

# Sexual Risk Behaviors of HIV Seroconverters in the US Army, 2012–2014

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**Abstract:** The United States (US) Army implemented a comprehensive HIV characterization program in 2012 following repeal of the Don't Ask, Don't Tell policy banning openly homosexual individuals from serving in the US military. Program staff administered a standardized case report form to soldiers newly diagnosed with HIV from 2012 to 2014 in compliance with new program requirements. The case report form documented sociodemographic, sexual, and other risk behavior information elicited from US Army regulation-mandated epidemiologic interviews at initial HIV notification. A majority of HIV-infected soldiers were male and of black/African American racial origin. In the HIV risk period, male soldiers commonly reported male–male sexual contact, civilian partners, online partner-seeking, unprotected anal sex, and expressed surprise at having a positive HIV result. Don't Ask, Don't Tell repeal allows for risk screening and reduction interventions targeting a newly identifiable risk category in the US Army. At-risk populations need to be identified and assessed for possible unmet health needs.

**Key Words:** HIV, US Army, surveillance, MSM

(*J Acquir Immune Defic Syndr* 2015;70:456–461)

## INTRODUCTION

Although the overall incidence of HIV in the United States remained stable from 2008 through 2010, HIV incidence increased in 2 groups—men who have sex with men (MSM), especially those aged 13–24 years, and blacks/

African Americans.<sup>1</sup> Structural factors such as low level of education, and income and social inequality, to include stigma have been associated with HIV incidence and prevalence among minority racial and ethnic groups and MSM.<sup>2,3</sup> Among black/African American MSM, self-reported same-race partners, high HIV prevalence, unknown HIV status, and poor engagement in HIV care likely compound the risk conferred by structural factors.<sup>3–5</sup>

HIV incidence rose from 2009 to 2012 among soldiers on active duty in the US Army.<sup>6</sup> New HIV diagnoses among male soldiers accounted for this rise in incidence. The Department of Defense Don't Ask Don't Tell (DADT) policy<sup>7</sup> prevented public disclosure of same-sex relations. Data on sexual risk behaviors among HIV-infected soldiers in the US Army were not collected and HIV acquisition and transmission risks of infected soldiers were largely unknown. After the repeal of DADT in September 2011, the US Army Public Health Command (PHC) initiated an epidemiologic program to comprehensively characterize incident HIV infections among soldiers and other beneficiaries of the Military Health System (MHS). This program included implementation of a standardized case report form (CRF) containing specific questions on sexual behavior. We report findings of the first 2 years of program execution.

## METHODS

### Study Design and Population

Since initiation of the comprehensive HIV characterization program in the US Army on February 1, 2012, HIV program coordinators (HIV POCs), typically public health nurses, administered a standardized CRF Army-wide to MHS beneficiaries newly diagnosed with HIV at the time of initial notification and epidemiological assessment interview mandated by regulation.<sup>8</sup>

### Case Report Form

The CRF consisted of multiple choice and open-ended questions divided into sections A through J. Self-reported items included sociodemographic characteristics, histories of HIV testing, care and risk, clinical and sexually transmitted infections (STIs), sexual risk behaviors, alcohol and drug use, military service, antiretroviral use and questions asking about decision-making on when condoms were used and ways of

Received for publication March 4, 2015; accepted June 17, 2015.

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Supported by a cooperative agreement (W81XWH-07-2-0067) between the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc, and the US Department of Defense.

The authors have no conflicts of interest to disclose.

The views expressed are those of the authors and should not be construed to represent the position of the US Department of Defense.

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reducing or preventing perceived HIV risk. HIV POCs completed sections on the interview date and location and provided evidence of laboratory testing and results for STIs through electronic medical record reviews. The questions to participants targeted the HIV risk period defined as the interval between dates of self-reported last negative and initial positive HIV test results.

## Ethical Considerations

The PHC's Public Health Review Board (#146-12) and the Walter Reed Army Institute of Research Institutional Review Board (#1861-C) determined enhanced surveillance program activities were public health practice and not research.

## Analysis

Frequencies and measures of central tendency for characteristics of HIV-infected soldiers were summarized and compared by type of sexual contact using  $\chi^2$  or Fisher exact tests and Wilcoxon rank-sum test. Structured responses for reasons for the first positive HIV test were collapsed into service-related and risk-based categories. Responses to open-ended questions addressing decision-making on condom use and how participants believed HIV could have been prevented or reduced their risk were grouped by content into themes and frequencies by theme were summarized. CRF data were entered in duplicate and compared for quality control. Data were managed and analyzed using Statistical Analysis Software version 9.2 (SAS, Cary, NC).

## RESULTS

### Sociodemographic Characteristics

HIV POCs administered 184 CRFs among 250 soldiers, in active service or in training, newly diagnosed with HIV from February 1, 2012, through February 28, 2014. Most (98%) CRFs were from men to whom this analysis is restricted. At HIV diagnosis, HIV-infected male soldiers were a median 26 years of age (interquartile range [IQR] 22–34 years), 55% were single and had never married, and 54% reported race and ethnicity as non-Hispanic black (Table 1).

### Risk Profile

In the risk period, most (92%,  $n = 166$ ) believed their exposure to HIV was through sexual contact. Among two-thirds of HIV-infected soldiers indicating male–male sexual contact (64%,  $n = 116/181$ ) in the risk period, 78% had sex with men only, and 22% with both men and women. Of the 116 men, 94% reported having had anal sex (Table 1). Consistently or always using condoms for any type of sex was reported at most by an overall 10% of participants and by 15% of MSM for anal sex (Table 1). Decisions on when to use a condom were contingent on how well the partner was known (19%), partner's preference (7%), availability (7%), and influence of alcohol (6%).

MSM frequently reported having nonservice members, casual acquaintances, or strangers as partners, whereas men

who had sex with women only (MSW) commonly reported a spouse or main partner or nonservice members as partners (Table 1,  $P < 0.05$ ). Newly HIV-infected soldiers frequently reported first meeting a casual partner or stranger on the Internet (29%) or a bar/club (26%); a significantly higher proportion of MSM (37%) met these casual sexual partners on the Internet compared with MSW (15%) (Table 1,  $P < 0.05$ ). Cases reported having a median of 3 partners in the risk period (IQR 1–6 partners); MSM did not differ significantly from MSW in the median number of partners reported ( $P > 0.05$ ).

### HIV Testing, Care, and Infection

Although a majority (60%) of HIV-infected soldiers reported that their diagnostic test was performed for reasons related to US Army regulations such as interval service- or deployment-related screening, almost half of MSM (44%)—a significantly higher proportion than MSW (22%)—reported risk-based reasons for screening for their first positive test ( $P < 0.05$ ). Overall, 40% reported having an HIV test in the civilian community; almost half (49%) of MSM—a significantly higher proportion than MSW (22%,  $P < 0.05$ )—reported testing for HIV in the civilian community. Although 67% of soldiers perceived that they were at risk of getting HIV, an overall majority (78%) were surprised at having a positive HIV test result. Among 73% of participants who reported HIV acquisition in the United States, two-thirds believed that they acquired HIV in a state located in the southern United States. Both overall, and among MSM, approximately 1 in 5 were diagnosed with HIV within 6 months of a negative test and more than half within a year of a negative test (median: overall, 12 months; MSM, 11 months; MSW, 17 months,  $P < 0.05$ ).

### STD History

Syphilis infection was reported only by MSM in the risk period (Table 1). An overall 23% ( $n = 42$ ) reported seeking care for STIs in the civilian community; almost three-quarters (74%,  $n = 31$ ) were MSM.

### Military Service

HIV-infected soldiers were in service for a median of 4 years (IQR 2–10) at the time of diagnosis; MSM were in service for a significantly shorter period (median 4 years, IQR 1–8) compared with MSW (median 5 years, IQR 3–17) ( $P < 0.05$ ). Among those having a prior deployment ( $n = 104$ ), only 11% ( $n = 12$ ) believed that deployment caused them to change their sexual behavior, mostly after their return (75%).

### Prevention

Among 156 responders, more than half (52%) believed that using condoms would have prevented or decreased their risk of HIV. Others reported abstinence (13%), not drinking alcohol or drinking less (9%), having fewer sexual partners (8%), and knowing partners better (6%) would have attenuated their HIV risk. Engaging in less risky sexual behavior, practicing monogamy or fidelity, requesting HIV testing of

**TABLE 1.** Characteristics of Male Soldiers in Active Service and Newly Diagnosed as HIV-Infected, 2012-2014

Characteristic (Missing overall: n, %)		Overall (N = 181), n (%)	MSM (N = 116), n (%)	MSW (N = 60), n (%)	P
Demographics at diagnosis					
Age, yrs (0, 0%)	<19	8 (4)	6 (5)	2 (3)	0.3377
	20–24	68 (38)	47 (41)	19 (32)	
	25–29	40 (22)	24 (21)	16 (27)	
	30–34	26 (14)	19 (16)	6 (10)	
	35–39	13 (7)	8 (7)	5 (8)	
	40+	26 (14)	12 (10)	12 (20)	
Race and ethnicity (1, 1%)	Black, non-Hispanic/not reported	97 (54)	61 (53)	35 (58)	0.1207
	White, non-Hispanic/not reported	47 (26)	26 (22)	18 (30)	
	Other	36 (20)	28 (24)	7 (12)	
Marital status (0, 0%)	Single, never married	99 (55)	74 (64)	23 (38)	0.0015
	Ever married/live-in partner	82 (45)	42 (36)	37 (62)	
Education attained (8, 4%)	High school or less	58 (32)	39 (34)	16 (27)	0.4357
	Some college/technical school	75 (41)	45 (39)	29 (48)	
	College/graduate degree	40 (22)	27 (23)	12 (20)	
Behavior in the period at risk					
Sexual contact (0, 0%)	Anal	131 (72)	109 (94)	22 (37)	<0.0001
	Oral	156 (86)	102 (88)	54 (90)	0.8048
	Vaginal	85 (47)	25 (22)	60 (100)	<0.0001
Condom use,* anal sex (28, 15%)	Never	30 (17)	16 (14)	14 (23)	<0.0001
	Inconsistent	78 (43)	68 (59)	9 (15)	
	Always	19 (10)	17 (15)	2 (3)	
Oral sex (27, 15%)	Never	114 (63)	72 (62)	41 (68)	0.4456
	Inconsistent	32 (18)	24 (21)	7 (12)	
	Always	4 (2)	2 (2)	2 (3)	
Vaginal sex (56, 31%)	Never	41 (23)	19 (16)	21 (35)	<0.0001
	Inconsistent	39 (22)	10 (9)	28 (47)	
	Always	10 (6)	5 (4)	5 (8)	
Types of partners (0, 0%)†	Non-service member	100 (55)	74 (64)	25 (42)	0.0064
	Service member	51 (28)	42 (36)	8 (13)	0.0014
	Casual sex partner	83 (46)	58 (50)	24 (40)	0.2645
	Stranger	81 (45)	60 (52)	20 (33)	0.0253
	Spouse or main partner	81 (45)	44 (38)	36 (60)	0.0066
First meeting location (0, 0%)‡	Bar or club	47 (26)	31 (27)	16 (27)	0.4190
	Internet	53 (29)	43 (37)	9 (15)	0.0155
	Other sites	25 (14)	19 (16)	6 (10)	0.6256
Other high-risk sexual contact (10, 6%)§	HIV-infected person	24 (13)	20 (17)	4 (7)	0.0064
	HIV-infected person and group sex	3 (2)	3 (3)	0 (0)	
	Group sex	20 (11)	18 (16)	1 (3)	
	Not reported	121 (67)	69 (59)	49 (82)	
Number of partners, risk period (9, 5%)	None	5 (3)	2 (2)	2 (3)	0.3839
	One to 3	90 (50)	56 (48)	34 (55)	
	Four or more	77 (42)	55 (47)	21 (35)	
Sex while drunk (8, 4%) (21, 12%)	Risk period	70 (39)	37 (32)	32 (53)	0.0219
	Ever	92 (51)	50 (43)	40 (67)	0.0074
Influence of alcohol on sexual risk-taking (20, 11%)	Yes, a great deal of influence	23 (13)	11 (9)	11 (18)	0.5697
	Yes, but very little influence	14 (8)	8 (7)	5 (8)	
	Yes, some influence	24 (13)	16 (14)	8 (13)	
	No, no influence at all	90 (50)	61 (53)	29 (48)	
	Don't know/don't remember/not applicable	9 (5)	6 (5)	2 (3)	

**TABLE 1. (Continued) Characteristics of Male Soldiers in Active Service and Newly Diagnosed as HIV-Infected, 2012-2014**

Characteristic (Missing overall: n, %)	Category	Overall (N = 181), n (%)	MSM (N = 116), n (%)	MSW (N = 60), n (%)	P
STIs					
Gonorrhea (56, 31%)	Risk period	16 (9)	7 (6)	9 (15)	0.0514
(11, 6%)	Ever	41 (23)	27 (23)	13 (22)	0.8493
Chlamydia (62, 34%)	Risk period	9 (5)	4 (3)	5 (8)	0.2694
(12, 7%)	Ever	37 (20)	20 (17)	16 (27)	0.1699
Syphilis (59, 33%)	Risk period	10 (6)	10 (9)	0 (0)	0.0322
(10, 6%)	Ever	23 (13)	22 (19)	1 (2)	0.0006
Any STI (38, 20%)	Risk period	36 (20)	23 (20)	13 (22)	0.6839
(4, 2%)	Ever	82 (45)	55 (47)	26 (43)	0.6325

\*The response “not applicable” for condom usage has been omitted from the table and included the following (n, %): for anal sex (26, 14%), oral sex (4, 2%), and vaginal sex (35, 19%).

†Other types of partners (commercial sex worker in the United States, boss/work superior) reported in the risk period were less than 2% each and have been omitted from the table.  
‡For casual sex partner/stranger only; only meeting locations that constituted an overall 5% or more are listed above; other locations included private party (n = 9, 4%), work (n = 6, 3%), deployment (n = 4, 2%), bath house (n = 3, 2%), and restaurant (n = 1, 1%). Among those who sought partners online (n = 53), commonly visited Web sites were Adam4Adam (34%), Grindr (19%), Craigslist (17%), and Jack’d (11%). Other Internet sites or phone apps, such as Facebook, POF (PlentyOfFish), Manhunt, BGCLive (BlackGayChat), Men4RentNow, MySpace, Zoosk, and FriendFinder, were used less frequently.

§High-risk sexual contact responses totaling less than 3 by MSM/MSW grouping were excluded from the table.

||Any STI included gonorrhea, chlamydia, syphilis, genital herpes, genital warts, or hepatitis B.

partners, and seeing these HIV test results were reported by 5% or less of participants.

## DISCUSSION

Repeal of the DADT policy, which had been in effect for 17 years, has allowed military service members to disclose same-sex relations to health care providers without fear of retribution or separation from service. In this first analysis of CRFs from the US Army’s comprehensive HIV characterization initiative with specific questions on sexual risk behavior, soldiers infected with HIV from 2012 to 2014 were predominantly male; only 2% of all active-duty HIV-infected soldiers were female although active-duty female soldiers comprised approximately 12% of the US Army in 2012–2013.<sup>9,10</sup> Men who have sex with men (64%) and black/African American men (54%) comprised a majority of HIV-infected male soldiers in active service. HIV testing patterns and types of sexual partners indicated HIV prevention measures such as more frequent HIV and STI testing and pre-exposure prophylaxis (PrEP) may be warranted in populations at high risk. The prevalence of infrequent condom use indicates preventive interventions among HIV-positive soldiers should be a program priority to avoid secondary transmission.

These findings mirror a description of the HIV epidemic in the United States; in 2010, 63% of all new HIV infections and 78% of new HIV infections among men were attributable to male–male sexual contact, whereas 44% of all new HIV infections were among blacks/African Americans.<sup>1</sup> Both groups constitute a minority of the US population: Purcell et al<sup>11</sup> estimated that 3.5%–4.4% of the adult male US population were MSM, which represented approximately 2% of the 2008 US population; Blacks/African Americans formed 13.6% of the 2010 US population. Although it is unknown what proportion of the active US Army engage in male–male sexual contact, in fiscal year 2012

black/African Americans were one of the minority race and ethnic groups in the US Army comprising 20% of soldiers on active service, whereas soldiers of white, non-Hispanic race and ethnic origin made up 61% of the active US Army.<sup>12</sup>

Several factors that increase HIV acquisition and transmission reportedly explain the racial disparity in HIV infection status in the general population. Structural factors such as social and income inequalities and lack of economic opportunity were correlated significantly with a higher HIV risk among blacks/African Americans.<sup>2</sup> Black/African American MSM are more likely to have sexual partners of unknown HIV status<sup>13,14</sup> and perceive their risk of HIV acquisition to be lower with intraracial sexual partners.<sup>13</sup> Linkage to care within 3 months of HIV diagnoses and antiretroviral therapy use, both effective risk-reduction interventions among persons positive for HIV, were less prevalent among black/African American MSM.<sup>13,15</sup> Reductions in community viral load levels from large-scale antiretroviral therapy use have been associated with a decrease in new HIV diagnoses.<sup>16</sup> Despite universal health care and periodic HIV testing, racial and risk disparities persist in the US Army and seem to be influenced by drivers of the national HIV epidemic among black/African American MSM.

One in 2 soldiers had a negative HIV result within a year of diagnosis. Among MSM, 1 in 2 had an HIV test outside the MHS. Although service-related reasons predominated, risk-based reasons for HIV testing were frequent, especially among MSM. Almost all syphilis infections were reported by MSM and not MSW. Together, these findings indicate that soldiers at high risk for HIV and STIs may need more frequent testing, and more services, such as provision of PrEP, targeted to their health needs. National guidelines recommend that sexually active MSM get annual screening for HIV, syphilis, chlamydia, and gonorrhea, and MSM with multiple or anonymous sexual partners get quarterly or biannual screening.<sup>17</sup> Testing more frequently provides an opportunity for earlier access to treatment, and utilization of

services such as behavior counseling, thus reducing onward transmission risks. As a means of HIV prevention, national clinical practice guidelines recommend health care providers consider offering PrEP to eligible patients, including MSM, exceeding a threshold risk score.<sup>18</sup>

MSM commonly described having nonservice members, casual partners, or strangers (versus service members or a spouse or main partner) as sexual partners in their period at risk. They frequently met these temporary partners (37%) on the Internet rather than bars/clubs or other venues. Furthermore, among those who reported a location where they likely acquired HIV, most of them believed that the exposure occurred in southern US states, which is consistent with the epidemiology of HIV in the United States. Although the prevalence of HIV was highest in northeastern United States and the rate of new HIV diagnoses decreased from 2008 to 2011 in all regions except the Midwest, the southern United States continued to have the highest rate of diagnoses among all regions in the United States.<sup>19</sup> Seeking partners on the Internet and higher sexual risk behavior associated with online partner seeking have been reported among HIV-infected MSM. A meta-analysis conducted in 2006 found that among MSM recruited offline, online partner-seeking was more prevalent among HIV-infected MSM (49.6%) than uninfected MSM (41.2%).<sup>20</sup> In a meta-analysis conducted in 2014, unprotected anal intercourse was common among MSM who sought partners on the Internet (versus those who did not) especially among HIV-infected MSM irrespective of the HIV serostatus of their partners.<sup>21</sup> Risk reduction interventions among people living with HIV have reduced secondary transmission risk. In 2 large intervention trials conducted at 20 US-based clinics, a significant reduction in unprotected vaginal or anal intercourse was seen among HIV positive participants who received counseling from medical providers compared with those who received standard care.<sup>22,23</sup> These risk reduction programs may reduce HIV transmission and acquisition risks in the US Army.

Consistent with the US HIV epidemic, men who had male–male sexual contact and of black/African-American racial origin comprised a majority of active-duty soldiers who acquired HIV in the US Army. HIV-infected soldiers frequently reported nonservice member partners, online partner-seeking, unprotected anal intercourse, surprise at testing HIV positive, and seeking HIV or STI testing outside the MHS. Prevention programs ascertaining the needs of and targeting MSM and other populations at high risk are now possible after DADT repeal. Adopting and adapting best practices in the civilian community for HIV prevention and risk reduction to the US Army should be a priority.

## ACKNOWLEDGMENTS

The authors thank CDR David Brett-Major, COL Warrington, COL Bruley, and MAJ Flagg for their contributions to the CRF design; and COL Warrington, COL Bruley, and MAJ Flagg for their efforts in CRF implementation. The authors appreciate the efforts of Fang Li in data management and quality control for this analysis; and the

assistance of Goldwynn Manabat, Amanda McIntyre, and Wesley Robb-McGrath in data entry.

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