



# Characterizing the Impact of COVID-19 on Men Who Have Sex with Men Across the United States in April, 2020

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## Abstract

The COVID-19 pandemic is reinforcing health inequities among vulnerable populations, including men who have sex with men (MSM). We conducted a rapid online survey (April 2 to April 13, 2020) of COVID-19 related impacts on the sexual health of 1051 US MSM. Many participants had adverse impacts to general wellbeing, social interactions, money, food, drug use and alcohol consumption. Half had fewer sex partners and most had no change in condom access or use. Some reported challenges in accessing HIV testing, prevention and treatment services. Compared to older MSM, those 15–24 years were more likely to report economic and service impacts. While additional studies of COVID-19 epidemiology among MSM are needed, there is already evidence of emerging interruptions to HIV-related services. Scalable remote solutions such as telehealth and mailed testing and prevention supplies may be urgently needed to avert increased HIV incidence among MSM during the COVID-19 pandemic era.

**Keywords** Coronavirus · COVID-19 · MSM · Gay · HIV

## Introduction

The COVID-19 pandemic, caused by the 2019 novel coronavirus (SARS-CoV-2), was first documented in China in December 2019 with cases identified in the United States shortly thereafter [1, 2]. As of 6 April 2020, there were 330,891 COVID-19 cases in the US with every US state impacted [3]. Though the majority of cases have been diagnosed in densely populated urban areas, substantial numbers of cases are being reported in smaller communities across the country, albeit with far less SARS-CoV-2 testing infrastructure.

With limited evidence supporting specific pharmaceutical treatment strategies and no vaccine available, the current

response has included general COVID-19 mitigation efforts, testing, and healthcare infrastructure supports to slow the spread of the virus that causes COVID-19 and avert as many deaths as possible [4]. The COVID-19 pandemic is also exacerbating multiple health and wellness disparities such as unequal distribution of SARS-CoV-2 acquisition and transmission risks, more severe clinical courses in some patients, and reduced access to food, housing, ongoing medical care, and prescription medications. Given intersecting biological and structural risks, gay, bisexual and other men who have sex with men (MSM) have long been understood to be far more likely to be at risk for and living with HIV than other reproductive aged adults in the US [5]. Over one-third of MSM in the US who are already diagnosed with HIV are not on adequate treatment and may be immunocompromised, potentially increasing risks associated with COVID-19 [6]. MSM at risk of HIV infection may also continue to engage in risky health behaviors or have problems accessing necessary sexual health and HIV prevention services during the COVID-19 pandemic. Younger MSM may be more impacted by the economic effects of COVID-19 and may be particularly vulnerable to reduced access to these services [7].

Characterizing the impacts of the US COVID-19 epidemic and response among MSM with and without diagnosed HIV infection may emphasize the need for new

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approaches to engaging affected communities with remote services. Since 2013, we have used remote procedures to engage 10,000 US MSM each year in an online behavioral survey, the American Men's Internet Survey (AMIS) and have conducted mailed HIV/STI testing the past 2 years [8]. Our research group is also validating at-home self-collection of specimens for SARS-CoV-2 testing and plan on implementing a COVID-19 prevalence survey this spring. As part of the planning for that study, we conducted a brief survey with previous AMIS participants to understand how COVID-19 is impacting their general wellbeing, sexual health, substance use and access to HIV prevention and treatment services.

## Methods

### Participants and Procedures

AMIS is conducted in annual rounds with a goal of at least 10,000 complete surveys from eligible US MSM each year [8, 9]. Briefly, participants are recruited each year through convenience sampling from a variety of websites and through social media applications using banner ads and email blasts to members. Participants were eligible to participate if they were age 15 years or older, male sex at birth, resided in the US, and reported oral or anal sex with a man at least once at any time in the past. Participants of the August through December 2019 AMIS data collection cycle who provided their email address for future study invitations were sent a link to a special COVID-19 impact survey screener where AMIS eligibility was reassessed. If they still met the eligibility criteria and consented to participate in the COVID-19 impact study, they immediately started the online secure survey. No incentive was provided to participants.

### Measures

The survey measured COVID-19 related impacts on several areas: general wellbeing; sexual and substance use behavior; HIV and STI prevention; and HIV treatment (see supplemental file for COVID-19 related questions). Participants were asked to report whether they had COVID-19 related increases, decreases or no changes (or no changes due to COVID-19) in each of the items. Participants were also asked to report on their local area's COVID-19 mitigation plans, how well they adhered to them, and any recent symptoms, risks and COVID-19 diagnoses. We also asked several questions regarding willingness to collect various specimens at home for research or for clinical diagnosis of COVID-19 disease. The survey collected standard demographic information and self-reported HIV status.

## Analyses

The prevalence of COVID-19 related impacts was calculated overall and stratified by age groups of 15–24 years and 25+ years. Differences in the prevalence of adverse COVID-19 related impacts by participant age are reported as bivariate prevalence ratios (PR) and 95% confidence intervals (CI). When the potential beneficial change (either increased or decreased depending on the measure) was infrequent, the comparison group for the adverse change PR calculations collapsed the no change or potential beneficial change categories. PRs for trouble accessing services due to COVID-19 were only examined among those who had attempted to access those services. The age group comparisons were not performed for HIV treatment because there were too few participants age 15–24 who were living with HIV infection. Analyses were conducted using SAS 9.4 (SAS Institute, Cary, NC).

## Results

### Study Sample

There were 1051 completed responses collected from April 2 through April 13, 2020. The median age of participants was 35 years (SD = 15.83) and most were white, non-Hispanic, had private health insurance at the start of the COVID-19 pandemic, lived in urban or suburban counties, and were from the US South (Table 1). A substantial proportion of participants were Hispanic or Latino, had public health insurance, were food insecure in the past year, and were from small/medium metropolitan counties. Eleven percent (n = 122) of participants had a previous HIV diagnosis. Over one-third of participants had symptoms in the past 24 h, including 16.2% who reported a cough. Few participants had contact with someone with COVID-19 disease, but over one-quarter reported that they did not know if they had these contacts. Only 1 participant had been diagnosed with COVID-19. All but 1 participant reported that their local area was under a stay-at-home order. When asked about compliance with local COVID-19 measures, 20.1% (173/861) of participants reported 100% adherence, 71.4% (615/861) reported greater than 50% but less than 100% adherence, and 8.5% (73/861) reported less than 50% adherence to the measures (n = 190 did not answer this question).

### General Impacts

The majority of participants had decreased quality of life, increased anxiety, and decreased connection to friends due

**Table 1** Characteristics of Men who have Sex with Men Who Participated in a COVID-19 Impact Survey, American Men's Internet Survey, 2020

	All participants (N = 1051)	
	N	(%)
Age (years)		
15–24	214	(20.4)
25–29	179	(17.0)
30–39	210	(20.0)
40+	448	(42.6)
Race/ethnicity		
Black, non-Hispanic	89	(8.5)
Hispanic or Latino	146	(13.9)
White, non-Hispanic	740	(70.4)
Other or multiple races	65	(6.2)
Health insurance		
None	59	(5.6)
Private only	781	(74.3)
Public only	152	(14.5)
Other or multiple insurance	53	(5.0)
Food insecure past 12 months		
No	891	(84.8)
Yes	155	(14.8)
Population density		
Urban	452	(43.0)
Suburban	222	(21.1)
Small/medium metropolitan	281	(26.7)
Rural	94	(8.9)
Region		
Northeast	187	(17.8)
Midwest	194	(18.5)
South	427	(40.6)
West	241	(22.9)
US Territories	2	(0.2)
Local COVID-19 measures		
No	1	(0.1)
Yes	1050	(99.9)
Self-reported HIV status		
Positive	122	(11.6)
Negative or unknown	929	(88.4)
Symptoms in Past 24 h		
No symptoms	654	(62.2)
Fever	9	(0.9)
Cough	170	(16.2)
Shortness of breath	47	(4.5)
Muscle aches	46	(4.4)
Diarrhea	59	(5.6)
Other (Less Likely COVID-19) <sup>a</sup>	270	(25.7)
Close contact with someone with COVID-19		
No	731	(69.6)
Yes	36	(3.4)
Don't know	279	(26.6)
COVID-19 diagnosis		
No	1046	(99.5)
Yes	1	(0.1)

**Table 1** (continued)

<sup>a</sup>Other symptoms included sneezing, sore throat and feeling of being unwell

to COVID-19 or the plans to manage it (Table 2). Substantial proportions of participants also had decreased quality of sleep and decreased connection to family. Large proportions of participants had also experienced problems with basic resource needs, including difficulties buying food, paying rent, decreased work hours, and increased needs to support family members or partners who had lost their jobs. Many participants ( $n = 201$ , 19.1%) reported losing their job due to COVID-19, but few had lost their health insurance or were experiencing homelessness. Young participants were more likely to have COVID-19 related impacts on their economic resources.

### Sexual and Substance Use Behavior Impacts

The majority of participants reported fewer sex partners and opportunities to have sex due to COVID-19 or the plans to manage it (Table 3). Many participants also had decreased use of dating or hook-up apps, but many had unchanged usage and a substantial proportion reported increased usage of these apps to connect with other men but not to meet them in person. Condom access and usage were unchanged due to COVID-19. One-tenth of participants had increased use of recreational drugs and one-quarter had increased alcohol consumption. Young participants were more likely to have increased use of apps to connect to men, problems accessing condoms, and increased drug and alcohol use due to COVID-19.

### HIV and STI Prevention Impacts

Many participants reported problems accessing HIV or STI testing and STI treatment due to COVID-19 or the plans to manage it (Table 4) Though only about one-third of participants had recently sought an HIV or STI test, substantial proportions of those who had sought testing reported trouble due to COVID-19. Among participants who were currently on HIV pre-exposure prophylaxis (PrEP), the majority had no problems getting the PrEP prescription or getting their medications from the pharmacy, but some participants did report these difficulties. Young participants were more likely to report that COVID-19 was causing problems for access to HIV and STI testing and treatment services.

### HIV Treatment Impacts

Few participants living with HIV infection had decreased access to their HIV medications or had trouble taking them due to COVID-19 or the plans to manage it (Table 5).

**Table 2** General COVID-19 impacts among United States men who have sex with men who participated in a COVID-19 Impact Survey, American Men's Internet Survey, 2020

	All participants (N = 1051)		Participants 15 to 24 years (N = 214)		Participants 25 + years (N = 837)		PR (CI) <sup>a</sup>
	n	(%)	n	(%)	n	(%)	
<b>Quality of life</b>							
Decreased/less	729	(69.4)	152	(71.0)	577	(68.9)	1.03 (0.93, 1.13)
No change	275	(26.2)	50	(23.4)	225	(26.9)	Ref.
Increased/more	46	(4.4)	12	(5.6)	34	(4.1)	
<b>Anxiety</b>							
Decreased/less	36	(3.4)	13	(6.1)	23	(2.7)	Ref.
No change	248	(23.6)	49	(22.9)	199	(23.8)	
Increased/more	764	(72.7)	150	(70.1)	614	(73.4)	0.96 (0.88, 1.06)
<b>Quality of sleep</b>							
Decreased/less	389	(37.0)	79	(36.9)	310	(37.0)	1.00 (0.82, 1.21)
No change	530	(50.4)	92	(43.0)	438	(52.3)	Ref.
Increased/more	131	(12.5)	43	(20.1)	88	(10.5)	
<b>Feeling connected to family</b>							
Decreased/less	313	(29.8)	64	(29.9)	249	(29.7)	1.00 (0.80, 1.26)
No change	482	(45.9)	84	(39.3)	398	(47.6)	Ref.
Increased/more	254	(24.2)	66	(30.8)	188	(22.5)	
<b>Feeling connected to friends</b>							
Decreased/less	590	(56.1)	133	(62.1)	457	(54.6)	<b>1.13 (1.00, 1.28)</b>
No change	293	(27.9)	57	(26.6)	236	(28.2)	Ref.
Increased/more	165	(15.7)	24	(11.2)	141	(16.8)	
<b>Access to food or money</b>							
Decreased/less	466	(44.3)	109	(50.9)	357	(42.7)	<b>1.19 (1.02, 1.39)</b>
No change	547	(52.1)	90	(42.1)	457	(54.6)	Ref.
Increased/more	37	(3.5)	15	(7.0)	22	(2.6)	
<b>Difficulty buying food</b>							
Decreased/less	45	(4.3)	9	(4.2)	36	(4.3)	Ref.
No change	508	(48.3)	98	(45.8)	410	(49.0)	
Increased/more	495	(47.1)	107	(50.0)	388	(46.4)	1.07 (0.92, 1.25)
<b>Difficulty paying rent</b>							
Decreased/less	23	(2.2)	4	(1.9)	19	(2.3)	Ref.
No change	841	(80.0)	154	(72.0)	687	(82.1)	
Increased/more	182	(17.3)	55	(25.7)	127	(15.2)	<b>1.69 (1.28, 2.24)</b>
<b>Access or stability of internet</b>							
Decreased/less	126	(12.0)	35	(16.4)	91	(10.9)	<b>1.50 (1.04, 2.15)</b>
No change	864	(82.2)	167	(78.0)	697	(83.3)	Ref.
Increased/more	57	(5.4)	12	(5.6)	45	(5.4)	
<b>Number of paid work hours</b>							
Decreased/less	340	(32.4)	107	(50.0)	233	(27.8)	<b>1.79 (1.51, 2.13)</b>
No change	653	(62.1)	96	(44.9)	557	(66.5)	Ref.
Increased/more	50	(4.8)	10	(4.7)	40	(4.8)	
<b>Need to support family or partners who lost job</b>							
Decreased/less	36	(3.4)	11	(5.1)	25	(3.0)	Ref.
No change	799	(76.0)	165	(77.1)	634	(75.7)	
Increased/more	212	(20.2)	38	(17.8)	174	(20.8)	0.85 (0.62, 1.17)
<b>Lost job</b>							
No	828	(78.8)	139	(65.0)	689	(82.3)	Ref.
Yes, COVID-related	201	(19.1)	69	(32.2)	132	(15.8)	<b>2.06 (1.61, 2.64)</b>

**Table 2** (continued)

	All participants (N = 1051)		Participants 15 to 24 years (N = 214)		Participants 25 + years (N = 837)		PR (CI) <sup>a</sup>
	n	(%)	n	(%)	n	(%)	
Yes, other reason	21	(2.0)	6	(2.8)	15	(1.8)	–
Lost health insurance							
No	1001	(95.2)	202	(94.4)	799	(95.5)	Ref.
Yes, COVID-related	20	(1.9)	6	(2.8)	14	(1.7)	1.68 (0.65, 4.31)
Yes, other reason	29	(2.8)	6	(2.8)	23	(2.7)	–
Homeless or Moved in with Friend because can't pay housing cost							
No	1020	(97.1)	206	(96.3)	814	(97.3)	Ref.
Yes, COVID-related	15	(1.4)	5	(2.3)	10	(1.2)	1.95 (0.67, 5.65)
Yes, other reason	15	(1.4)	3	(1.4)	12	(1.4)	–

<sup>a</sup>Prevalence ratios (PR) with 95% confidence intervals (CI) are from bivariate modified Poisson regression models testing associations between age group and outcome. Bold indicates significant at  $P < 0.05$

Substantial proportions had decreased ability to get HIV care visits or laboratory testing. More than three-quarters had recently attempted to get an HIV care appointment, and a quarter of those had trouble making or keeping the appointment due to COVID-19.

### Willingness to Collect Specimens

The vast majority of participants were willing to collect specimens at home for mailed-in SARS-CoV-2 COVID-19 testing for diagnostic purposes (97.9%; 1029/1051) and for research purposes (95.2%; 1001/1051). There were only minor differences in willingness to self-collect by specimen type with throat swabs (97.6%; 1026/1051) and saliva (96.8%; 1017/1051) being more preferred than blood spot (86.1%; 905/1051). Overall, 85.1% (894/1051) of participants were willing to collect all three specimens regardless of whether they would be for research or diagnostic purposes. Willingness to self-collect specimens for testing did not significantly differ by age group, except youth were slightly less willing to provide specimens for research purposes than were older participants (91.1% [195/214] versus 96.3% [806/837]; chi-square  $p = 0.0015$ ).

### Discussion

Many US MSM are experiencing COVID-19 related impacts on their general wellbeing and resources, which is not unexpected given the widespread economic and social effects of the pandemic [10–12]. The economic impacts of COVID-19 are also being felt disproportionately among younger MSM who may be more reliant on hourly and in-person service employment as part of the “gig economy” [7]. Though few

of our participants had yet to report loss of health insurance or housing due to COVID-19, many had already lost jobs or had money problems setting the stage for additional troubles if economic policies are not implemented rapidly. This is particularly concerning because substantial proportions of our participants are already reporting COVID-19 related barriers to HIV and STI testing, PrEP access, and HIV treatment. Many participants had not yet tried to access these services, but if the COVID-19 pandemic is protracted, more MSM will have trouble getting these vital health services. A longer COVID-19 mitigation or recovery process could also potentially impact access to PrEP and HIV medications as longer-term prescriptions expire and medical care visits are required for renewal. Relaxing follow-up laboratory guidelines, increasing prescription refill numbers, and having providers transition to telehealth services are solutions already being promoted by professional organizations [13].

In addition to the potential direct impacts of COVID-19 on resources and access to critical sexual healthcare, many participants are also reporting changes in sexual behaviors and substance use. Though condom access and usage appears to be minimally affected by COVID-19, participants are reporting fewer sex partners likely as a result of COVID-19 social distancing recommendations and stay-at-home orders [11]. This may have an immediate effect on decreasing HIV and STI transmission risk among MSM, but substantial proportions of MSM are already reporting that they aren't strictly adhering to COVID-19 mitigation recommendations. It is possible that protracted mitigation orders will result in even further compliance challenges, placing these MSM at increased risk of acquiring or transmitting SARS-CoV-2 infection, particularly if they are ignoring stay-at-home orders so they can meet sexual partners. There is also evidence from a study conducted after the September 11

**Table 3** Sexual health and substance use COVID-19 impacts among United States men who have sex with men who participated in a COVID-19 Impact Survey, American Men's Internet Survey, 2020

	All participants (N = 1051)		Participants 15 to 24 years (N = 214)		Participants 25 + years (N = 837)		PR (CI) <sup>a</sup>
	n	(%)	n	(%)	n	(%)	
<b>Number of sex partners</b>							
Decreased/less	539	(51.3)	97	(45.3)	442	(52.8)	0.86 (0.73, 1.00)
No change	500	(47.6)	114	(53.3)	386	(46.1)	Ref.
Increased/more	9	(0.9)	3	(1.4)	6	(0.7)	
<b>Opportunities to have sex</b>							
Decreased/less	715	(68.0)	148	(69.2)	567	(67.7)	1.01 (0.91, 1.12)
No change	282	(26.8)	55	(25.7)	227	(27.1)	Ref.
Increased/more	45	(4.3)	11	(5.1)	34	(4.1)	
<b>Use of dating/hook-up apps to connect with other men</b>							
Decreased/less	369	(35.1)	65	(30.4)	304	(36.3)	0.93 (0.75, 1.14)
No change	522	(49.7)	102	(47.7)	420	(50.2)	Ref.
Increased/more	157	(14.9)	47	(22.0)	110	(13.1)	<b>1.52 (1.14, 2.03)</b>
<b>Use of dating/hook-up apps to meet men in person</b>							
Decreased/less	513	(48.8)	101	(47.2)	412	(49.2)	0.95 (0.82, 1.11)
No change	472	(44.9)	101	(47.2)	371	(44.3)	Ref.
Increased/more	61	(5.8)	12	(5.6)	49	(5.9)	0.91 (0.50, 1.65)
<b>Access to condoms</b>							
Decreased/less	99	(9.4)	34	(15.9)	65	(7.8)	<b>2.03 (1.38, 2.99)</b>
No change	940	(89.4)	179	(83.6)	761	(90.9)	Ref.
Increased/more	5	(0.5)	1	(0.5)	4	(0.5)	
<b>Use of condoms</b>							
Decreased/less	57	(5.4)	15	(7.0)	42	(5.0)	1.39 (0.79, 2.45)
No change	976	(92.9)	196	(91.6)	780	(93.2)	Ref.
Increased/more	8	(0.8)	2	(0.9)	6	(0.7)	
<b>Use of recreational drugs</b>							
Decreased/less	71	(6.8)	19	(8.9)	52	(6.2)	Ref.
No change	863	(82.1)	156	(72.9)	707	(84.5)	
Increased/more	104	(9.9)	39	(18.2)	65	(7.8)	<b>1.91 (1.45, 2.52)</b>
<b>Alcohol consumption</b>							
Decreased/less	106	(10.1)	29	(13.6)	77	(9.2)	Ref.
No change	658	(62.6)	118	(55.1)	540	(64.5)	
Increased/more	273	(26.0)	67	(31.3)	206	(24.6)	<b>1.30 (1.09, 1.56)</b>

<sup>a</sup>Prevalence ratios (PR) with 95% confidence intervals (CI) are from bivariate modified Poisson regression models testing associations between age group and outcome. Bold indicates significant at  $P < 0.05$

terrorist attacks that showed a small but significant increase in condomless anal sex among US MSM after the tragedy, with people who lost a friend or relative reporting even greater increases [14]. If MSM have a similar response to COVID-19 but are experiencing sustained interruptions in HIV/STI services, we may see increased HIV and STI incidence among MSM. In addition, these data also indicate that young MSM may be disproportionately impacted by HIV

and STI service interruptions, which may reverse some of the recent gains in reducing HIV incidence among young MSM [5].

Several limitations with this approach should be considered. AMIS data are from convenience sampling and are not generalizable to all MSM in the US or to all MSM online. The surveys only involved self-report of COVID-19 related impacts, it's unclear whether this would be

**Table 4** COVID-19 as a barrier for HIV/STI prevention among United States men who have sex with men who participated in a COVID-19 Impact Survey, American Men's Internet Survey, 2020

	All participants (N = 1051)		Participants 15 to 24 years (N = 214)		Participants 25 + years (N = 837)		PR (CI) <sup>a</sup>
	n	(%)	n	(%)	n	(%)	
Total							
Access to STI testing or treatment							
Decreased/less	267	(25.4)	76	(35.5)	191	(22.8)	<b>1.54 (1.23, 1.91)</b>
No change	771	(73.4)	138	(64.5)	633	(75.6)	Ref.
Increased/more	3	(0.3)	0	(0.0)	3	(0.4)	
Trouble getting an STI test							
No	324	(30.8)	53	(24.8)	271	(32.4)	Ref.
Yes	49	(4.7)	15	(7.0)	34	(4.1)	<b>1.98 (1.14, 3.42)</b>
Haven't tried to get	678	(64.5)	146	(68.2)	532	(63.6)	–
Access to HIV testing <sup>b</sup>							
Decreased/less	175	(18.8)	47	(22.6)	128	(17.8)	1.26 (0.94, 1.69)
No change	712	(76.8)	154	(74.0)	558	(77.4)	Ref.
Increased/more	2	(0.2)	0	(0.0)	2	(0.3)	
Getting an HIV test <sup>b</sup>							
Decreased/less	142	(15.3)	38	(18.3)	104	(14.4)	1.24 (0.89, 1.74)
No change	733	(78.9)	162	(77.9)	571	(79.2)	Ref.
Increased/more	5	(0.5)	0	(0.0)	5	(0.7)	
Trouble getting an HIV test <sup>b</sup>							
No	234	(25.2)	45	(21.6)	189	(26.2)	Ref.
Yes	52	(5.6)	14	(6.7)	38	(5.3)	1.42 (0.82, 2.44)
Haven't tried to get	626	(67.4)	146	(70.2)	480	(66.6)	–
Trouble getting A PrEP prescription <sup>c</sup>							
No	140	(54.9)	21	(61.8)	119	(53.8)	Ref.
Yes	18	(7.1)	1	(2.9)	17	(7.7)	0.36 (0.05, 2.60)
Haven't tried to get	46	(18.0)	4	(11.8)	42	(19.0)	–
Trouble getting PrEP medications <sup>c</sup>							
No	138	(54.1)	16	(47.1)	122	(55.2)	–
Yes	12	(4.7)	0	(0.0)	12	(5.4)	–
Haven't tried to get	54	(21.2)	10	(29.4)	44	(19.9)	–

<sup>a</sup>Prevalence ratios (PR) with 95% confidence intervals (CI) are from bivariate modified Poisson regression models testing associations between age group and outcome. Bold indicates significant at  $P < 0.05$

<sup>b</sup>Among participants who did not report being HIV-positive

<sup>c</sup>Among participants on PrEP, PR could not be calculated

prone to misreporting and what effects those biases would have on our findings. More detailed quantitative and qualitative studies of the COVID-19 impacts would be needed to clarify these effects. Our findings are also likely to be very transient in nature due to the changing nature of local COVID-19 transmission, mitigation efforts and their impacts on healthcare and economies. This may limit reproducibility of the findings but could also be a substantial benefit in rapidly examining changes in these impacts as the COVID-19 pandemic evolves. Online surveys are uniquely suited to these types of rapid re-assessments.

## Conclusion

COVID-19 has produced widespread disruptions to US economic resources, social networks and healthcare services. Our study provides the first evidence of the scope of these disruptions among US MSM, including direct impacts on sexual partnering and access to HIV prevention and treatment. To avert increased HIV and STI incidence, steps need to be taken immediately to improve access to these services, such as increasing the use of telehealth for PrEP and HIV care and mailed self-collection of

**Table 5** COVID-19 as a barrier for HIV treatment among United States men who have sex with men living with HIV infection who participated in a COVID-19 Impact Survey, American Men's Internet Survey, 2020

	All participants (N = 122)	
	n	(%)
Getting HIV care visits		
Decreased/less	33	(27.0)
No change	86	(70.5)
Increased/more	1	(0.8)
Trouble making or keeping HIV appointments		
No	68	(55.7)
Yes	24	(19.7)
Haven't tried to get	29	(23.8)
Getting viral loads or other labs		
Decreased/less	29	(23.8)
No change	88	(72.1)
Increased/more	3	(2.5)
Access to HIV medications		
Decreased/less	7	(5.7)
No change	112	(91.8)
Increased/more	2	(1.6)
Trouble getting an ART prescription		
No	95	(77.9)
Yes	10	(8.2)
Haven't tried to get	15	(12.3)
Trouble getting ART medications		
No	100	(82.0)
Yes	8	(6.6)
Haven't tried to get	13	(10.7)
Taking HIV medications daily		
Decreased/less	6	(4.9)
No change	111	(91.0)
Increased/more	4	(3.3)

specimens for HIV and STI testing. To avoid exacerbating health disparities, we must also make rapid progress on deploying large-scale seroprevalence studies to better understand potential co-morbidity of HIV and SARS-CoV-2 among MSM from across the US. Ultimately, systematically characterizing the outcomes and mitigation strategies of both the US COVID-19 epidemic and associated impacts on HIV prevention and care represents a rapidly emerging priority for gay men and other MSM in 2020.

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manuscript. TS, MZ, and SB wrote the manuscript. All authors critically reviewed and edited the manuscript.

## Compliance with Ethical Standards

**Conflict of interest** The authors report no conflict of interest.

**Ethical Approval** The study was conducted in compliance with federal regulations governing protection of human subjects and was reviewed and approved by Emory University's institutional review board.

**Informed Consent** Informed consent was obtained from all individual participants in the study.

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