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## HIV epidemic among key populations in west Africa

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### Abstract

**Purpose of review**—Globally, HIV infection remains a significant issue for key populations such as men who have sex with men (MSM) and female sex workers. A review of recent articles was conducted for west African countries to assess the burden of disease among female sex workers and MSM, access to services and identify barriers to implementation of services for key populations.

**Recent findings**—In west Africa, key populations engage in high-risk practices for the acquisition of HIV and other sexually transmitted infections. Available HIV prevalence data fluctuate across and within countries for both MSM and female sex workers and may be five to ten times as high as that of the general population. HIV prevalence varied from 15.9% in The Gambia to 68% in Benin among female sex workers, whereas it ranged from 9.8% in The Gambia to 34.9% in Nigeria for MSM. Yet, important data gaps exist, including key populations size estimations in several countries as well as HIV prevalence, incidence and other biomarkers of HIV risk. Because of sociocultural, legal, political and economic challenges, exacerbated by a poor health system infrastructure, the HIV response is not strategically directed toward programs for key populations in countries with concentrated epidemics. Noteworthy is the low coverage of prevention care and treatment interventions offered to key populations.

**Summary**—Sufficient planning and political will with legal and structural frameworks that reconcile public health and human rights are needed to prioritize HIV prevention, care and treatment programming for key populations programs in west Africa.

### Keywords

concentrated epidemics; female sex workers; key populations; men who have sex with men; west Africa

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### Conflicts of interest

There are no conflicts of interest.

## INTRODUCTION

More than three decades after the first reported case of AIDS, sub-Saharan Africa continues to be the most heavily affected region in the world. East and southern Africa alone account for 56% of the global burden of HIV with eight countries having estimates of more than 1,000,000 persons living with HIV/AIDS [1]. HIV prevalence in west Africa remains comparatively low, with the adult prevalence in the general population assessed at 2% or lower except for Côte d'Ivoire and Nigeria where adult prevalence is estimated at 3.4 and 3.5%, respectively [1]. West Africa includes 14 countries, 3 landlocked and 11 with a coastline (Fig. 1), with the majority purporting French as their national language. The epidemic in west Africa is deemed to be heterosexually driven, but recent data suggest that sex between men may play a significant role in the spread of HIV infection [2,3]. Data from Senegal, The Gambia, Côte d'Ivoire, Ghana and Nigeria indicate that a substantial number of infections occur [4–7] among men who have sex with men (MSM), many of whom also report having sex with women [8].

## CONCENTRATED EPIDEMICS

The Joint United Nations Programme on HIV/AIDS defines epidemics as concentrated, low level, generalized and hyper endemic [9]. The characterization of concentrated epidemics has been based on a threshold of HIV prevalence less than 1% in the general population and more than 5% in key populations – subpopulations at higher risk of HIV, such as female sex workers (FSW), MSM and persons who inject drugs (PWID). However, recent literature has examined transmission dynamics to document if HIV infection in the general population is self-sustaining or dependent on transmission from key populations [10,11]. Surveillance data indicate that west African countries have experienced concentrated HIV epidemics with elevated HIV prevalence among FSW and MSM [10]. Limited data are available for PWID in west Africa [12] and the role of injecting drugs in HIV transmission dynamics is unknown. Yet, reported drug use in this region has predominantly been noninjecting [13]. Several studies document the disproportionate high rates of HIV among key populations in low-income countries [14,15,16]. However, national responses to the HIV/AIDS epidemic in most west African countries have historically focused on the general population, with little attention being paid to key populations. Key populations have rarely been part of surveillance activities in west Africa, resulting in important data gaps necessary to inform a broader public health response.

For this review, we included journal articles published during 2009–2014. During this period, some published articles report on studies and/or data collected over the past 15 years. We conducted a systematic search of publications using EMBASE and PubMed that either reported HIV seroprevalence data among key populations or included discussions on seroprevalence among key populations or MSM, FSW and PWID.

In this review, we will describe the HIV epidemic in FSW and MSM in west Africa and discuss challenges to expanding HIV prevention programs to key populations in the region.

## Female sex workers

FSW and their clients are a critical group contributing to the spread of HIV infection worldwide [17]. In west Africa, FSW carry a significant burden of HIV disease and are identified as a high-prevalence and incidence core group [18,19]. In selected cities in Ghana, Benin and Togo, 32–84% of prevalent cases among men had been attributed to sexual contact with FSW [1,18,20]. The percentage of HIV in the general women population that can be attributed to female sex work is estimated at 18% [21]. A meta-analysis of FSW studies in low to middle-income countries indicated that FSW in sub-Saharan Africa had 12.4 times the odds of HIV compared with all women of reproductive age [15<sup>\*\*\*</sup>]. HIV prevalence in FSW varies within and across west African settings, with reported estimates over the past 5 years of 15.9% in The Gambia [22], 20% in Nigeria [23], 20.1% in Senegal [21], 25.7% in Bobo-Dioulasso, Burkina Faso [24], 26.6% in Côte d'Ivoire [17], 30.4% in Cotonou, Benin [25], 45.4% in Lome, Togo [20] and up to 68.6% in a study in Ghana and Benin [18] (Table 1). Although data are scarce for male and transgender sex workers, a study conducted among male sex workers in Côte d'Ivoire identified an HIV prevalence of 50% [7].

Although these estimates among FSW and male sex workers are relatively high, it is important to interpret them cautiously as these studies were largely conducted in urban areas, and were not nationally representative. Furthermore, population size estimations for key populations are available only for four (Sierra Leone, Côte d'Ivoire, Ghana and Nigeria) out of the 14 west African countries [28–30], which provides limited ability to effectively gauge the contribution of key populations to the HIV epidemic in the region. Trends recently reported from Benin, Côte d'Ivoire, Guinea and Nigeria show a temporal decline in HIV prevalence estimates among FSW [1,23,25,27].

The risk of HIV acquisition and/or transmission is usually determined by a combination of behavioral, biological and structural factors, such as the frequency of unprotected sexual intercourse, a high number of concurrent sexual partners, the presence of other sexually transmitted infections (STIs), limited access to prevention and treatment services, social stigma and discriminatory legal or regulatory policies [15<sup>\*\*\*</sup>]. In most studies on FSW, unprotected sexual intercourse was frequent with clients, with reported rates as high as 62% in Sierra Leone [31,32]. Similar rates of unprotected sex have been reported by FSW elsewhere with regular sexual partners [17]. However, in two consecutive studies conducted in Nigeria, self-reported condom use among FSW was high with clients who pay for sex, ranging from 76.3 to 90.5%, but under 45% with regular, nonpaying sexual partners [23,33]. Unfortunately, there are no available data across the region to assess whether duration of sex work or early onset of sex work is associated with risk of infection.

STIs, especially genital ulcers, may play an important role in HIV transmission and acquisition [34–36]. FSW studies from Côte d'Ivoire, Ghana, Benin and Nigeria documented an elevated prevalence of curable bacterial STIs, denoting a higher risk for HIV infection among these FSW [17,18,26]. Structural factors that elevate risk among FSW include extreme poverty, concomitant lack of familial and social support, gender inequality, stigma, discrimination, physical and sexual violence and legal and regulatory policies penalizing sex work [15<sup>\*\*\*</sup>,37]. Sex work is illegal in most west African countries and FSW

are criminalized, when arrested. Structural risk factors associated with arrest and incarceration indirectly heighten risk for HIV infection by restricting access to preventive HIV/ STIs care and treatment services [37]. Although some localized education and prevention interventions have been launched for FSW in west Africa, they lack the scale to reach most FSW [10\*].

### Men who have sex with men

Since the beginning of the epidemic, MSM have been disproportionately affected by HIV [38]. Although the annual number of new HIV infections among all adults in sub-Saharan Africa has declined by 34% since 2001 [1], emerging data suggest that the situation among African MSM may mirror higher risk profiles documented among MSM elsewhere in the world [14\*]. Recent studies in Africa also indicate that MSM risk is higher than the general population [21]. In Nigeria, consecutive assessments conducted in 2007 and 2010 among MSM documented an increase in HIV prevalence from 13.5 to 17.2% [33]. Elsewhere in the region, HIV prevalence among MSM varies, with reported estimates over the past 3 years of 9.8% in Banjul, The Gambia [6], 18.0% in Abidjan, Côte d'Ivoire [39], 34.3% in Accra-Tema in Ghana [40], 34.9% in Abuja, Nigeria [5] and up to 50.0% among MSM engaging in sex work in Abidjan, Côte d'Ivoire [7] (Table 2).

As with FSW, risk factors for MSM bring in several contextual elements, such as illegality of same-sex behavior and poor quality service access that intensify individual-level risk [43]. Individual risks include unprotected anal intercourse, high numbers of sexual partners and the presence of other STIs. Unprotected anal intercourse at last sex was reported by 43.4% of MSM enrolled in a cross-sectional survey conducted in three cities in Nigeria and by 57% of MSM in a study conducted in Douala, Cameroon [44,45], underscoring the high levels of risky behavior among these men. At the sexual network level, studies from Senegal and Nigeria have documented a substantial percentage of MSM who report having both male and female concurrent sex partners [8,46]. Bisexual concurrency may establish a bridge between male and female sexual networks and have implications for HIV transmission in the general population [47,48]. Furthermore, in some contexts, 25–50% of MSM engage in sex work based on recent studies in Nigeria, Côte d'Ivoire and Senegal [4,5,7,44,49], which may increase their vulnerability to HIV infection. The presence of bacterial STIs constitutes biological factors that may exacerbate risk of HIV infection and transmission [50]. Studies of MSM in Côte d'Ivoire and Senegal documented a high prevalence of bacterial STIs [7,51]. Lastly, other important factors associated with higher risk sexual practices, such as excessive use of alcohol, injecting and noninjecting drugs (e.g., amphetamine-type stimulants) stigma, discrimination and human rights abuses have yet to be examined.

Although some estimates of risk factors for HIV infection are available for west African MSM, important data gaps remain. Donor-supported and national HIV surveillance and prevention activities are focused on the general heterosexual population; MSM prevalence data are not available for Liberia, Sierra Leone, Niger, Burkina Faso and Mali. Data on trends in HIV prevalence and incidence are even scarcer in the region. To fill these gaps, the President's Emergency Plan for AIDS Relief has over the past 5 years funded a plan to

conduct a series of behavioral surveys, with biomarkers using respondent-driven sampling to assess HIV prevalence, risk behaviors and MSM population size estimates in Nigeria, Côte d'Ivoire, Ghana and Mali. The intent of these surveys is to create an evidence base on which HIV prevention programs may be developed for MSM in west Africa – a population that has historically been overlooked by HIV prevention programs. The majority of MSM in resource-limited countries has yet to be reached by prevention services [52]. The Global Forum on MSM and HIV estimates the scale-up and delivery of basic strategies and interventions proven to reduce HIV transmission remains poor for MSM, particularly outside of high-income countries [53].

## **HIV PREVENTION CHALLENGES FOR KEY POPULATIONS IN WEST AFRICA**

There is ample evidence that targeted HIV prevention programs aimed at reducing transmission of HIV and STIs are feasible and effective among FSW [21,54–56] and to a lesser extent among MSM [57,58]. However, major challenges hamper the delivery of effective prevention programs in these populations in west Africa. These challenges are linked to sociocultural, legal, political and economic issues and are often exacerbated by limited programmatic capacity and infrastructure within the public healthcare system.

### **Cultural challenges**

Defining sex workers is difficult, as FSW often have multiple types of employment, are highly mobile and are often compelled to seek anonymity because of stigma. A qualitative study among FSW in Ghana concluded that stigma may deter FSW from getting tested, undermine condom use and prevent those who are HIV-positive from seeking treatment [29]. Understanding motivations and barriers for seeking healthcare among those women could help inform interventions to reduce HIV transmission and its associated morbidity and mortality [59]. Many MSM choose to remain closeted or to enter into sexual relationships or marriages with women because of sociocultural gender norms and a fear of stigmatization and discrimination. Adebajo *et al.* found a statistically significant association between internalized homophobia and HIV infection among MSM reporting bisexual practices in Nigeria, emphasizing the misconceptions of risk that often lead to riskier sexual practices [60]. In general, unlike their peers from other countries, key populations in west Africa are not uniformly organized into peer-led or lesbian, gay, bisexual and transgender organizations [37]. Consequently, key populations are unable to serve as social capital to assist and/or provide interventions to their peers. Several nascent lesbian, gay, bisexual and transgender groups or organizations in the region, such as the International Centre on Advocacy for the Right to health in Nigeria, the Center for Popular Education and Human Rights in Ghana or Alternative in Côte d'Ivoire, would benefit from greater regional and international support.

### **Legal and human rights challenges**

Sex work is illegal in most west African countries with numerous punitive legal approaches but is unevenly enforced. Senegal is the lone exception, where prostitution has been legal and regulated since 1969 [61,62]. However, there is increasing evidence that many FSW in

Senegal are no longer willing to be registered, and a significant number may be working outside legal sanction [62]. Likewise, MSM are highly stigmatized as same-sex intercourse is criminalized across west Africa and may be punishable by lengthy prison terms or death [16,30,63]. A recent Nigerian law mandates a 14-year prison sentence for anyone entering a same-sex union and a 10-year term for ‘a person or group of persons who supports the registration, operation and sustenance of gay clubs, societies, organizations, processions or meetings’ [60]. A rapid assessment conducted by Poteat *et al.* [43] in Senegal concluded that enforcing laws criminalizing same-sex practices may significantly decrease uptake of HIV services among MSM. Furthermore, the assessment found that law enforcement officers often ignore or participate in antigay violence [43]. In some countries, healthcare providers are pressured by governmental authorities to disclose the identities of their MSM clients, rendering this political environment a deterrent for seeking care and/or treatment services [16].

### Political challenges

Despite the emerging evidence indicating a heavy HIV burden among key populations, the public health response in most west African countries is influenced by a moral debate. Largely because of political pressure, current HIV prevention and care policies do not call for an urgent scale-up of comprehensive initiatives among key populations [28]. In most countries, government is reticent to engage with key populations stakeholders and to help expand and sustain successful programs even when programs are successfully jump-started by externally funded nongovernmental or community-based organizations. In recent years, a social justice movement has emerged in Africa [64] with strong advocacy by regional networks, such as the African Men for Sexual Health and Rights and substantive engagement by civil society to promote human rights of sexual minorities. The emergence of groups such as, African Men for Sexual Health and Rights, has helped mobilize or strengthen political will to offer services to key populations. But on several occasions public advocacy on behalf of MSM issues has contributed to a backlash or reenforcement of negative measures, namely in Senegal, Ghana and Core d’Ivoire [43]. Nevertheless, FSW and MSM have been recognized as an HIV prevention priority in Nigeria, Ghana and Côte d’Ivoire’s 5-year national strategic plans.

### Economic challenges

Over the last decade, several FSW interventions were implemented as part of epidemiologic research or demonstration projects in Burkina Faso, Togo, Benin and Nigeria [24,65], but were not designed to be sustainable projects. Other interventions, such as Project PAPO in Côte d’Ivoire, were initiated through President’s Emergency Plan for AIDS Relief with country-based partners and gradually scaled up to successfully provide comprehensive services to FSW and MSM [17]. However, these interventions remain dependent on external donor funding and have yet to transition into complete country-owned programs, either through a ministry of health or a sustainably funded civil society partner. Similarly, multicountry initiatives to promote HIV prevention strategies among FSW have been sponsored by development agencies and successfully rolled out in major west African cities over the last 10 years. These projects were specifically targeting FSW with a comprehensive package of services [10\*], but funding gaps resulted in extended interruptions of services in

some countries [66]. Inadequate financing for HIV prevention programming for key populations remains a primary reason why low coverage of HIV prevention services for key populations persists in west Africa [10\*].

## CONCLUSION

In west Africa key populations engage in high-risk practices and live in a sociopolitical environment that increases vulnerability for HIV acquisition and transmission. Although the effectiveness of targeted HIV prevention interventions among FSW has been well recognized [21], fewer evidence-based achievements were noted among MSM globally [58]. The challenge for implementing HIV/AIDS awareness education and prevention interventions in resource-limited countries is not a lack of 'know how', but rather an amalgamation of factors and barriers that include cultural and social norms, legal and human rights issues and economic commitment. Most west African countries have yet to engage key stakeholders, including government and political leaders, to define suitable key populations-friendly policies and to mobilize adequate technical and financial support for strong and viable key populations programmes, including service delivery. Services that address HIV prevention strategies, such as peer-led interventions, condom and condom-compatible lubricant promotion and use, STIs screening and treatment services, HIV testing and counseling and HIV care, treatment and support, have a better chance to impact transmission rates significantly, if delivered together. Sufficient resources combined with planning, political will and reforms to legal and structural frameworks will all be required to overcome the substantial social, political, economic, legal and psychosocial barriers that key populations face in west Africa. This review suggests that emerging evidence exists to justify concerns about the bridging role key populations may play in fueling the epidemic in the general population in west Africa and the need to mobilize new investments for HIV and other STIs prevention care and treatment programs for key populations throughout the region.

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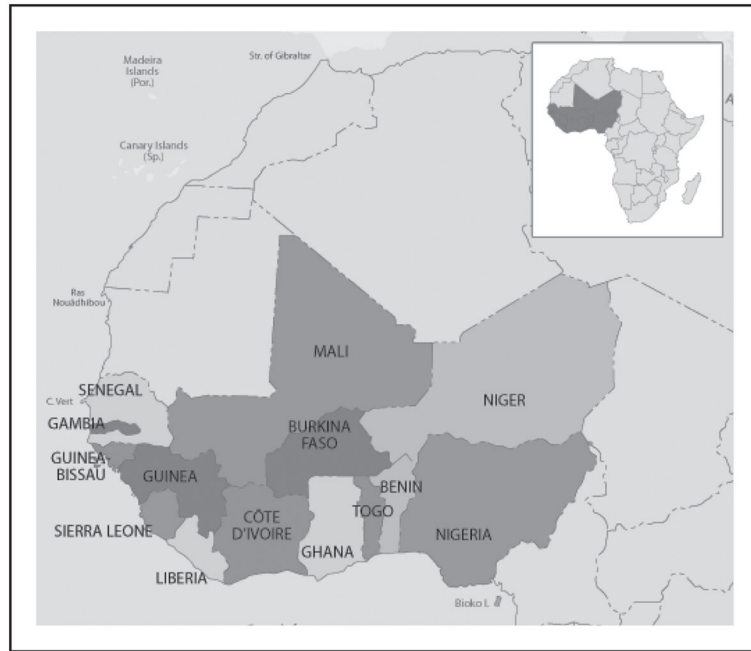
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**FIGURE 1.** Map of west Africa. Open source: jacksonb brown.com.

Table 1

HIV prevalence data among female sex workers in west Africa

Country	City/Location	Author	Study year	Recruitment method	Sample size(n)	HIV prevalence (%)	Pooled estimates (if available)	HIV prevalence in females 15–49 years. (%) [15*]
Nigeria	Six states	Eluwa [23]	2007	Cluster sampling	2971	32.0		
		Baral [15**]	2009	Meta-analysis	3477		33.7	4.50
	Six states	Eluwa [23]	2010	Cluster sampling	2963	20.0		
Benin	Cotonou	Behanzin [25]	2005	Cluster sampling	512	33.3	N/A	1.54
	Outside Cotonou	Behanzin [25]	2005	Cluster sampling	316	34.7		
	Six Urban Centres	Ahoyo [26]	2005	Cluster sampling	882	30.5		
	Cotonou	Behanzin [25]	2008	Cluster sampling	352	30.4		
	Outside Cotonou	Behanzin [25]	2008	Cluster sampling	261	27.6		
		Baral [15**]	2002–2010	Meta-analysis	792	N/A	40.9	
Togo	Lome	Sobela [20]	2003	Cluster sampling	386	54.7		4.20
	Lome	Sobela [20]	2005	Cluster sampling	359	45.4		
	Outside Lome	Sobela [20]	2005	Cluster sampling	566	17.7		
		Baral [15**]	2009	Meta-analysis	1311	N/A	36.2	
Burkina Faso		Konate [24]	2003–2005	Convenience sampling	658	25.7		
Côte d'Ivoire		Vuysteke [17]	2007–2009	Convenience sampling	1110	26.6		
Guinea		Diallo [27]	2001	Cluster sampling	339	40.7		
		Diallo [27]	2007	Cluster sampling	598	34.4		
		Baral [15**]	2001/2007	Meta-analysis	937	N/A	36.7	1.72
Senegal		Kane [21]	2008	Convenience sampling	604	20.1		1.04
		Baral [15**]	2009	Meta-analysis	1656	N/A	19.9	
The Gambia	Banjul + three cities	Peitzmeier [22]	2010	Peer-referral Venue-based sampling	251	15.9		

N/A, not available.

Table 2

HIV prevalence among men who have sex with men in west Africa

Country	City/Location	Author	Study year	Recruitment method	Sample size (n)	HIV prevalence (%)	HIV prevalence among males 15–49 years. (%) [41]
Nigeria	Lagos	Merrigan [4]	2007	RDS <sup>a</sup>	293	17.4	
	Kano	Merrigan [4]	2007	RDS	293	9.3	
	Cross River	Merrigan [4]	2007	RDS	293	1.1	
	Abuja	Vu [5]	2010	RDS	194	34.9	3.30
	Ibadan	Vu [5]	2010	RDS	210	11.3	
	Lagos	Vu [5]	2010	RDS	308	15.2	
	Abuja	Sheehy [8]	2010	RDS	194	27.1	
	Ibadan	Sheehy [8]	2010	RDS	210	28.0	
	Lagos	Sheehy [8]	2010	RDS	308	44.9	
Ghana	Accra-Tema	Aberle-Grasse [40]	2010	RDS	456	34.3	1.30
	Cape Coast / Takoradi	Aberle-Grasse [40]	2010	RDS	398	4.7	
	Kumasi	Aberle-Grasse [40]	2010	RDS	302	13.6	
	Koforidua	Aberle-Grasse [40]	2010	RDS	146	11.3	
Côte d'Ivoire	Abidjan	Vuyisteke [7]	2008	Convenience sampling	96	50.0	2.70
	Abidjan	Hakim [39]	2012	RDS	603	18.0	
Senegal	Four cities	Wade [42]	2007	Snowball sampling	501	21.8	0.60
The Gambia	Banjul	Mason [6]	2011	Snowball sampling	205	9.8	N/A

<sup>a</sup>RDS, Respondent-driven sampling. N/A, not available.