

WISCONSIN AIDS/HIV PROGRAM NOTES

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Estimated Number of Men who Have Sex with Men and People who Inject Drugs with Indications for HIV Pre-Exposure Prophylaxis in Wisconsin

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Key Points

- Pre-exposure prophylaxis (PrEP) is a way to prevent HIV infection. By taking one pill a day, a person who may have significant risk of acquiring HIV can reduce this risk by 90%.
- PrEP is appropriate for HIV-negative men who have sex with men (MSM) and people who inject drugs (PWID) who have high-risk HIV behaviors and for whom consistent condom use or use of new equipment for each injection is not feasible or practical.
- The estimated numbers of people in Wisconsin for whom PrEP may be appropriate include:
 - 7,800 MSM, ages 15-59 (range 1,900-20,300)
 - 2,500 PWID, ages 15 and older (range 300-8,000)
- PrEP efforts and resources in Wisconsin should be focused on people at greatest risk of acquiring HIV. Because of their disproportionately high prevalence of HIV, intensified efforts to increase the use of PrEP may have the greatest public health impact and benefit for an estimated 350 Black MSM, ages 15-44, in the city of Milwaukee (range 100-800).

Background

PrEP is an effective HIV prevention intervention that involves an HIV-negative person taking one pill daily of the antiretroviral drug Truvada. When taken as directed, Truvada is more than 90% effective in preventing HIV.

The March 2016 [issue](#) of *Wisconsin AIDS/HIV Program Notes (HIV Pre-Exposure Prophylaxis in Wisconsin)* provides an overview of PrEP and highlights current PrEP-related activities in Wisconsin.¹

In this article, we estimate the number of Wisconsin residents for whom PrEP might be appropriate, based on published national and regional estimates of the number of people for whom PrEP is indicated. These estimates should assist planners and service providers to identify the potential scope and resources needed to implement the use of PrEP among eligible populations in Wisconsin in the coming years.

Methods

The estimates provided in this article are based on a five-step process using the data sources noted:

- Step 1 **Population:** Establish a population for selected groups (e.g., male residents in Wisconsin, ages 15-59) using Wisconsin census data from the American Community Survey.²
- Step 2 **12-Month Risk Percentages:** Estimate the percentage of the Wisconsin and Milwaukee populations with male-to-male sex and injection drug use behavior in the past 12 months. Published estimates are by region of the U.S. (Midwest region for MSM and PWID statewide) and by level of urbanicity (large central metropolitan category, for Milwaukee City).³
- Step 3 **People reported with HIV and presumed to be living in the jurisdiction as of December 31, 2015:** Subtract this group so that the estimated number of people eligible for using PrEP consists of people not known to be HIV-positive.⁴

Step 4 **PrEP-Indicated Percentages:** Based on published national data, estimate the percentage of MSM and PWID with recent risk behavior for whom use of PrEP may be appropriate.⁵

Step 5 **PrEP-Indicated Estimates:** Calculate the estimates as follows:

$$[(\text{population} \times \text{12-month risk percentages}) - (\text{HIV-positive})] \times \text{PrEP-indicated percentages}$$

The table presented in the **Results** section provides statewide estimates of the number of MSM, ages 15-59, and PWID, ages 15 and older, for whom PrEP may be indicated. We also provide an estimate of the number of Black MSM, ages 15-44, in the city of Milwaukee for whom PrEP may be indicated. This is the population most affected by HIV and with the highest rate of new HIV diagnoses in Wisconsin. A narrower age group is used for Black MSM in Milwaukee to help focus on the population with the greatest need for PrEP.

Results

The table below provides the estimated percentages and steps used to develop estimates for the number of MSM, ages 15-59, and PWID, ages 15 and older, in Wisconsin for whom PrEP is indicated. In addition, we provide estimates of the number of Black MSM, ages 15-44, living in Milwaukee for whom PrEP is indicated.

Calculations and Estimates of Wisconsin MSM and PWID with Indications for PrEP

Population of interest	MSM, ages 15-59, in Wisconsin	PWID, ages 15 and older, in Wisconsin	Black MSM, ages 15-44, in Milwaukee
Step 1: Establish base population			
Base population descriptor	Males, ages 15-59, Wisconsin	Females and males, ages 15 and older, Wisconsin	Black males, ages 15-44, in of Milwaukee
Base population 2014	1,737,653	4,680,900	44,839
Step 2: Estimate 12-month risk in population of interest			
<i>Risk behavior descriptor</i>	Had male-male sex, past 12 months (% of men)	Injected drugs, past 12 months (% of all adults)	Had male-male sex, past 12 months (% of Black men in Milwaukee)
Estimate (range)	2.1% (1.3%-3.3%)	0.3% (0.1%-0.6%)	4.4% (3.4%-5.7%)
Step 3: Subtract number reported with HIV and presumed to be living in the jurisdiction, as of 12/31/15			
Number reported with HIV and presumed to be living in the jurisdiction	MSM (including MSM/PWID), ages 15-59, Wisconsin	PWID (excluding MSM/PWID), ages 15-59, Wisconsin	Black MSM (including MSM/PWID), ages 15-44, Milwaukee
Number reported	4,937	922	548
Step 4: Percent of population of interest with indication for PrEP			
Risk Population	MSM	PWID	MSM
Estimate (range)	24.7% (10.6%-38.8%)	18.5% (7.2%-29.8%)	24.7% (10.6%-38.8%)
Step 5: Estimates of the number not known to be HIV-positive with indications for PrEP			
	MSM, ages 15-59, in Wisconsin, with indications for PrEP	PWID, ages 15 and older, in Wisconsin, with indications for PrEP	Black MSM, ages 15-44, in Milwaukee, with indications for PrEP
Estimate* (range)	7,794 (1,879-20,311)	2,427 (272-8,084)	352 (104-778)

* $[(\text{Base population} \times \text{12-month risk percentages}) - (\text{HIV-positive})] \times \text{PrEP-indicated percentages}$

In summary, PrEP may be indicated for the

- 7,800 MSM, ages 15-59, in Wisconsin (range 1,900-20,300), including
- 350 Black MSM, ages 15-44, in Milwaukee (range 100-800)
- 2,500 PWID, ages 15 and older (range 300-8,000)

Discussion

In 2014, the Centers for Disease Control and Prevention (CDC) published the U.S. Public Health Service's clinical practice guidelines for PrEP,⁶ recommending use of PrEP for MSM, PWID, and heterosexuals at substantial risk of HIV acquisition.

In February 2016, the CDC estimated that rapid uptake of PrEP can help prevent 17,000 new HIV infections in the United States by 2020, if 40% of high-risk MSM, 10% of injection drug users, and 10% of high-risk heterosexuals used PrEP.⁷ Recent publication of percentages of MSM and PWID with recent risk behaviors³ and of the percentage of MSM and PWID for whom PrEP may be indicated,⁵ enable us to estimate the number of MSM and PWID in Wisconsin with indications for PrEP. Smith, et al., note that "the actual risk for acquiring HIV infection for each of these transmission risk groups differs based on efficiency of transmission routes and likelihood of exposure to HIV."⁵

Thus, along with the statewide estimate, this analysis provides an estimate of a subset of MSM with indications for PrEP. Black MSM, ages 15-44, in Milwaukee are at especially high risk for acquiring HIV. An estimated 39% of Black MSM in the city of Milwaukee are living with HIV infection, compared to 14% and 13% of Hispanic and White MSM respectively.⁸ In February 2016, CDC released results of a study indicating that in the absence of a drastic reduction in new infections, half of Black MSM in the U.S. will acquire HIV in their lifetime, compared to one in four Hispanic MSM and one in 11 White MSM.⁹ Meta-analyses indicate that Black MSM in the U.S. and Canada do not engage in higher-risk sexual behaviors than MSM of other races.¹⁰ Despite having similar numbers of partners and serodiscordant unprotected sex and lower rates of substance abuse, Black MSM are much more likely to become HIV-infected than their non-Black peers. The CDC notes that risk in Black communities is especially high because Blacks tend to have sex with partners of the same race/ethnicity and consequently face a greater risk of HIV infection with each new sexual encounter.

Findings presented here are subject to several limitations:

- CDC estimates that 24.7% of sexually active adult MSM and 18.5% of active PWID are at substantial risk for acquiring HIV.⁵ CDC also estimates that PrEP may be appropriate for 0.4% of heterosexually active adults. However, since regional estimates of the percentage of U.S. adults with recent high-risk heterosexual activity are not available, we did not develop Wisconsin estimates of heterosexuals with indications for PrEP.
- Limitations to the estimates of numbers of MSM and PWID by region and level of urbanicity are detailed by Oster, et al.³ The primary limitations are: small survey sample sizes, forcing the authors to use survey data collected during 1999-2010; the need to extrapolate beyond age ranges of survey respondents; and the absence of homeless and institutionalized populations in the survey.
- The primary limitation of the estimates of the percentage of MSM and PWID with indications for PrEP is the large ranges.

Implications for Public Health Practice

Implementation of PrEP can help Wisconsin progress towards achieving the National HIV/AIDS Strategy 2020 goals of reducing new HIV infections and reducing HIV-related health disparities. This analysis provides wide-ranging estimates of the number of MSM and PWID in Wisconsin with indications for

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PrEP. These estimates serve as a starting point in planning for increased use of PrEP in Wisconsin. Approximately 10,000 Wisconsin residents may benefit from PrEP. Focusing limited PrEP resources on Black MSM will have the greatest impact on reducing the number of new infections overall and will help reduce disparities.

¹ Krchnavek K. HIV Pre-exposure prophylaxis in Wisconsin. Wisconsin AIDS/HIV Program Notes March 2016, <https://www.dhs.wisconsin.gov/publications/p00792-16-march.pdf>

² U.S. Census Bureau, American Fact Finder, 2014 American community survey 1-year estimates, accessed 2/23/2016.

³ Oster AM, et al. Population size estimates for men who have sex with men and persons who inject drugs. 2015 Journal of Urban Health; 92(4):733-43.

⁴ Wisconsin HIV surveillance system, accessed February 24, 2016.

⁵ Smith DK, et al. Vital Signs: Estimated percentages and numbers of adults with indications for preexposure prophylaxis to prevent HIV acquisition — United States, 2015, Morbidity and Mortality Weekly Report (MMWR), November 27, 2015 / 64(46):1291-1295, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6446a4.htm?s_cid=mm6446a4_w.

⁶ U.S. Public Health Service, Preexposure prophylaxis for the prevention of HIV infection in the United States, 2014, <http://www.cdc.gov/hiv/pdf/prepguidelines2014.pdf>.

⁷ <http://www.cdc.gov/nchhstp/newsroom/2016/croi-press-release-prevention.html>

⁸ Wisconsin Division of Public Health, AIDS/HIV Program, unpublished estimates, August 2015.

⁹ <http://www.cdc.gov/nchhstp/newsroom/2016/croi-press-release-risk.html>

¹⁰ Millett G, et al. Comparisons of disparities and risks of HIV infection in black and other men who have sex with men in Canada, UK, and USA: a meta-analysis. The Lancet 2012 Jul 28;380(9839):341-8.

