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Detection of Undiagnosed HIV Among State Prison Entrants

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A substantial proportion of individuals infected with the human immunodeficiency virus (HIV) in the United States enter a correctional facility annually.[1,2] Therefore, incarceration presents an opportunity for HIV detection. Even though many states have adopted policies of mass HIV screening of inmates,[2–4] the extent to which HIV testing on prison entry detects new infections is unclear.

We examined HIV prevalence among inmates entering a state prison system and the proportion known to state public health authorities as having previously tested HIV seropositive.

Methods

We evaluated individuals entering the North Carolina Department of Public Safety (NC DPS) between June 2008 and April 2009. Testing entering inmates for HIV in North

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Author Contributions: Dr Wohl had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
Study concept and design: Wohl, Golin, Rosen, White.
Acquisition of data: Wohl, White.
Analysis and interpretation of data: Wohl, Golin, Rosen, May, White.
Drafting of the manuscript: Wohl, May, White.
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Study supervision: Wohl, Golin, White.

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Carolina was voluntary; however, a state statute mandated screening for syphilis. Excess blood was batch tested for HIV antibodies (Labcorp Inc). Before removing links to the inmate's HIV test result, identifiers were used to merge prison test results with the North Carolina Department of Health and Human Services (NCDHHS) HIV testing database. The University of North Carolina biomedical institutional review board, the NCDPS human subjects review committee, and the US Office of Human Research Protections approved the study. A waiver of informed consent was provided.

Results

During the study period, 23 373 inmates entered the NC DPS (Table); most were black men and more than half had a prior incarceration. Of these 23 373 inmates, 22 134 (94.7%) had HIV testing performed on blood remaining after syphilis testing (Figure). Reasons for not having an HIV test included no blood drawn, insufficient quantity, or lost specimen. Testing of excess blood revealed 320 inmates (1.45%) to be HIV seropositive. Of those who tested HIV seropositive, 300 (93.8%) were known by the NC DHHS to be infected with HIV prior to incarceration. Therefore, 20 of 22 134, or 0.09% (95%CI, 0.06%–0.14%) of tested inmates were infected and not known to be previously.

Among the 1239 entering inmates without HIV testing of excess blood, 1066 underwent voluntary HIV testing by the prison, 36 of whom (4.8%) were HIV seropositive. All 36 were previously known by the NC DHHS to be infected with HIV.

Discussion

Although the overall prevalence of HIV infection was high at 1.45%, the prevalence of undiagnosed infection was 0.09% and the yield of screening of individuals entering prison in North Carolina was low, with more than 93% of infected inmates previously known by health authorities to be infected. Therefore, in contrast to the perception that undiagnosed HIV infection is prevalent among incarcerated individuals, our results indicate that few new cases of HIV enter prison. The confidence interval around the prevalence of undiagnosed infection included 0.1%, the threshold above which the US Centers for Disease Control and Prevention recommends routine HIV screening in health care settings.[5] Other at-risk populations with higher levels of undiagnosed HIV infection may constitute a higher priority for screening for HIV than prisoners. Of all new HIV diagnoses in North Carolina in 2008–2009, less than 2% were prison entrants.[6]

There are limitations to our study. Prior HIV testing may have occurred as a consequence of screening during a previous incarceration, although almost half of the inmates with known HIV infection had no history of incarceration. Additionally, some with a prior positive HIV test may not have received their results and without screening upon incarceration would remain unaware of their HIV status. However, according to the NCDHHS, 90% of those testing HIV seropositive in North Carolina in 2008–2009 were notified of their results. Furthermore, although North Carolina has the eighth highest prevalence of HIV in the United States, these results may not generalize to other states. In addition, the few cases of previously unknown HIV coupled with limited available inmate data precluded analyses to

identify prisoner characteristics that could be used to enhance detection of undiagnosed HIV infection.

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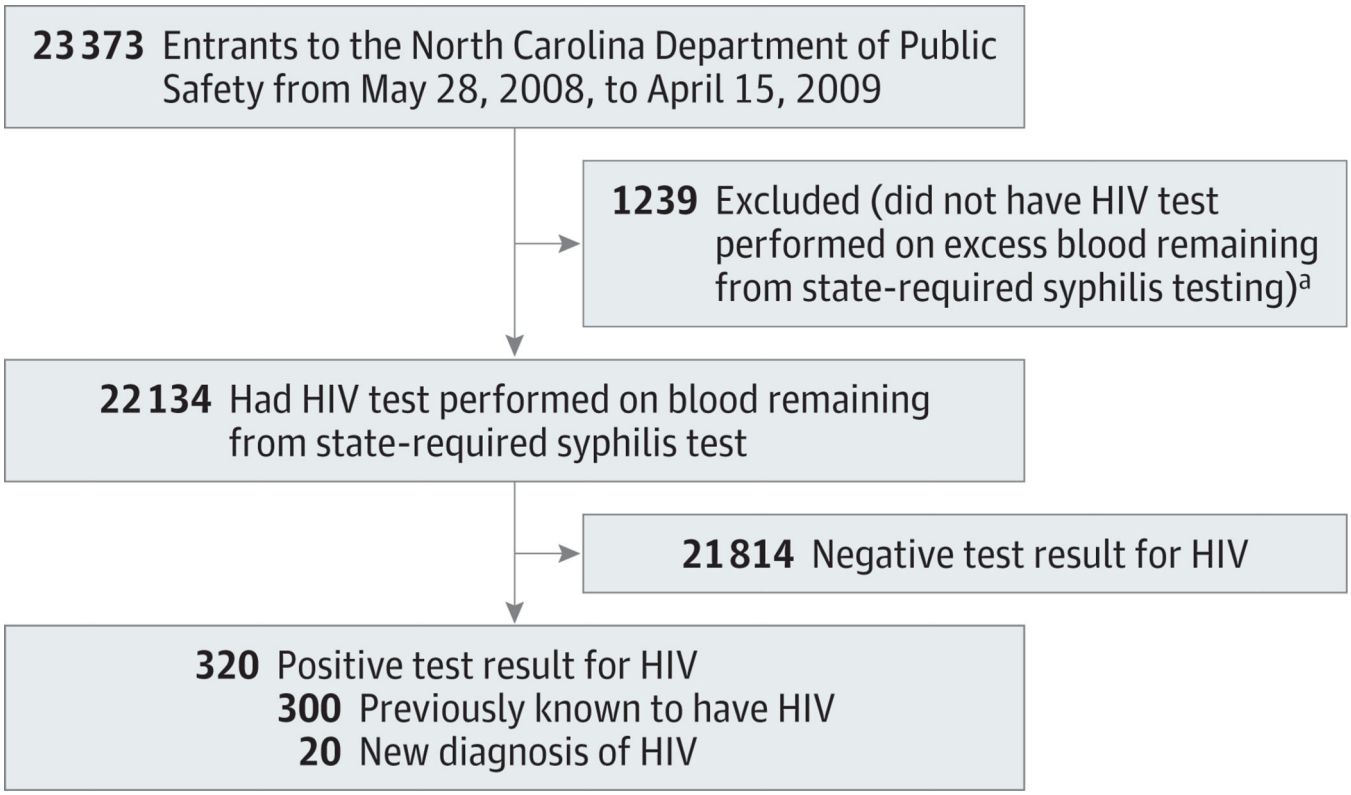

Figure 1.

Testing of Inmates Entering the North Carolina Prison System for Human Immunodeficiency Virus (HIV)

[a]There were 1066 inmates who did not have HIV test performed on excess blood remaining from state-required syphilis testing but who were tested for HIV by the prison system. Of these, 36 tested positive for HIV and all were previously known by the North Carolina Department of Health and Human Services to be infected with HIV.

Table

Characteristics of Inmates Entering Prison in North Carolina

	No. (%) of Inmates		
		HIV Test of Excess Blood[a]	
	New to NC DPS (n = 23 373)	Yes (n = 22 134)	No (n = 1239)
Sex			
Female	2657 (11.4)	2499 (11.3)	158 (12.8)
Male	20 701 (88.6)	19 620 (88.7)	1081 (87.3)
Missing	15 (<1)	15 (<1)	0
Race[b]			
White	9311 (39.84)	8844 (39.96)	467 (37.69)
Black	12 570 (53.78)	11 860 (53.58)	710 (57.30)
Native American	366 (1.57)	352 (1.59)	14 (1.13)
Asian	47 (0.20)	44 (0.20)	3 (0.24)
Other[c]	934 (4.00)	899 (4.06)	35 (2.82)
Unknown	145 (0.62)	135 (0.61)	10 (0.81)
Prior incarceration			
Yes	12 184 (52.1)	11 585 (52.3)	599 (48.4)
No	11 188 (47.9)	10 548 (47.7)	640 (51.7)
Missing	1 (<1)	1 (<1)	0

Abbreviations: HIV, human immunodeficiency virus; NC DPS, North Carolina Department of Public Safety.

[a] None of the distributions of the characteristics were significantly different among inmates with a study HIV test vs those without.

[b] Self-reported.

[c] Other included inmates who identified as having mixed race.