HIV Screening in Commercially Insured Patients Screened or Diagnosed With Sexually Transmitted Diseases or Blood-Borne Pathogens

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Background: The Centers for Disease Control strongly recommends HIV screening for all patients who present to health care settings with sexually transmitted diseases (STD) or blood-borne pathogens exposure. The objective of this study is to assess the rates and determinants of HIV screening in a national sample of commercially insured patients screened or diagnosed with an STD or hepatitis B or C.

Methods: We used Poisson regression model with a robust error variance to assess the determinants of HIV screening using administrative claims data from health plans across 6 states (n = 270,423).

Results: The overall HIV screening rate of patients who were diagnosed or screened for STDs or hepatitis was low (32.7%); rates were lowest for patients presenting with epididymitis or granuloma inguinale (<10%). Patients aged 25 to 34 years were more likely to be screened than other age groups. Females were significantly less likely to be screened for HIV (prevalence ratio = 0.90; 95% CI = 0.89, 0.91) than males. Patients living in states where no written HIV informed consent was required were significantly more likely to be screened than those living in states where written HIV informed consent was specifically required.

Conclusions: HIV screening rates were low and varied by STD categories. Females and younger and older patients were at increased risk of no HIV screening. Requiring specific written informed consent for HIV screening resulted in less HIV screening. Interventions are urgently needed to increase the HIV screening rate among this at-risk population.

By the end of 2006, an estimated 1.1 million people in the United States were infected with HIV. Despite advances in HIV diagnostics and therapeutics, 1 in 5 of these patients remained undiagnosed.[1] Early diagnosis of HIV is important because research has shown that patients who were aware of their HIV status were more likely to take steps to prevent the transmission of their disease to others.[2] In addition, early diagnosis enables patients to be appropriately treated with highly active antiretroviral therapy (HAART). HAART has resulted in significant reductions in HIV-associated symptoms, opportunistic infections, hospitalizations, and mortality among HIV-infected persons.[3] Moreover, patients on HAART therapy have lower levels of the circulating virus and therefore lower risk of HIV transmission.[4] The White House recently released an article titled "National HIV/AIDs Strategy for the United States." HIV testing was included as a key strategy to achieve the goal of reducing the number of people who become infected with HIV in the United States.[2]

Patients with sexually transmitted diseases (STD) are at 2 to 5 times higher risk of having concomitant HIV infection than those without an STD.[5,6] Similarly, patients at risk of developing hepatitis B or C are also at risk of contracting HIV, because these infections are transmitted through percutaneous exposure to infected blood or intimate sexual contact. For more than a decade, many national organizations such as the US Centers for Disease Control and Prevention (CDC), the US Preventive Services Task Force, and the American Academy of Family Physicians have strongly recommended that all patients seeking screening or treatment for an STD, hepatitis B, or hepatitis C be screened for HIV.[7–9]

There is evidence that these national recommendations regarding HIV screening in at-risk populations are not being followed. Routine HIV screening rates in STD clinics range from 30% to 99% (median = 58%).[10] HIV screening rates among other at-risk groups were reported as follows: <25% in Medicaid patients,[11] 32% to 40% in Veteran Affairs patients,[12] and 55% in an urban primary care center.[13] More recently, a study using 2005 data reported an HIV screening rate of 19.5% among commercially insured patients diagnosed with STDs.[14] However, determinants of HIV screening among commercially insured patients were not investigated.

The objective of the current study is to assess the rates and determinants of HIV screening in a national sample of commercially insured patients screened or diagnosed with STD or hepatitis B or C per CDC-recommended routine HIV screening.[15] Assessing determinants of HIV screening would be important in the design of future-targeted interventions to increase HIV screening rates in this at-risk population.

MATERIALS AND METHODS

During 2006 to 2007, administrative claims data were utilized from 6 commercial health insurance plans covering more than 16 million member-lives across 6 States in the United States. Membership and health plan eligibility information were linked to claims from inpatient, outpatient, professional, pharmacy, emergency department (ED), and ancillary sources. Data elements drawn from these databases included member demographics (age, gender, residence region, and enrollment), service dates, care settings (outpatient, inpatient, or ED), diagnosis codes, and procedure codes.

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TABLE 1. Codes to Define Sexually Transmitted Diseases (STDs), Hepatitis B, or Hepatitis C

	ICD-9 Diagnosis Codes	CPT Codes
Chancroid	099.0	
Chlamydial or gonorrhea infection	V73.88, V73.98, 099.5x, 099.41, 098.xx	86631, 86632, 87110, 87270, 87320, 87490–87492, 87590–87592, 87810
Other nongonococcal urethritis	099.40, 099.49	
Condyloma	078.11	
Epididymitis	604.9x	
Granuloma inguinale	099.2	
Genital herpes	054.1x	87273, 87528, 87529, 87530
Lymphogranuloma venereum	099.1	86729
Human papillomavirus (HPV)	079.4, 795.05, 795.09	
Syphilis	091.xx	87164, 86781, 86592, 86593
Trichomonas	131.xx	87808, 87810, 87850, 87660
Hepatitis B	070.20, 070.21, 070.30, 070.31,	80074*, 86704–86707, 87340, 87341, 87350, 87515, 87516, 87517
Hepatitis C	070.51	80074*, 86803, 86804, 87520–87522
STD exposure, counseling, or screening	V01.6, V65.45, V74.5	
Pelvic inflammatory disease	614.0, 614.3, 614.5, 615.0	

*Acute hepatitis panel.
ICD indicates international classification of diseases; CPT, current procedural terminology.

Cohort Selection

The study sample consisted of patients aged 14 to 64 years who were diagnosed or screened for STD or acute hepatitis B or C, or received counseling for STD exposure between January 1, 2007 and October 31, 2007. We assessed for the diagnosis of the following STDs: chancroid, chlamydial infection, gonorrhea, nongonococcal urethritis, condyloma accuminata, epididymitis, granuloma inguinale, genital herpes, lymphogranuloma venereum (LGV), human papillomavirus (HPV), syphilis, and trichomoniasis. We evaluated screening tests for the following STDs: gonorrhea or chlamydial infection (in men only), genital herpes, LGV, syphilis, or trichomoniasis. Several national medical societies have advocated screening tests for gonorrhea and chlamydial infection among all sexually experienced young women, regardless of specific risk behaviors.[16,17] Therefore, it is possible that women may have received gonorrhea and chlamydial infection screening as part of routine care and not in the context of a suspected STD encounter. To eliminate this as a possible confounding factor, we did not assess HIV screening rates among women who received screening test for gonorrhea and chlamydial infection only and not the diagnosis. The International Classification of Diseases, 9th Revision (ICD-9), diagnosis codes and Current Procedural Terminology (CPT) codes that were used to identify the study population are listed in Table 1.

The index date was set as the time the first screening test or diagnosis occured. To ensure the complete and accurate capture of baseline characteristics and outcome of interest, the study included patients who were continuously enrolled in the health plan for at least 12 months pre- and 2 months postindex date. In addition, to capture only incident cases, we excluded members diagnosed with HIV infection, AIDS, hepatitis B, or hepatitis C any time before the index date. In order not to miss patients who were previously diagnosed with HIV, we also excluded patients who had a CD4 cell count (n = 390) or HIV RNA test (n = 648) performed during the year before index date. The final sample size after application of inclusion and exclusion criteria was 270,423.

Dependent Variables

The main dependent variable was whether the patient was screened for HIV. HIV screening was defined as having either HIV-1 and/or HIV-2 tests (CPT codes: 86689, 86703, 3292F), HIV-1 tests (CPT codes: 86701, 87390, 87534–87536; HCPCS code: S3645), HIV counseling (ICD-9 diagnosis code V65.44), CD4 cell counts (CPT: 86,360, 86,361), or HIV RNA (CPT codes: 87536, 87539) testing performed in the 2 months prior through 2 months after the index date. In addition, members diagnosed with HIV or AIDS in the 2 months after the index date (ICD-9 diagnosis codes: 042, 079.53, V08; DRG codes: 488, 489, 490, MS-DRG codes: 969, 970, 974, 975, 976, 977) were also counted as having received HIV screening. We allowed for a broader definition of HIV screening to address the limitations of claims data (e.g., HIV screening test performed outside of insurance plan) and to capture physicians who had recommended HIV screening, but the patient ultimately refused. However, a sensitivity analysis revealed that 99% of HIV screening was captured by HIV laboratory tests alone (CPT codes: 86689, 86703, 3292F, 86701, 87390, 87534–87536; HCPCS code: S3645).

Determinants

The determinants of interest included the risk categories, the setting of diagnosis or testing (i.e., inpatient, outpatient, or ED), age (i.e., 14–24 years, 25–34 years, 35–44 years, 45–54 years, and 55–64 years), gender, comorbidities, geography region, and type of state-informed consent law regarding HIV screening. The specific risk categories included the following: (1) gonorrhea or chlamydial infection, (2) other nongonococcal urethritis, (3) condyloma, (4) epididymitis, (5) genital herpes, (6) HPV, (7) syphilis, (8) trichomoniasis, (9) pelvic inflammatory disease (PID), (10) STD exposure, counseling, or screening, (11) hepatitis B, (12) hepatitis C, and (13) other STDs (i.e., chancroid, granuloma inguinale, and LGV). We pooled chancroid, granuloma inguinale, and LGV due to small sample size.

We measured comorbidity using the Elixhauser comorbidity index, which was specifically designed for use with administrative datasets and has been shown to predict a variety

TABLE 2. Characteristics of the Study Sample and HIV Screening Rate (n = 270,423)

	Sample (n)	HIV Screening Rate (%)	Unadjusted Prevalence Ratio (95% CI)
Age (yr)			
14–24	46,418	33.5	0.74 (0.73, 0.75)
25–34	75,416	45.1	Reference
35–44	62,245	37.7	0.83 (0.82, 0.85)
45–54	49,641	20.5	0.46 (0.45, 0.46)
55–64	36,703	14.3	0.32 (0.31, 0.33)
Gender			
Male	77,635	28.7	Reference
Female	192,788	34.3	1.20 (1.18, 1.21)
Elixhauser comorbidity index			
=0	165,428	36.4	Reference
≥1	104,995	26.8	0.74 (0.73, 0.75)
Health care setting of triggering event			
Outpatient	245,274	33.0	1.06 (1.04, 1.08)
Emergency department (ED)	5949	16.9	0.51 (0.48, 0.54)
ED followed by inpatient admission	1352	18.1	0.55 (0.49, 0.61)
Inpatient or hospital observation	17,847	34.8	Reference
State law regarding HIV screening			
Written informed consent only	34,908	23.6	Reference
Written or verbal informed consent	194,738	34.4	1.46 (1.43, 1.49)
No specific informed consent requirement	40,777	32.4	1.37 (1.34, 1.41)
Region			
Northeast	12,913	27.3	0.76 (0.89, 0.91)
Midwest	82,906	32.1	0.90 (0.89, 0.91)
West	30,456	22.9	0.64 (0.63, 0.66)
South	144,148	35.6	Reference

HIV indicates human immunodeficiency virus; CI, confidence interval.

of patient outcomes, including mortality, postoperative complications, length of stay, and hospital charges.[18] This index captures a list of 30 comorbid conditions including cardiovascular disease, diabetes, lymphoma, weight loss, and drug abuse.[18] A comorbidity index of 0 indicates no comorbid diseases, whereas higher scores denote a greater burden of comorbid disease.[18] We dichotomized the Elixhauser comorbidity index (i.e., 0 vs. 1 or more) based on the distribution of the variable. The type of state HIV informed consent laws was categorized as follows: (1) written informed consent only, (2) written or verbal informed consent, and (3) no specific informed consent requirement. The CDC does not recommend that written consent for HIV screening is required, but several states have not adopted these recommendations.[19]

Statistical Analyses

Because the outcome measured is common (prevalence rate above 10%), we estimated the prevalence ratio (PR) using a Poisson regression model with a robust error variance.[20] We included State law on HIV screening as a fixed effect to eliminate the variation in HIV screening rates across states. We assessed the effect of the risk categories, setting of diagnosis, type of state HIV informed consent law, and sociodemographic characteristics on the likelihood of HIV screening. Crude and adjusted PRs were reported for the variables of interest. We dropped region as a covariate in the multivariate analysis because it was highly collinear ($r = 0.89$) with the type of state HIV informed consent law. SAS Proprietary Software, Release 9.1 (SAS Institute Inc, Cary, NC) and Stata (Statacorp 2003) were used for all statistical analyses.

RESULTS

A total of 270,423 patients were included in this study. The majority were female (n = 192,788), and females had significantly higher HIV screening rates (34.3%) compared with males (28.7%) (Table 2). The largest proportion of the sample was between 25 and 34 years of age (n = 75,416), and these patients had the highest HIV screening rate of any age group (45.1%). The overall HIV screening rate of patients who were diagnosed with or screened for STDs, Hepatitis B or C was 32.7% (Table 3). The most common STDs and bloodborne infections were hepatitis B (n = 111,031); syphilis (n = 99,160); gonorrhea or chlamydial infection (n = 98,422); and hepatitis C (n = 89,814). Another large group included patients who presented with an STD exposure and/or needed STD counseling or screening (n = 66,774).

HIV screening rates tended to be lower among patients diagnosed with specific infections, compared with those who were screened for the same condition (e.g., hepatitis B diagnosed = 11.4% vs. screened = 49.2%,). Similarly, HIV screening rates were compared for patients diagnosed with hepatitis C (diagnosed = 10.0% vs. screened = 43.1%), syphilis (diagnosed = 26.2% vs. screened = 65.4%), gonorrhea or chlamydial infection (diagnosed = 33.6% vs. screened = 49.4%), and trichomoniasis (diagnosed = 21.1% vs. screened = 23.3%). HIV screening rates among patients diagnosed with epididymitis (3.1%) or PID (10.8%) were very low.

The majority (61%) of patients had no comorbid conditions, and patients with no comorbid conditions (36.4%) had significantly higher HIV screening rates than patients with one or more comorbid conditions (26.8%). Most patients (91%) were screened or treated for STDs or hepatitis in the outpatient setting.

TABLE 3. Receipt of HIV Screening by Risk Categories

	Sample Size	HIV Screening Rate (%)	Unadjusted Prevalence Ratio* (95% CI)
Total	270,423	32.7	
Hepatitis	126,490	46.9	2.31 (2.29, 2.34)
Hepatitis B†	111,031	48.4	2.22 (2.20, 2.25)
Diagnosis	2289	11.4	
Screening tests	108,742	49.2	
Hepatitis C†	89,814	41.3	1.45 (1.44, 1.47)
Diagnosis	4952	10.0	
Screening tests	84,862	43.1	
STD	143,933	20.3	0.43 (0.43, 0.44)
Syphilis†	99,160	65.3	4.71 (4.65, 4.77)
Diagnosis	263	26.2	
Screening tests	98,897	65.4	
Chlamydial or gonorrhea infection†	98,422	46.9	1.91 (1.89, 1.93)
Diagnosis	15,469	33.6	
Screening tests	82,953	49.4	
STD counseling, screening	66,774	43.8	1.51 (1.49, 1.52)
Human papillomavirus	23,343	11.0	0.32 (0.30, 0.33)
Trichomoniasis†	17,018	22.8	0.68 (0.66, 0.70)
Diagnosis	3714	21.1	
Screening tests	13,304	23.3	
Genital herpes	10,365	21.4	0.65 (0.62, 0.67)
Epididymitis	8653	3.1	0.09 (0.08, 0.10)
Condyloma	6392	13.3	0.40 (0.38, 0.43)
Pelvic inflammatory disease	1389	10.8	0.33 (0.28, 0.38)
Other nongonococcal urethritis	501	22.2	0.68 (0.57, 0.80)
Chancroid, granuloma inguinale, and lymphogranuloma venereum	213	19.7	0.60 (0.46, 0.79)

*The reference for each of the risk category is the absence of the specific diagnosis. For example, the reference for hepatitis is no hepatitis.
†We presented stratified HIV screening rate for a risk category by the method the category was captured (i.e., diagnosis codes vs. screening laboratory tests).
STD indicates sexually transmitted diseases; HIV, human immunodeficiency virus; CI, confidence interval.

TABLE 4. Multivariate Analysis: Likelihood of Receiving HIV Screening

	Adjusted Prevalence Ratio (95% CI)
Type of at-risk category*	
Chlamydial or gonorrhea infection	1.40 (1.38, 1.41)
Nongonococcal urethritis	0.79 (0.69, 0.90)
Condyloma	0.66 (0.63, 0.69)
Epididymitis	0.23 (0.21, 0.26)
Genital herpes	0.83 (0.80, 0.85)
Human papillomavirus	0.58 (0.56, 0.59)
Syphilis	3.57 (3.53, 3.62)
Trichomoniasis	0.89 (0.87, 0.91)
Hepatitis B	1.44 (1.42, 1.45)
Hepatitis C	1.28 (1.27, 1.29)
Pelvic inflammatory disease	0.59 (0.52, 0.67)
STD exposure, counseling, or screening	1.16 (1.15, 1.17)
Chancroid, granuloma inguinale, and LGV	0.80 (0.66, 0.98)
Age	
14–24 yr	0.87 (0.86, 0.88)
25–34 yr	Reference
35–44 yr	0.93 (0.92, 0.94)
45–54 yr	0.70 (0.68, 0.71)
55–64 yr	0.53 (0.52, 0.54)
Gender	
Female	0.90 (0.89, 0.91)
Male	Reference
Comorbidity index	
0	Reference
≥1	0.93 (0.92, 0.94)
Setting	
Outpatient	Reference
Inpatient	0.93 (0.91, 0.94)
Emergency room	0.67 (0.63, 0.70)
Emergency room followed by admission	0.66 (0.60, 0.73)
State law	
Written informed consent only	Reference
Written or verbal informed consent	1.21 (1.19, 1.23)
No specific informed consent requirement	1.40 (1.37, 1.43)

*The reference for each of the risk category is the absence of the specific diagnosis. For example, the reference for chlamydial or gonorrhea infection is no chlamydial or gonorrhea infection.
LGV indicates lymphogranuloma venereum; STD, sexually transmitted diseases; HIV, human immunodeficiency virus; CI, confidence interval.

Patients who presented to the ED were significantly less likely to be screened for HIV than those who presented to other health care settings. Patients living in states where written informed consent was required had the lowest rates of HIV screening (23.6%).

Multivariate analyses revealed that patients who were screened or diagnosed with chlamydial infection, gonorrhea, syphilis, hepatitis B, hepatitis C, and patients who presented after STD exposure, or for counseling or screening, were more likely to be tested for HIV than those who presented in the other risk categories (Table 4). Similarly, patients in the age group of 25 to 34 years were more likely to be screened than those in other age groups. Although females had higher crude HIV screening rates than males (34.3% vs. 28.7%) (Table 2), they were significantly less likely to be screened for HIV (PR = 0.90; 95% CI = 0.89–0.91) than males, when controlling for other patient characteristics. Patients with one or more comorbidities were significantly less likely to be screened for HIV (PR = 0.93; 95% CI = 0.92–0.94) than patients with no comorbid conditions. At-risk patients seen in the ED (<10%) were significantly less likely to be screened for HIV than patients identified in outpatient settings. Patients living in states where no written HIV informed consent was required were significantly more likely to be screened than those living in states where written HIV informed consent was specifically required.[19]

DISCUSSION

The low HIV screening rate found in this study demonstrated that national guidelines regarding HIV screening in patients with STDs, hepatitis B, or hepatitis C are not being followed. This is very concerning because HIV seroprevalence among patients with new STDs and/or viral hepatitis has been reported to be as high as 11.5% (median = 4.7%).[10] Studies have indicated that failing to implement guidelines on HIV

screening ultimately results in HIV-infected patients being diagnosed and treated at a very advanced stage of their disease and more new patients being infected every year.[21,22] Late-diagnosed HIV patients do not have a chance to benefit from antiretroviral therapy, leading to greater morbidity and mortality from HIV. Between 1996 and 2005, 39% of individuals identified with HIV infections progressed to AIDS within the same year.[23] In addition, it is estimated that in the United States one quarter of the 1.1 million persons infected with HIV are unaware of their serostatus, and these individuals account for more than 50% of new infections every year.[4] HIV-positive patients who do not know their HIV status are 3.5 times more likely to transmit the HIV virus than patients who were aware of their HIV status.[4]

Our findings suggest that the HIV screening rates may be much improved if healthcare providers consistently offer the HIV screening test. We found that HIV screening rates were significantly higher among patients who were screened for STDs or hepatitis than in patients who were diagnosed for these conditions. It is possible that providers who were providing a general screening for STD or hepatitis were more likely to cast a wider net as part of their differential diagnosis and comprehensive sexual health approach, compared with providers who focused on a specific diagnosis. In addition, Magnus et al have shown that 50% of patients living in an urban community with high HIV prevalence cited "not offered an HIV test" as the main reason for not being screened for HIV infection.[24] Interventions focusing on providers may be important and necessary to increase HIV screening rates for patients who present with an STD or blood-borne infection.[25] Provider education must stress the importance of broad screening for HIV, other STDs, and hepatitis when patients present with any genitourinary symptoms or risk history.

Data from this study identify additional clinical and demographic characteristics of patients at increased risk of not being screened for HIV. HIV screening rates were low in general, but rates were even lower (<10%) for patients presenting with epididymitis or granuloma inguinale. Women were significantly less likely to be screened for HIV than men, even though the majority of patients who presented with an STD or hepatitis B or C were women. Patients aged 25 to 34 years were most likely to be screened for HIV, with the likelihood of HIV screening decreasing in both younger and older populations. When controlling for other factors such as age, we also found that patients with comorbid conditions were less likely to be screened for HIV. This result may be due to providers having less time to address HIV screening in patients with other significant medical problems.

Patients who live in states that specifically require written informed consent for HIV screening have significantly lower HIV screening rates than patients who live in states with less restrictive informed consent laws. The CDC has strongly recommended for "opt-out" HIV testing in health care settings to address the persistent problem of missed opportunities for HIV screening and consequently late HIV diagnosis.[21] The results of this study strongly suggest that structural changes that reduce legal impediments to HIV testing would be beneficial in facilitating HIV testing behaviors among providers and their patients.

This study also showed that patients seen in the ED have significantly lower rates of HIV screening. This may be due to the lack of rapid HIV screening tests in certain health care systems; emergency providers in these health care systems may be reluctant to screen the patient for HIV if they cannot follow-up. Alternatively, ED providers may not want to be burdened with lengthy HIV pretest counseling. Although both the CDC and the US Preventive Services Task Force have long recommended against the need of HIV pretest counseling,[8] this perception may still be a barrier for conducting HIV screening. Similar barriers might be observed in outpatient settings, especially when the patients see nonroutine providers for an urgent care visit. Interventions that streamline the HIV screening process (e.g., expanding the availability of rapid HIV testing and eliminating the perceived need for lengthy pretest counseling) may be successful in increasing HIV screening rates in all healthcare settings.

It is important to note that this study has limitations. First, because this study population was commercially insured, the findings of this study may not translate to other populations, especially more disadvantaged populations where providers may perceive a higher HIV risk. However, commercially insured patients are an important group for studying HIV screening for patients with STDs. According to the National Health and Social Life Survey, a population-based household survey, the majority of patients (71%) have sought STD treatment from a commercial setting.[26] In addition, use of data from the commercially insured patients allowed us to assess the rates of HIV screening in a population where access to healthcare was not an impediment, yet screening rates remained low. Second, some patients might have had anonymous screening at a free clinic; therefore, an insurance claim for HIV screening would not have been submitted to their health plan. These screenings would not be captured by the administrative dataset, and the HIV screening rates we found may be artificially low. However, in the current economic climate, access to free STD/HIV screening services is increasingly limited, so the likelihood of extensive external screening remains low. Finally, it is possible that patient refusal of HIV screening may contribute to this low rate, and this factor cannot be assessed from the administrative data. Administrative claims data are better at capturing what would be paid for during a health care visit (e.g., laboratory test) and poorer at capturing provider-patient interactions that cannot be assigned a monetary value (e.g., HIV testing discussion). However, the HIV screening rates found in this study is consistent with results from other nonclaims-based analyses.[10,13,27] In addition, administrative claims data have been used to effectively examine and document patterns of health care utilization,[28,29] detect opportunities to improve quality of care,[11,14,30] and estimate incidence of disease.[31–33]

In conclusion, despite consistent national guidelines on HIV screening in at-risk individuals for more than a decade and the recent CDC recommendation for routine HIV screening, HIV screening rates were low among patients who were screened or diagnosed with STDs or blood-borne infections. HIV screening rates were even lower among patients who presented with specific STDs such as condyloma, epididymitis, HPV, and PID. Females and patients with comorbid conditions were significantly less likely to receive the recommended HIV screening tests. Requiring specific written informed consent for HIV screening was also associated with significantly less HIV screening. Low HIV screening rates in this high-risk population may result in significant delayed HIV diagnosis and treatment for many patients. Delay in HIV diagnosis and treatment leads to poorer patient health outcomes and increased likelihood of HIV transmission. Interventions in health care settings focusing on educating the providers on the importance of HIV screening and streamlining the HIV screening process are urgently needed to increase the HIV screening rate among those at risk population.

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