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STI Characterization in Two U.S. Veterans Health Administration Healthcare Facilities During the Early COVID-19 Pandemic

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Summary

A study of Veterans in Maryland and Washington, D.C. identified an increase in STI ratios with notable gender and racial disparities during the early COVID-19 pandemic.

Abstract

This retrospective chart review of Veterans at the Maryland and Washington, D.C. VA Medical Centers showed that STI positivity ratios increased in 2020 (2018-2020). The disparity in STI risk between Black and White Veterans widened in 2020, highlighting the need for targeted evidence-based STI prevention following the COVID-19 pandemic.

Keywords: Sexually transmitted infections (STIs), COVID-19, Veterans, Health equity, HIV prevention

Introduction

Hotspot areas for new HIV infections, including parts of Maryland and Washington D.C, have alarmingly rising rates of bacterial sexually transmitted infections (STI) [1]. In 2019, to respond to these trends, the U.S. Department of Health, and Human Services (HSS) launched an initiative to end the HIV Epidemic in the U.S. by 2030 [2]. Unfortunately, the advent of the COVID-19 pandemic shortly followed this national initiative limiting efforts to decrease incident HIV and STI. National data illustrates that STI rates continued to rise early in the pandemic, which was of particular concern for regions with disproportionately high baseline rates of HIV and STI incidence and prevalence [3].

The Veterans Health Administration (VHA) is an integrated healthcare delivery system caring for more people living with and at risk for HIV than any other healthcare system in the U.S. [4]. As a result, VHA provides a unique opportunity to understand the impact of the early phase of the COVID-19 pandemic on STI trends and sexual health equity [4]. We aimed to examine select STI incidence rates and patterns before and during the early phase of the COVID-19 pandemic at the Veterans Affairs Maryland Healthcare Systems (VAMHCS) and the Washington D.C. Veterans Affairs Medical Center (DC VAMC).

Materials and Methods

In this retrospective cross-sectional chart review, we used VHA electronic medical record (EMR) data from the VAMHCS and the DC VAMC. We extracted International Classification of Diseases-10th revision (ICD-10) diagnoses codes [5], demographic data, HIV screening lab results, and bacterial STIs for all Veterans who received care at either of the two sites between fiscal years (FY) 2018 and 2020.

Extracted data was aggregated and stored as an encrypted file on the secured facility server on a password protected computer. Microsoft® Excel® was used for all data analysis. This project received exemption determination by both the Institutional Review Board (IRB) of the University of Maryland and the DC VAMC and was conducted in compliance with local regulatory requirements.

A positive STI test was defined as either: (a) a positive *Chlamydia trachomatis* (CT) Nucleic Amplification Acid Test (NAAT) from any site (rectal, vaginal, cervical, and/or urine) (b) a positive *Neisseria gonorrhea* (GC) NAAT from any site (pharyngeal, rectal, vaginal, cervical, and/or urine); or (c) a positive treponemal and Rapid Plasma Reagin (RPR) tests. STI positivity ratio was defined as Veterans who tested positive for an STI divided by overall Veterans tested.

The race was divided into three categories: Black, White, and other. Gender was divided into cisgender men, cisgender women, and transgender. Transgender individuals were identified using the gender identity disorder ICD-10 diagnosis code (F64.1) [5]. Incident HIV infection during a FY was defined as a positive test for HIV (Ag/Ab and/or HIV RNA) with a history of a prior documented negative test in the VHA EMR systems. ANOVA one-sided tests were used to compare differences between FYs. Chi-Square tests were used to compare differences by race, age, or gender within the same FY.

Results

The STI positivity ratio increased significantly in 2020 (15.8%) compared to 2019 (10.1%) at the DC VAMC (p-value <0.0001) (**Table 1**). It also increased at the VAMHCS (6.1% in 2020 compared to 4.3% in 2019); however, that change was not statistically significant (p-value=0.25) (**Table 1**).

Among those tested for an STI, Black Veterans were 1.5-2.5 times more likely to test positive compared to White Veterans across all 3 years at the VAMHCS (p-value=0.02 for 2018; p-value <0.0001 for 2019; p-value <0.00001 for 2020) and the DC VAMC (p-value <0.0001 for 2018; p-value=0.0026 for 2019; p-value=0.0003 for 2020).

Cisgender men were approximately 2-5.5 times more likely to test positive for an STI compared to cisgender women across all three years at both sites (p-value <0.0001 for VAMHCS FY 2019 and 2020, and all three FY at DC VAMC; p-value = 0.0012 for VAMHCS for FY 2018).

At the DC VAMC, STI positivity ratios significantly increased in 2020 compared to 2019 for all age groups (Age <34: 15.7% in 2020 and 11.4% in 2019, p-value = 0.013; Age 35-44: 13.4% in 2020 and 10.5% in 2019, p-value = 0.034; Age 45-54: 13.3% in 2020 and 8.7% in 2019, p-value = 0.005; Age > 55: 18.7% in 2020 and 9.8% in 2019, p-value <0.0001) (**Table 1**). At the VAMHCS, STI positivity ratios increased significantly only for ages 35-44 (8.1% in 2020 and 5.2% in 2019, p-value = 0.041) and those >55 (4.6% in 2020 and 3.2% in 2019, p-value = 0.048).

Two Veterans fit the criteria for HIV seroconversion. Both were at the DC VAMC, one in 2018 and another in 2019. Both were linked and retained in care.

Discussion

Our findings show that while during the early phase of the COVID-19 pandemic fewer Veterans at the VAMHCS and the DC VAMC sought STI testing, the number of positive STI results remained the same. This data supports that, during the early phase of the COVID-19 pandemic, sexual behavior at risk of STI transmission remained prevalent among Veterans in Maryland and Washington, DC which is largely consistent with national data findings during this timeframe [3]. These findings, - particularly if associated with low uptake of HIV pre-exposure prophylaxis (PrEP) - could implicate higher rates of HIV seroconversion as current COVID-19 restrictions ease, notably in these 2 HIV hotspot areas.

Furthermore, we identified notable health disparities. Among those tested, Black Veterans at both sites were more likely to test positive for an STI as compared to White Veterans, and consistently had a higher STI positivity ratio in 2020 compared to 2019 at both sites. This suggests that the COVID-19 pandemic may have widened this existing racial health disparity in STI prevention which is consistent with national data findings [3].

Social determinants of health facing the black community likely play a role in the higher percentage of positive tests. Evidence-based, patient-centered interventions that improve access to care and decrease stigma, especially for those most impacted, are needed and may include expansion of telemedicine use for HIV PrEP and STI testing (i.e., home-based, point of care screening), and same-day PrEP initiation [6,7].

Cisgender female Veterans were less likely to test positive for an STI at both sites and across all three FY compared to cisgender males. They were also the only demographic without a significant increase in STI positivity ratio in 2020 compared to 2019 across all ages and races. Whether this finding is related to reduced sexual exposure, missed opportunities for screening due to stigma or factors unique to VHA including a

Table 1. Comparison of STI positivity ratios in-between FY 2019-2020 at the Maryland VAHCS and the DC VAMC.

		VAMHCS					DC VAMC				
Demographics		n (positive) / N (tested) (%)			p-value		n (positive) / N (tested) (%)			p-value	
		2018	2019	2020	2018 vs 2019	2020 vs 2019	2018	2019	2020	2018 vs 2019	2020 vs 2019
Total		171/3926 (4.4)	168/3909 (4.3)	150/2434 (6.1)	0.9	0.25	383/5320 (7.2)	520/5157 (10.1)	604/3810 (15.8)	**<0.00001**	**<0.00001**
Race	Black	123/2476 (5)	125/2455 (5.1)	121/1600 (7.7)	0.97	**0.0006**	291/3402 (8.5)	387/3399 (11.4)	462/2523 (18.3)	**<0.00001**	**<0.00001**
	White	39/1196 (3.3)	33/1199 (2.7)	18/661 (2.7)	0.46	**0.03**	54/1146 (4.7)	74/1032 (7.2)	74/696 (10.6)	**0.015**	**0.011**
	Other	9/254 (3.5)	10/255 (3.9)	11/173 (9)	0.86	**0.015**	38/772 (4.9)	59/726 (8.1)	68/591 (11.5)	**0.012**	0.28
Gender	Cisgender men	146/2935 (5)	152/2970 (5.1)	138/1814 (7.6)	0.8	**0.0005**	344/3872 (8.9)	478/3787 (12.6)	569/2890 (19.7)	**<0.00001**	**<0.00001**
	Cisgender women	25/986 (2.5)	16/931 (1.7)	12/616 (1.9)	0.22	0.74	38/1442 (2.6)	41/1368 (3)	33/913 (3.6)	0.5	0.41
	Transgender	0/5 (0)	0/8 (0)	0/4 (0)	NA	NA	0/6 (0)	1/2 (50)	2/7 (28.6)	NA	NA
Age	34 or less	31/417 (7.4)	39/490 (8)	37/347 (10.7)	0.77	0.18	75/692 (10.8)	97/853 (11.4)	109/695 (15.7)	0.74	**0.013**
	35-44	42/753 (5.6)	38/756 (5.2)	38/471 (8.1)	0.72	**0.041**	116/1450 (8)	144/1365 (10.5)	133/993 (13.4)	**0.02**	**0.034**
	45-54	29/573 (5.1)	22/566 (3.9)	16/326 (4.9)	0.34	0.47	59/890 (6.6)	75/859 (8.7)	87/655 (13.3)	0.099	**0.005**
	55 or more	69/2183 (3.2)	68/2097 (3.2)	59/1290 (4.6)	0.88	**0.048**	133/2288 (7.2)	204/2080 (9.8)	275/1467 (18.7)	<0.0001	**<0.0001**

STI: Sexually Transmitted Infection; FY: Fiscal Year; VAMHCS: Maryland Veterans Affairs Healthcare System; DC VAMC: Washington DC Veterans Affairs Medical Center.

history of military sexual trauma cannot be concluded from this data. However, recent VHA research highlighted that GC and CT testing is low among female Veterans and infection rates are high especially in women younger than 25 [8].

While there is existing research on rates of STI screening and incidence during the early phase of the COVID-19 pandemic in the U.S. and within the VHA [9], to our knowledge, limited publications exist examining the trends in patient characteristics and the impact on sexual health equity, especially for Veterans within U.S. HHS designated HIV geographic hotspots (Baltimore, MD and Washington, D.C.). This study serves as an early attempt to assess priority populations and disparities indicators outlined in the *STI National Strategic Plan* to better understand the current state of STIs and support the ability to measure progress in reducing STIs [10].

This study has some limitations. The root cause of these findings cannot be determined from this analysis and are likely influenced by various factors including inequities in access to healthcare and other social determinants of health. The use of ICD-10 codes to identify transgender individuals can underestimate the number of transgender Veterans limiting the conclusions that can be drawn about this population [11]. Nonetheless, the VHA included self-identified gender identity in its EMR starting 2021 [12]. The use of RPR titers in a restricted timeframe limits the differentiation between individuals with a new syphilis infection from those who are serofast or had a previously treated infection. STI treatment may not be reported in pharmacy refill data since Veterans may get treatment at their clinic. This limits data analysis related to STI treatment at the VHA. Finally, the decrease in asymptomatic bacterial STI screening rates in 2020 may have underestimated the true number of Veterans who would have tested positive in 2020 [9].

Conclusion

In conclusion, our study showed an increase in STI positivity ratios in 2020 compared to 2019 at both the VAMHCS and the DC VAMC. While the number of Veterans screened was lower, the number of those who tested positive for an STI remained relatively unchanged. This is evidence that sexual behavior at risk for STI transmission continued during social distancing measures due to COVID-19. Disparities in STI positivity ratios were widened in Black Veterans in 2020, highlighting an increased need for targeted efforts related to STI treatment and prevention, especially for populations in which STIs do not fall equally.

Conflicts of Interest

The authors have no real or perceived vested interests related to the content of this article that could be construed as a conflict of interest.

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Author Contributions Statement

All authors have reviewed, approved, and contributed significantly to the development of this manuscript.

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