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Estimating Gains in HIV Testing by Expanding HIV Screening at Routine Checkups

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Abstract

Objectives.—To estimate gains in the prevalence of individuals who had ever been tested for HIV overall and by subpopulations from increases in the percentage of persons who had a routine checkup and were tested.

Methods.—We used data from the 2019 Behavioral Risk Factor Surveillance System to determine the prevalence of individuals who were ever tested for HIV and the prevalence of missed opportunities for HIV testing among those never tested in the United States. We assessed the effect of absolute percentage increases in having ever been tested among those who had a past-year routine checkup on increasing the overall prevalence of having ever been tested.

Results.—In 2019, 49.5% of US adults had ever been tested for HIV; 34.5% had a missed opportunity. A 50% increase in testing at routine checkups would increase the prevalence of

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CONTRIBUTORS

D. Patel led the analysis planning and the writing and editing of the brief. W. O. Williams conducted the statistical analysis. J. Heitgerd and E.A. DiNenno supervised the design and reporting of the study. N. Taylor-Aidoo contributed to the analysis planning. All authors contributed to concept and design, data interpretation, and drafts or revisions of the brief.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

HUMAN PARTICIPATION PROTECTION

Human participant protection was not required because the study was a secondary analysis of de-identified, publicly available data.

having ever been tested to 84.0%. Increases in the prevalence of having ever been tested (≥ 85%) was highest among persons aged 35 to 54 years, Black persons, persons who were female at birth, persons with health insurance, and persons reporting HIV risk behaviors.

Conclusions.—Fully incorporating HIV screening into primary care would greatly increase the proportion of US adults who have been tested for HIV.

Public Health Implications.—Continued efforts to promote HIV testing, including implementing routine screening in clinical settings, will help ensure that all US adults know their HIV status.

In 2006, the Centers for Disease Control and Prevention (CDC) recommended screening for HIV infection (regardless of clinical signs or symptoms) in health care settings at least once in a lifetime for all persons aged 13 to 64 years.[1] Seven years later, the US Preventive Services Task Force recommended that clinicians screen for HIV infection in persons aged 15 to 65 years, opening the way for increased HIV-testing coverage and payments by health insurers.[2]

Despite these recommendations, fewer than half (45.9%) of US adults aged 18 to 64 years in the 50 states and the District of Columbia reported having ever been tested for HIV in 2017, and the prevalence of having ever been tested for HIV varied by subpopulations.[3] For example, fewer than one third of persons aged 18 to 24 years have ever been tested for HIV compared with more than half of persons aged 25 to 44 years. Nearly 70% of Blacks have ever been tested for HIV, whereas the prevalence of having ever been tested for HIV ranged from 38.4% to 48.1% among other racial/ethnic subgroups.

Expanding routine HIV screening in health care settings is a key approach to diagnosing people with HIV, as outlined in the nation's initiative *Ending the HIV Epidemic in the U.S.*[4] Our purpose was to estimate gains in the prevalence of having ever been tested for HIV overall and by subpopulations at various levels of increase in the percentage of persons who had a past-year routine checkup and who were tested.

METHODS

We used data from the 2019 Behavioral Risk Factor Surveillance System (BRFSS)[5] for our analysis. BRFSS is an annual cross-sectional survey among noninstitutionalized US adults aged 18 years and older that collects data on health-related risk behaviors, chronic health conditions, and use of preventive services. Data are weighted to generalize sample results and provide nationally representative estimates.

Our analysis was limited to respondents living in the 50 US states, the District of Columbia, and Puerto Rico. We included respondents aged 18 to 64 years to align with the recommendations.[1,2] We examined respondents' reports of whether they had ever had an HIV test and whether they had a routine checkup within the past year. When respondents reported having never been tested for HIV and having had a routine checkup in the past year, we considered that a missed opportunity for HIV testing. We also examined estimates of having ever been tested and a missed opportunity for testing by sociodemographic

characteristics (i.e., age, race/ethnicity, sex at birth, health insurance coverage) and by report of any HIV risk behaviors.

We calculated the prevalence of having ever been tested for HIV and a missed opportunity for an HIV test using survey weights, including 95% confidence intervals, overall and for each type of subpopulation. To examine the impact of increased testing during past-year routine checkups, we assessed the effect of absolute percentage increases in having ever been tested among individuals who had a past-year routine checkup on increasing the overall prevalence of having ever been tested. For example, if we observed that 50% of those who had a past-year routine visit had ever been tested, we increased the percentage by 10 percentage points (i.e., 60% of those who had a past-year routine visit being tested) and estimated the percentage increase in having ever been tested in the total population. We describe the effect of increasing routine screening (i.e., reducing missed opportunities) on having ever been tested overall and by subpopulations.

We conducted all analyses in SAS version 9.4 (SAS Institute, Cary, NC).

RESULTS

In 2019 among US adults aged 18 to 64 years, 49.5% had been tested for HIV and about one third (34.5%) had missed an opportunity for an HIV test (Table 1). If HIV testing increased by 50% among those who had a past-year routine checkup, the prevalence of having ever been tested for HIV in the overall population would increase to 84.0%.

Approximately 60% of those aged 25 to 34 years or 35 to 44 years had been tested for HIV. Increasing HIV testing by 40% among those who had a past-year routine checkup maximizes the percentage of those who were ever tested in these age groups to 81.5% and 85.2%, respectively. A 50% increase in testing among those who had a past-year routine checkup would result in a prevalence of having ever been tested for HIV of 87.1% among those aged 45 to 54 years compared to 66.9% among those aged 18 to 24 years.

More than 70% of Blacks had ever been tested for HIV. This would increase to 93.2% if HIV testing increased by 30% among Blacks who had a past-year routine checkup. If HIV testing increased by 50% among Hispanics/Latinos, Whites, and persons of other races/ethnicities who had a past-year routine checkup, the prevalence of having ever been tested for HIV in these subpopulations would increase to 82.2%, 80.3%, and 77.2%, respectively.

Female respondents had a higher percentage of having ever been tested (54.5%) than did male respondents (45.7%). Increasing HIV testing by 50% among female and male respondents who had a past-year routine checkup would result in 89.9% and 80.1%, respectively, who were ever tested.

About half of those with health insurance (49.8%) and those without health insurance (49.1%) had ever been tested. A 50% increase in testing at past-year routine checkup would result in a greater increase in having ever been tested among those with health insurance (86.5%) than those without health insurance (70.8%).

The percentage of those who have ever been tested among those who reported any HIV risk behaviors was 69.6%; a 30% increase in testing among those with a missed opportunity maximized the percentage of having ever been tested to 86.8% for this group.

DISCUSSION

In 2019, about half of US adults aged 18 to 64 years had ever been tested for HIV in accordance with the CDC and US Preventive Services Task Force recommendations.[1,2] Increasing HIV testing by 50% among those who had a past-year routine checkup would increase the prevalence of having ever been tested to more than 80%. Although all subpopulations benefit from increased testing among those who had a past-year routine checkup, the groups that would reach the highest prevalence of having ever been tested would be those aged 35 to 44 years and 45 to 54 years, Blacks, female respondents, those with health insurance, and those reporting any HIV risk behaviors. Although the goal of screening more than 80% of US adults for HIV is aspirational, research demonstrates that increased screening in health care settings would be cost effective, even for lower-risk groups,[6] and is key to ending the HIV epidemic.[4]

Barriers to HIV testing in primary care settings include health care providers' unfamiliarity with national recommendations,[7,8] continued preference for risk-based screening,[8] assumptions about risk,[9] and HIV stigma.[9] However, studies have shown that improved HIV-testing uptake is possible using interventions such as patient text message reminders[10] and provider electronic medical record prompts.[11] For example, a 2-fold increase in HIV screening was achieved using a passive electronic medical record reminder at a hospital-based, academic primary care practice.[12]

Limitations to this analysis include potential recall bias because of self-reporting and the inability to discern separate groups of persons at high risk for HIV (e.g., men who have sex with men, transgender persons, persons who inject drugs). The exploration of absolute percentage increases in receiving at least 1 lifetime HIV test during routine checkups provides information about potential gains; however, individuals might opt out of routine testing even if it is always offered.

PUBLIC HEALTH IMPLICATIONS

Fully incorporating HIV screening into primary care would greatly increase the proportion of US adults tested. Without interventions to combat the barriers we have described, we are unlikely to see a 50% increase in HIV testing at routine checkup. Continued efforts to promote HIV testing (e.g., CDC's Let's Stop HIV Together campaign[13]), implement routine screening in clinical settings, conduct targeted HIV testing in nonclinical settings, and scale up HIV self-testing (especially with disruption of health care services because of COVID-19) will be needed to ensure that all US adults know their HIV status—a key component of *Ending the HIV Epidemic in the U.S.* [4]

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TABLE 1—

Missed Opportunity for HIV Testing at Past-Year Routine Checkup, Ever Tested for HIV, and Gains in Ever Tested for HIV With Expanded Screening at Past-Year Routine Checkup: United States, 2019

	Overall % (95% CI)	Missed Opportunity,[a] % (95% CI)	Past-Year Routine Checkup,[b] % (95% CI)	Ever Tested for HIV,[c] % (95% CI)	10% Increase in Routine Screening,[d] %	20% Increase in Routine Screening,[d] %	30% Increase in Routine Screening,[d] %	40% Increase in Routine Screening,[d] %	50% Increase in Routine Screening,[d] %
Overall	100	34.5 (34.2, 34.9)	71.4 (71.0, 71.8)	49.5 (49.1, 49.9)	56.7	63.8	70.9	78.1	84.0
Age, y									
18-24	15.6 (15.3, 15.8)	41.6 (40.5, 42.7)	65.5 (64.4, 66.6)	34.1 (33.0, 35.2)	40.7	47.2	53.8	60.3	66.9
25-34	22.2 (21.9, 22.5)	23.9 (23.1, 24.6)	63.2 (62.4, 64.1)	57.6 (56.8, 58.5)	64.0	70.3	76.6	81.5	81.5
35-44	20.8 (20.4, 21.1)	24.2 (23.4, 24.9)	68.0 (67.2, 68.8)	61.0 (60.2, 61.8)	67.8	74.6	81.4	85.2	85.2
45-54	20.5 (20.2, 20.8)	34.6 (33.8, 35.4)	76.5 (75.8, 77.2)	52.5 (51.7, 53.3)	60.2	67.8	75.5	83.1	87.1
55-64	21.0 (20.8, 21.3)	50.1 (49.4, 50.8)	82.5 (81.9, 83.1)	38.7 (37.9, 39.4)	46.9	55.2	63.4	71.6	79.9
Race/Ethnicity									
Non-Hispanic White	57.9 (57.5, 58.2)	38.6 (38.2, 39.0)	71.4 (71.0, 71.8)	44.6 (44.2, 45.0)	51.7	58.9	66.0	73.2	80.3
Non-Hispanic Black	12.6 (12.3, 12.8)	21.3 (20.3, 22.2)	79.8 (78.8, 80.9)	71.9 (70.8, 73.0)	79.9	87.9	93.2	93.2	93.2
Hispanic/Latino	20.1 (19.8, 20.4)	28.1 (27.1, 29.1)	66.5 (65.5, 67.6)	54.1 (53.0, 55.2)	60.7	67.4	74.1	80.7	82.2
Other[e]	9.5 (9.2, 9.7)	39.5 (37.9, 41.1)	70.6 (69.2, 72.1)	41.9 (40.4, 43.5)	49.0	56.1	63.1	70.2	77.2
Sex at birth									
Male	49.3 (48.5, 50.2)	35.2 (34.0, 36.4)	68.9 (67.7, 70.1)	45.7 (44.4, 46.9)	52.6	59.4	66.3	73.2	80.1
Female	50.7 (49.8, 51.5)	35.4 (34.2, 36.6)	79.9 (78.9, 80.9)	54.5 (53.3, 55.8)	62.5	70.5	78.5	86.5	89.9
Health insurance									

	Overall % (95% CI)	Missed Opportunity,[a] % (95% CI)	Past-Year Routine Checkup,[b] % (95% CI)	Ever Tested for HIV,[c] % (95% CI)	10% Increase in Routine Screening,[d] %	20% Increase in Routine Screening,[d] %	30% Increase in Routine Screening,[d] %	40% Increase in Routine Screening,[d] %	50% Increase in Routine Screening,[d] %
Yes	84.1 (83.8, 84.4)	36.7 (36.4, 37.1)	76.1 (75.7, 76.5)	49.8 (49.4, 50.2)	57.4	65.0	72.6	80.2	86.5
No	15.9 (15.6, 16.2)	21.7 (20.7, 22.6)	45.7 (44.6, 46.8)	49.1 (48.0, 50.2)	53.7	58.2	62.8	67.4	70.8
HIV risk behavior[f]									
Yes	8.4 (8.1, 8.6)	17.1 (16.1, 18.2)	64.4 (62.9, 65.8)	69.6 (68.3, 70.9)	76.1	82.5	86.8	86.8	86.8
No	91.6 (91.4, 91.9)	36.2 (35.8, 36.6)	72.1 (71.7, 72.5)	47.6 (47.2, 48.0)	54.8	62.0	69.2	76.5	83.7

Note. CI = confidence interval.

[a]Percentage of persons aged 18-64 years never tested for HIV (i.e., answered “no” to the question “Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation. Include fluid from your mouth”) and had a past-year routine checkup (i.e., answered “within the past year [anytime less than 12 months ago]” to the question “About how long has it been since you last visited a doctor for a routine checkup?”).

[b]Percentage of persons aged 18-64 years who had a past-year routine checkup (i.e., answered “within the past year [anytime less than 12 months ago]” to the question “About how long has it been since you last visited a doctor for a routine checkup? [A routine checkup is a general physical exam, not an exam for a specific injury, illness, or condition]”).

[c]Percentage of US adults aged 18-64 years having ever been tested for HIV (i.e., answered “yes” to the question “Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation. Include fluid from your mouth”).

[d]Percentage of US adults aged 18-64 years ever tested for HIV if there is an absolute percentage increase in having ever been tested for HIV at past-year routine checkups.

[e]Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, multiracial, other.

[f]Having HIV risk behavior was defined as answering yes to any of the following: injecting any drug other than those prescribed in the past year; being treated for a sexually transmitted disease, or STD, in the past year; or giving or receiving money or drugs in exchange for sex in the past year.