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Use of an HIV Prediction Model to Evaluate PrEP Coverage in a Large Healthcare System

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BACKGROUND

- Monitoring progress in PrEP scale-up requires tools for identifying people who are at high risk of HIV acquisition and may benefit from PrEP

OBJECTIVE

- Evaluate PrEP coverage and disparities in use among people at high risk of HIV acquisition, using a validated prediction model to estimate HIV risk (Marcus et al., *Lancet HIV* 2019)

METHODS

- Included all adult members of Kaiser Permanente Northern California as of January 1, 2018, excluding those with prior HIV diagnosis
- Used an HIV prediction model we previously developed and validated in this setting to generate HIV risk scores based on historical electronic health record data

Table 1. HIV risk score strata

Strata	Scores*
Low	<0.05%
Moderate	0.05% to <0.2%
High	0.2% to <1.0%
Very high	≥1.0%

*Predicted probability of incident HIV diagnosis within 3 years.

- Assessed recent (January 1, 2018 – June 30, 2019) and ever PrEP use by HIV risk score strata
- Among patients with very high risk scores, used chi-square tests to compare PrEP use by demographics
  - Socioeconomic status (SES) was measured by quintile of neighborhood-level deprivation index
  - No data available on gender identity

Of those identified by our model as being at very high risk of HIV acquisition, **only 40% had recently used PrEP** and there were **substantial disparities in use.**

RESULTS

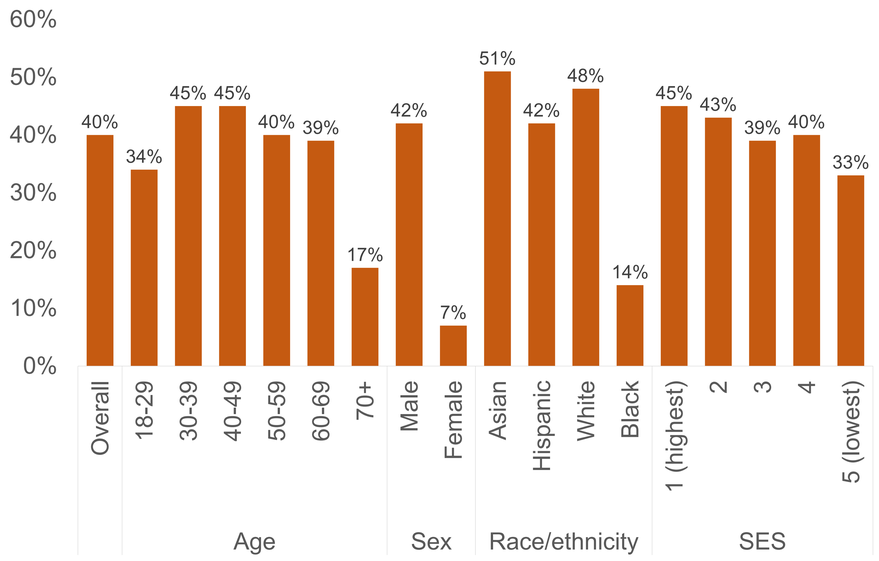
- Of those with very high risk scores, mean age was 38 years, 98% were male, 19% Black, 19% Hispanic, and 12% Asian

Table 2. Recent and ever PrEP use by HIV risk score

		PrEP use, n (%)	
	N	Recent	Ever
HIV risk score	3,281,965	6,733 (0.2%)	8,311 (0.3%)
Low	2,827,373	533 (0.02%)	589 (0.02%)
Moderate	402,923	1,066 (0.3%)	1,223 (0.3%)
High	42,829	1,564 (3.7%)	1,955 (4.6%)
Very high	8,840	3,570 (40%)	4,544 (51%)

Figure 1. Recent PrEP use among patients with very high HIV risk scores*

*All demographic comparisons were $P<0.001$.



SUMMARY

- Recent PrEP use ranged from 0.02% to 40%, and ever PrEP use from 0.02% to 51%, among those with low and very high risk scores, respectively
- Recent PrEP use among those with very high risk scores was higher among those aged 30-49 vs. 18-29; male vs. female patients; Asian, white, and Hispanic vs. Black patients; and those with the highest vs. lowest SES
- Disparities were similar for ever PrEP use

CONCLUSIONS

- HIV risk prediction models can be used to monitor progress toward PrEP scale-up and equity goals in healthcare settings
- Efforts are needed to increase PrEP uptake, particularly among women, younger age groups, those with lower SES, and Black individuals

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