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Reaching Key Populations: PrEP Uptake in an Urban Health Care System in the Bronx, New York

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Abstract

Pre-exposure prophylaxis (PrEP) has been established as an effective HIV prevention tool, but real world studies are limited. To inform dissemination efforts, we sought to describe individuals prescribed PrEP in the largest health care system in the Bronx, New York, an urban region with a high burden of HIV. We used a clinical database and chart review to identify individuals prescribed PrEP between 2011 and 2015 (n=108). A majority were Black and Hispanic, half were men who have sex with men, and nearly a third were cisgender women who have sex with men. Primary care settings were the most common site of PrEP prescription and PrEP prescription rates increased over time. Despite reaching a diverse patient population, PrEP prescribing rates were low, underscoring the urgent need for PrEP scale-up.

Resumen

La profilaxis previa a la exposición (PrEP) se ha establecido como una herramienta eficaz de prevención del VIH, pero los estudios en la práctica clínica son limitados. Para ayudar los esfuerzos de diseminación, tratamos de describir los individuos prescritos con PrEP en el Bronx, Nueva York, una región urbana con una alta prevalencia de VIH. Se utilizó una base de datos clínicos y una revisión de los gráficos para identificar a los individuos que recibieron PrEP entre 2011 y 2015 (n=108). La mayoría de los individuos eran afroamericanos o hispanos, la mitad eran hombres que tenían relaciones sexuales con hombres, y casi un tercio eran mujeres cisgénero que tenían relaciones sexuales con hombres. Los centros de atención primaria fueron el sitio más común de la prescripción de PrEP y las tasas de prescripción de PrEP aumentaron con el tiempo. A pesar de llegar a una población diversa de pacientes, las tasas de prescripción de PrEP fueron bajas y subraya la necesidad urgente aumentar la distribución de PrEP a gran escala.

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Conflicts of Interest:

The authors declare that they have no conflicts of interest.

Ethical approval:

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments.

For this type of study formal consent is not required.

Introduction

Clinical trials and open-label studies have established pre-exposure prophylaxis (PrEP) as an effective method of preventing HIV infection among persons at substantial risk of HIV acquisition (1-3). In 2012, the United States (U.S.) Food and Drug Administration (FDA) approved emtricitabine-tenofovir disoproxil fumarate (FTC-TDF) for PrEP, and in 2014, the U.S. Centers for Disease Control and Prevention published clinical practice guidelines for the provision of PrEP (4).

Complementing these advances, there is now an emerging literature examining PrEP uptake in real-world clinical settings. However, these studies have been largely limited to specialized PrEP programs and demonstration projects, and have focused mainly on men who have sex with men (MSM) (5-7). Little is known about PrEP initiation in large health care systems offering care across a spectrum of clinical settings such as primary care, subspecialty care, and sexual health centers. In order to inform PrEP dissemination efforts, the present study sought to describe the sociodemographic and HIV risk characteristics of individuals who received PrEP prescriptions within an integrated health care system in the Bronx, New York, an urban area with one of the largest HIV epidemics in the U.S. As a secondary aim, we sought to describe changes in the number of PrEP prescriptions over time.

Methods

Setting

Our study population included all adults in the largest health care system in the Bronx. The Bronx is a borough of New York City with a population of 1.4 million, and has a high burden of HIV/AIDS with an estimated HIV prevalence of 2% (8). Roughly 55% of the Bronx population identifies as Hispanic or Latino, and 43% identifies as non-Hispanic Black or African-American (9). The health care system comprises four acute care hospitals, 21 primary care sites, 12 women's health centers, and greater than 20 additional specialty care sites including a single community-based sexual health center. Every year, over 50,000 individuals test for HIV across the health care system.

Study population

We conducted a retrospective study of individuals prescribed PrEP between January 2011 and November 2015. To identify patients prescribed PrEP, we used the Einstein/Rockefeller/City University of New York Center for AIDS Research's HIV Clinical Cohort Database. The database includes all individuals tested for HIV within the health care system along with associated clinical and demographic information, including prescription data (10). In order to capture early PrEP prescriptions that may have occurred prior to FDA approval of FTC-TDF for PrEP, our search query included all PrEP prescriptions beginning in 2011. We included adults aged 18 and older who had a negative HIV test between January 1, 2011 and December 31, 2014 and received a prescription for FTC-TDF. The prescription query included all prescriptions written through November 4, 2015. We reviewed the medical records of all patients identified in this manner to confirm that FTC-TDF was prescribed as

PrEP. Patients prescribed FTC-TDF for post-exposure prophylaxis (PEP) or Hepatitis B treatment were excluded.

Data collection and measures

We developed a standardized data dictionary and chart abstraction tool to extract clinical and demographic information from the medical records. Specific data that were extracted included age at time of first PrEP prescription, year of prescription, sex at birth, gender identity (male, female, transgender, gender-nonconforming), race/ethnicity (non-Hispanic Black or African-American, non-Hispanic White, Hispanic, Other Race), sexual orientation (heterosexual, MSM, transgender women who have sex with men, cisgender women who have sex with women), and clinical site of PrEP prescription. We categorized clinic sites as primary care (adult internal medicine, family medicine, or adolescent medicine), women's health, infectious diseases subspecialty, or sexual health subspecialty. HIV risk factors extracted from clinical notes during chart review included self-reported condomless anal and vaginal sex, multiple sex partners, prior non-occupational post-exposure prophylaxis, transactional sex, and injection drug use. Sexually transmitted infection (STI) diagnoses were obtained from laboratory data on gonorrhea, chlamydia, syphilis, genital herpes, and anal human papilloma virus (HPV). If individuals specified a sexual partner, we categorized partners as either a main partner (any individual with whom the patient identified being in an ongoing relationship) or non-main partners (any casual or anonymous sex partner), and reported partner HIV status. To assess change in the number of PrEP prescriptions over time, we compared the monthly mean of unique patients first prescribed PrEP during each three-month quarter of the study period.

The Albert Einstein College of Medicine Institutional Review Board provided study approval.

Results

Among 177,525 individuals with a negative HIV test during the study period, 2064 adult individuals were prescribed FTC-TDF. After excluding individuals prescribed FTC-TDF for PEP, new HIV infection, or Hepatitis B infection, we identified 108 individuals who were prescribed PrEP.

Individual demographics and risk factors

The median age of those prescribed PrEP was 28 (IQR 24-37) (Table 1). Thirty-six percent were Hispanic, and 29% were non-Hispanic Black. There were 74 cisgender men (69%), of whom 79% were MSM, and 3 (3%) transgender women. There were 31 (29%) cisgender women, of whom 94% were women who have sex with men. At the time of PrEP prescription, 50% had a main partner who was HIV-positive, and an additional 11% had a non-main partner who was HIV-positive. Eighty-seven percent of cisgender women identified having a male partner who was HIV-positive, and having an HIV-positive partner was the most commonly cited risk factor among women prescribed PrEP. Among men, condomless anal sex was the most commonly cited risk factor (43%), followed by having multiple sexual partners (39%) and prior documented STIs (37%). Twelve percent of

individuals reported having taken non-occupational PEP prior to being prescribed PrEP. Four percent reported prior transactional sex, and one individual reported injection drug use.

Type of clinical site

The most common setting for PrEP prescription was primary care, with 60 individuals (55%) prescribed PrEP at primary care centers. Out of a total of 21 primary care sites within the health care system, 14 sites had prescribed PrEP. A single sexual health center prescribed PrEP to 23 individuals (21%). Adult and pediatric infectious disease subspecialty clinics prescribed PrEP to an additional 20 individuals (19%). Six (6%) women were prescribed PrEP at women's health centers.

Change over time in number of PrEP prescriptions

The number of PrEP prescriptions increased between 2011 and 2015. Out of 108 individuals prescribed PrEP, 10 were prescribed PrEP before 2014. Beginning in 2014, there was a marked increase in PrEP prescriptions, with an increase from an average of 0.4 prescriptions per month in the first quarter of 2014, to an average of 5.1 prescriptions per month in the last quarter of the study.

Discussion

We identified individuals prescribed PrEP between 2011 and 2015 in a large health care system in the Bronx, a region with high prevalence of HIV infection. We found the majority were non-Hispanic Black or Hispanic, half were MSM, and nearly a third were cisgender women. Additionally, individuals prescribed PrEP had diverse risk factors for HIV infection. We observed a large increase in PrEP prescribing over time, but overall PrEP prescribing was low. PrEP prescriptions occurred across a range of clinical settings, and we found that most PrEP prescribing occurred in primary care centers and a single sexual health center.

Our study expands upon limited literature on PrEP in clinical practice by examining PrEP prescribing in a diverse patient population across different clinical settings within a health care system. Existing data on real-world PrEP uptake have been limited to specialized PrEP programs and demonstration projects (6, 7, 11). In addition, the population served in this study differs from prior studies in that it is predominantly non-Hispanic Black and Hispanic, key populations that have been disproportionately affected by the HIV epidemic in the U.S.

Unlike most published studies that have focused on specialized PrEP programs or demonstration projects, we describe PrEP prescribing in clinical practice across a spectrum of care settings. Specialty programs and demonstration projects may limit accessibility to those who are at risk especially if they are not aware of their degree of risk. We identified the location of PrEP prescription, and found that a majority of PrEP prescriptions were written in primary care settings, demonstrating the feasibility of the venue to reach populations at risk. Given the high prevalence of HIV infection in the Bronx, many primary care sites within our health care system already offer integrated HIV care (12), and may have contributed to increased PrEP prescriptions in primary care settings. Women's health centers and a sexual health center were also responsible for a significant proportion of PrEP prescriptions, suggesting that there are multiple clinical settings where PrEP uptake is

feasible. However, we found that only two-thirds of all primary care clinics in the health care system had ever prescribed PrEP, which may be due to low provider knowledge and awareness of PrEP prescribing (11). Even as primary care providers may be aware of PrEP, many may feel uncomfortable prescribing PrEP, have concerns about PrEP safety and risk compensation, or refer to subspecialists for further care (13).

PrEP scale-up efforts must also address racial disparities in care and the disproportionate burden of HIV infection on people of color. Nearly three-quarters of all new HIV diagnoses are among Hispanics and non-Hispanic Black individuals, with MSM of color in particular at high risk for HIV infection (14). A majority of individuals prescribed PrEP in this study were non-Hispanic Black or Hispanic, consistent with the population in the Bronx. Our study demonstrates that reaching these key populations for PrEP in clinical settings is feasible, although efforts to increase PrEP accessibility to racial and ethnic minorities are urgently needed to reduce HIV infections. National PrEP data suggest that the proportion of individuals prescribed PrEP who are Black dropped from 12% to 10% between 2012 and 2015, with White individuals comprising the majority (74%) of all PrEP recipients (15). Ongoing PrEP scale-up efforts must focus on closing this widening disparity in care, to ensure that the populations at greatest risk have access to this critical tool for HIV prevention.

Our study expands upon the limited published data of PrEP uptake among non-MSM populations. Cisgender women who have sex with men comprised roughly one-third of all individuals prescribed PrEP in this study, of whom more than three-quarters had a HIV-positive main partner. Only two women were prescribed PrEP at a subspecialty clinic, and nearly three-quarters of all women accessed PrEP from primary care and women's health clinics. Women make up roughly a quarter of all new HIV infections in New York City (8), and, despite research indicating the need for PrEP among at-risk women (16), they have been largely underrepresented in studies of real-world PrEP programs. We also identified three transgender women, a key population that has been underrepresented in PrEP implementation efforts (17). Ongoing efforts are needed to both identify and engage cisgender and transgender women who would benefit from PrEP.

We observed a large increase in PrEP prescribing during the study period, but overall rates remained low. Beginning in April 2014, we observed a dramatic increase in PrEP prescriptions, which was sustained until the end of the study in 2015. Potential factors contributing to this increase are the publication of CDC guidelines for PrEP, as well as New York State Medicaid approval for PrEP coverage, both of which occurred in the first half of 2014. In addition, our health care system opened a sexual health center in 2014 with significant resources devoted toward PrEP and PEP, coinciding with the creation of a state assistance program for uninsured individuals that provides reimbursement for PrEP-related primary care services (18). In 2015, the New York City Department of Health and Mental Hygiene launched public awareness campaigns promoting PrEP and began distributing PrEP action kits, a toolkit for clinical providers to prescribe PrEP and provide comprehensive sexual health care, which may have also contributed to an increase in PrEP uptake (19).

Despite its strengths, our study has several limitations. First, because our study was a retrospective chart review, data from regular clinical practice was not systematically recorded, and therefore may not reflect complete risk behaviors. Second, we did not assess if individuals were referred to care specifically for PrEP, which may have influenced the distribution of PrEP prescription sites. Third, our data extraction was limited to individuals who had a negative HIV test before 2015. Because our results do not include individuals with an initial HIV test in 2015, we likely underestimated the number of individuals prescribed PrEP in 2015, and may have disproportionately captured those already engaged in care at the time of initial PrEP prescription. Finally, although we observed overall low rates of PrEP prescribing, it is difficult to quantify the extent of missed opportunities for PrEP. One study estimated that there are roughly 22,500 MSM in the Bronx (20), and given a CDC estimate that 25% of all MSM in the U.S. fulfill clinical indications for PrEP use (21), there is significant opportunity for increased PrEP uptake.

The introduction of PrEP has fundamentally altered HIV prevention efforts, with health care providers now able to provide effective chemo-prophylaxis to individuals at high risk of HIV infection. In a large health care system in an urban region with a high prevalence of HIV/AIDS, we observed a large increase in PrEP prescription across a spectrum of care settings. Most individuals were racial and ethnic minorities, half were MSM, and nearly a third were cisgender women, key populations affected by HIV. Our findings highlight the need to identify effective strategies to increase PrEP prescription in both primary care and subspecialty settings and to better engage populations at high risk for HIV infection.

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Table 1

Characteristics of individuals prescribed PrEP (N = 108)

Age Group	Total (%)	Male sex (%), n = 77	Female sex (%), n = 31
18-24	31 (29%)	25 (32%)	6 (19%)
25-34	46 (43%)	33 (43%)	13 (42%)
35-44	16 (15%)	10 (13%)	6 (19%)
45-54	13 (12%)	8 (10%)	5 (16%)
55+	3 (3%)	1 (1%)	1 (3%)
Gender			
Cisgender Female	31 (29%)	N/A	31 (100%)
Cisgender Male	74 (69%)	74 (96%)	N/A
Transgender Male-to-Female	3 (3%)	3 (4%)	N/A
Race/Ethnicity			
Black or African American, Non-Hispanic	31 (29%)	23 (30%)	8 (26%)
Hispanic	39 (36%)	28 (36%)	11 (35%)
White	11 (10%)	8 (10%)	3 (10%)
Other or Unspecified	27 (25%)	18 (23%)	9 (29%)
Sexual Orientation			
Heterosexual	39 (36%)	10 (13%)	29 (94%)
MSM ¹	61 (56%)	61 (79%)	N/A
MTF ² sex with men	2 (2%)	2 (3%)	N/A
WSW ³	1 (1%)	N/A	1 (3%)
Unspecified	5 (5%)	4 (5%)	1 (3%)
HIV Risk Factors			
Main partner HIV positive	54 (50%)	27 (35%)	27 (87%)
Non-main partner HIV positive	12 (11%)	11 (14%)	1 (3%)
Multiple sex partners	34 (31%)	30 (39%)	4 (13%)
Condomless anal sex	33 (31%)	33 (43%)	0 (0%)
Transactional sex	4 (4%)	2 (3%)	2 (6%)
Injection drug use	1 (1%)	0 (0%)	1 (3%)
Prior sexually transmitted infection	33 (31%)	29 (38%)	4 (13%)
Prior HIV postexposure prophylaxis use	13 (12%)	11 (14%)	2 (6%)
Type of Clinical Site			
Infectious Disease Clinic	20 (19%)	18 (23%)	2 (6%)
Primary Care	60 (56%)	44 (57%)	15 (48%)
Women's Health Center	6 (6%)	0 (0%)	6 (19%)
Sexual Health Center	23 (21%)	15 (19%)	8 (26%)

¹ Men who have sex with men

²Transgender male-to-female women

³Women who have sex with women

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