côte d'Ivoire (n=64), Mali (n=19), and Senegal (n=12). There were also 20 native French individuals [17]. Women represented 63% of HIV-2 cases. The risk factor was unknown for 26%, but heterosexual transmission was the most likely route for 72%. In three males, homosexual transmission was well documented. No more nationwide surveys have reported updated HIV-2 figures in France; current estimates are a few thousand.

HIV-2 in Portugal

The cumulative number of notified HIV-2 infections in Portugal was 1,813 by the end of 2008 [16]. Until the year 2000, the majority of HIV-2 patients were Portuguese-born males living in the north of the country. In contrast, from 2000 to 2007, most individuals diagnosed with HIV-2 infection in Portugal had a West African origin, were predominantly female and were living in the capital, Lisbon. Movements of soldiers and repatriates from African territories during the independence wars and, later, migration and mobility from HIV-2 highly endemic areas largely determined such different patient profiles [20, 21].
The role of Guinea-Bissau as the epicenter for the global HIV-2 spreading throughout Portuguese ties has been well documented [6, 14, 16]. Founder effects for HIV-2 in Brazil and India seem to be a direct consequence of this link [22, 23].

HIV-2 infection in other European countries

A short case series of HIV-2 patients has been reported in Italy. Until 2020, a large clinic in northern Italy reported 32 cases, 84% of which were of African origin. Half of them were male. HIV-2 viremia was undetectable in 37% of cases. Nearly half were dual HIV-1/HIV-2 infections. Heterosexual transmission was the most frequent route of contagion [24].
In the Netherlands, earlier reports of HIV-2 infection referred to West African migrants living near the Rotterdam port [25]. A more recent study noticed that less than 4% of people with HIV in the country had been diagnosed with HIV-2 infection [10]. To date, the Rotterdam cohort has included 52 HIV-2 patients, of whom 27 keep on regular follow-up [10]. Over 80% are African, most from Cape Verde.
In Belgium and Luxembourg, 65 HIV-2 patients were virologically characterized two decades ago,

being the majority West African migrants. Other European countries that have reported HIV-2 cases are Germany and the United Kingdom, again, with most of them being West Africans [26-28].

The Spanish HIV-2 register

The first cases of HIV-2 infection in Spain were reported in 1988 in two migrants from Senegal and one from Gambia living in Barcelona [29]. A national register of HIV-2 cases was then created. Yearly meetings have been arranged to update information on new HIV-2 diagnoses and longitudinal follow-up when possible [30]. A centralized laboratory performs subtyping, viral load and drug resistance testing for HIV-2 [31].

Up to the end of 2025, a total of 428 cases of HIV-2 infection had been reported in Spain. A total of 331 (77.4%) were Sub-Saharan Africans, being native Spaniards only 59 (13.8%). The mean age at diagnosis was 42 years, ranging from newborns to 83 years-old. Male were more common than women, being 271 (63.5%). Heterosexual transmission was the most likely route of infection for 289 (67.7%). There were 5 cases attributable to blood transfusions, 3 to vertical transmission, 6 to injection drug use, and 15 to male homosexual contacts. HIV-1 and HIV-2 coinfection was demonstrated in 39 (9.1%). Longitudinal follow-up was available for 123 HIV-2 individuals. Their median CD4 count was 568 cells/mm^3. Ten (11.7%) had less than 200

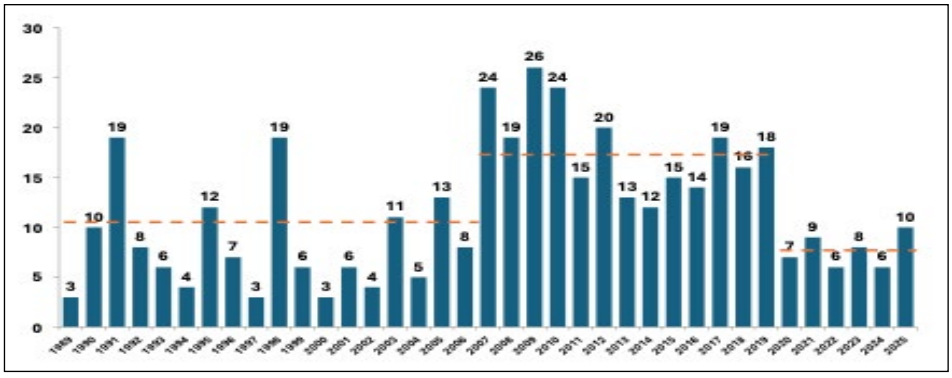

Figure 1
Number of yearly new diagnoses of HIV-2 infection in Spain.

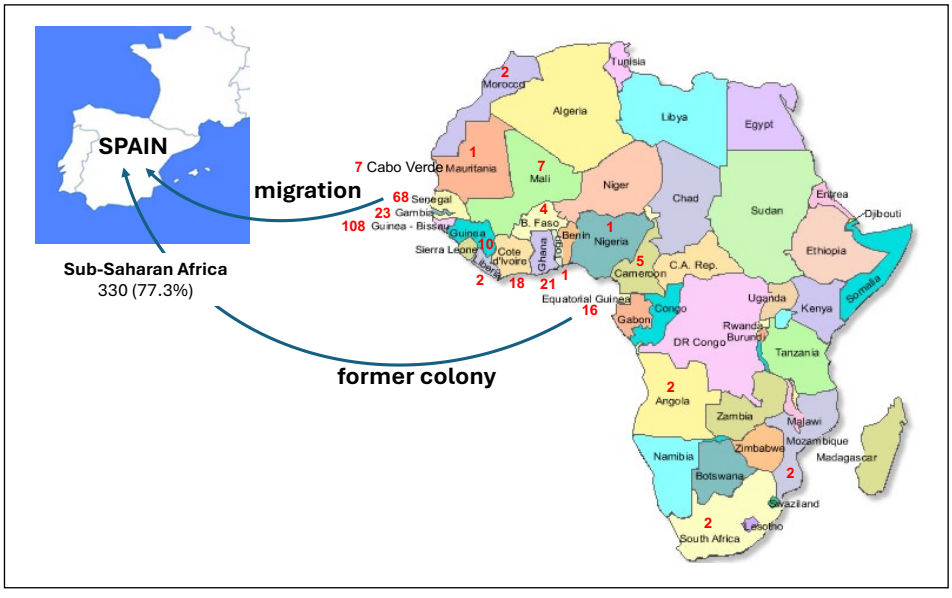

Figure 2
The country of origin for individuals with HIV-2 infection reported in Spain.

cells/mm^3. Antiretroviral therapy with tenofovir/emtricitabine plus integrase inhibitors, either dolutegravir or bictegravir, was taken by 79% of patients, being the remaining 21% treated with boosted darunavir. Undetectable viral load was recognized in 87% of patients.

The annual incidence of HIV-2 in Spain has declined after peaking 15 years ago [32]. The current number of incident cases is around 10 per year. We can recognize three periods in the reporting of HIV-2 in Spain during the last four decades (*Figure 1*). Before 2006, the average annual incidence was 11 cases. It then rose to an average of 20 cases annually until the COVID-19 pandemic. The increase largely resulted from the arrival of African migrants to the Canary Islands and southeastern Spanish coasts during that period. Since 2020, fewer than ten HIV-2 cases per year have been reported in Spain. We suggest that early identification of HIV-2 in newcomers, combined with declining HIV-2 rates in their countries of origin, largely explains the current low incidence in Spain, with very few or only occasional local transmissions.

Of all 428 cumulative cases of HIV-2 reported to date, 330 (77.3%) are Sub-Saharan Africans. Being a country of 50 million people, Spain has 7 million foreigners (14%). Roughly 250,000 are Sub-Saharan Africans, with West Africans being the largest group by far. Migrants from this region are mostly from Senegal (75,000), Nigeria (35,000), Mali (30,000), Ghana (20,000) and Equatorial Guinea (10,000) [33]; the latter is a former Spanish colony (*Figure 2*).

Future trends for HIV-2 in Europe

Europe was the first region where HIV-2 patients were identified among West African migrants, yet the infection remains largely neglected [34]. Notably, France and Portugal continue to have the largest numbers of HIV-2 carriers. However, national surveillance data are generally scarce, making it difficult to provide precise and updated estimates of HIV-2 infection in Europe. Spain stands out as an exception, maintaining a register since 1989 and reporting 428 cases of HIV-2 infection by the end of 2025. These surveillance differences impact the ability to fully understand the epidemic's scope.

Heterosexual transmission has been and continues to be the most frequent route of acquisition of HIV-2 in Europe as elsewhere [9]. In contrast with HIV-1, men having sex with men only sporadically have been reported as infected with HIV-2, including a cluster of eight older men in Spain [35]. Contrary to HIV-1, perinatal transmission of HIV-2 is naturally uncommon [36]. No recent reports of vertical transmission of HIV-2 from European countries have been released. Universal perinatal HIV-1/2 testing along with antiretroviral coverage during pregnancy, have driven to almost zero any chance of mother to child transmission of HIV-2.

Consensus exists that new HIV-2 infections in Europe are decreasing [10, 21, 24, 26, 32]. Migrants from West Africa remain the primary source of cases, with no significant ongoing transmission within the native population. This contrasts with HIV-1, a more transmissible zoonosis from central Africa, which spread from the beginning widely among Europeans. While HIV-1 rapidly established itself within the native population upon arrival, new HIV-2 diagnoses continue to occur mostly among migrants from endemic West African countries. Strengthened medical management of HIV-2 infected individuals should further prevent the spread across Europe and help controlling the epidemic [37]. Furthermore, encouraging recent data from West African countries highlight that HIV-2 circulation is rapidly declining there [38-40].

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Conflict of interets

None for all authors.

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