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## The Health and Health Care of US Prisoners: Results of a Nationwide Survey

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### Contributors

A. P. Wilper designed the study, planned the analysis, performed statistical analysis and data management, and interpreted the analysis. A. P. Wilper, S. Woolhandler, and D. U. Himmelstein drafted the article. J. W. Boyd, K. E. Lasser, D. McCormick, and D. H. Bor performed critical revisions of the article. S. Woolhandler supervised all aspects of the study design, analysis planning, interpretation, and article preparation.

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## Abstract

[Go to:](#)

*Objectives.* We analyzed the prevalence of chronic illnesses, including mental illness, and access to health care among US inmates.

*Methods.* We used the 2002 Survey of Inmates in Local Jails and the 2004 Survey of Inmates in State and Federal Correctional Facilities to analyze disease prevalence and clinical measures of access to health care for inmates.

*Results.* Among inmates in federal prisons, state prisons, and local jails, 38.5% (SE = 2.2%), 42.8% (SE = 1.1%), and 38.7% (SE = 0.7%), respectively, suffered a chronic medical condition. Among inmates with a mental condition ever treated with a psychiatric medication, only 25.5% (SE = 7.5%) of federal, 29.6% (SE = 2.8%) of state, and 38.5% (SE = 1.5%) of local jail inmates were taking a psychiatric medication at the time of arrest, whereas 69.1% (SE = 4.8%), 68.6% (SE = 1.9%), and 45.5% (SE = 1.6%) were on a psychiatric medication after admission.

*Conclusions.* Many inmates with a serious chronic physical illness fail to receive care while incarcerated. Among inmates with mental illness, most were off their treatments at the time of arrest. Improvements are needed both in correctional health care and in community mental health services that might prevent crime and incarceration.

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The prison population of the United States has quadrupled in the past 25 years, and the country now incarcerates more people per capita than any other nation. Worldwide, imprisonment per 100 000 ranges from 30 in India to 75 in Norway, 119 in China, 148 in the United Kingdom, 628 in Russia, and 750 in the United States.<sup>1</sup>

Currently, nearly 2.3 million US inmates (about 1% of US adults) must rely on their jailers for health care.<sup>2</sup> Although prisoners have a constitutional right to health care through the Eighth Amendment's prohibition of "cruel and unusual" punishment,<sup>3</sup> periodic scandals, as well as previous studies, indicate that prisoners' access to health care and the quality of that care are often deficient.<sup>4,5</sup> Indeed, citing deplorable conditions in California's prison system, a federal judge recently removed prison health care from the state's control.<sup>6</sup> However, there is little nationally representative data on the health and health care of America's prisoners.

Inmates have high rates of chronic medical conditions, especially viral infections. In addition, substance abuse and mental illness are common among inmates.<sup>7,8</sup> We are not aware of any study analyzing the prevalence of common chronic conditions or of access to medical and psychiatric care among the incarcerated population as a whole. Therefore, we sought to determine the prevalence of select chronic diseases, access to health services, and pre- and postincarceration psychiatric treatment among the US inmate population.

## METHODS

[Go to:](#)

We analyzed data from the 2004 Survey of Inmates in State and Federal Correctional Facilities (SISFCF) and the 2002 Survey of Inmates in Local Jails (SILJ). The US Census Bureau conducted these surveys for the Bureau of Justice Statistics. Participation in the surveys was voluntary, and prisoners' answers were anonymous and confidential.

### Data Sources

The 2004 SISFCF consisted of in-person surveys of state and federal prisoners designed to provide nationally representative data on prison inmates. Between October 2003 and May 2004, inmates provided demographic, criminal justice, and health information to interviewers. The 2002 SILJ employed a virtually identical methodology and questionnaire.

The surveys employed a 2-stage sample design, selecting prisons in the first stage and inmates in the second stage. The Census Bureau preselected the 21 largest state prisons for inclusion in the survey. Remaining state prisons were stratified by census region; those with larger inmate populations were more likely to be included in the survey. Of 1585 state prisons, 301 were selected for participation in the SISFCF, of which 287 participated. Two prisons refused to

participate, and 12 were deemed “out of scope”: 2 were jails, 1 was under federal jurisdiction, 4 had closed, and 5 no longer housed inmates of the gender for which the facility was originally chosen. Of 16 152 randomly selected inmates, 14 499 completed interviews. The total response rate was 89.1%.

Three federal prisons were preselected. The remaining federal prisons were stratified by security level; those with larger inmate populations were more likely to be included in the survey. Of 148 eligible federal prisons, 40 were selected and 39 participated in the survey (1 prison refused to participate). A computer that was supplied with a list of all inmates selected inmates from within a facility using a random start point and a predetermined skip interval. Of 4253 randomly selected federal inmates, 3686 completed interviews. The total response rate was 84.6%.<sup>9</sup>

The Census Bureau conducted the SILJ from January to April 2002 using a similar 2-stage sample design. Researchers conducting the SILJ preselected 234 jails for inclusion to ensure that facilities with large numbers of men, women, or juveniles had a higher probability of selection than would jails with smaller numbers of these individual groups. The remaining facilities were stratified by inmate population, and facilities housing larger inmate populations were more likely to be included in the survey. Of 3365 jails, 465, including those that were preselected, were systematically selected, and 417 participated in the survey; 39 refused to participate, and 9 had closed or housed no inmates. From within each institution, interviewers selected inmates using a predetermined random start and sample selection rate. Of 7750 randomly selected jail inmates, 6982 completed interviews. The total response rate was 84.1%.<sup>10</sup> For all 3 surveys, the Census Bureau provided weights that adjusted for nonresponse and sample design in order to yield national estimates.

For both the SISFCF and the SILJ, inmates answered questions about symptoms or medical diagnoses received prior to incarceration, including diabetes mellitus, hypertension, HIV/AIDS, paralysis, prior or current malignancy (breast, cervical, colon, leukemia, lung, ovarian, prostate, testicular, uterine, or other [“other” was not included in the local jail survey]), stroke or brain injury, angina, arrhythmia, arteriosclerosis, prior myocardial infarction, or other heart problem (coronary, congenital, rheumatic). Inmates also reported on persistent problems with kidneys, asthma, cirrhosis, hepatitis, arthritis, or sexually transmitted diseases. Surveyors did not use health records to confirm diagnoses.

Inmates were queried about serious injuries they had sustained since being incarcerated that were caused by an accident or a physical or sexual assault. We defined “serious injuries” as those resulting from knife or gunshot wounds and those causing broken bones, internal injuries, or loss of consciousness.

Inmates also answered questions about their health care since incarceration. Such care included tuberculosis skin test and treatment of a positive test, receipt of prescription medications before and after admission, blood tests (otherwise unspecified), and visits to a doctor, nurse, or other health care worker for a persistent health problem.

The SISFCF and SILJ assessed self-reported mental illnesses, including any prior diagnosis of depressive disorder, bipolar disorder, schizophrenia, posttraumatic stress disorder (PTSD), anxiety or panic disorder, personality disorder, or other mental condition. Inmates answered questions about medications for psychiatric illness at any point in the past, in the year prior to admission, at the time of arrest, and since incarceration. Inmates also reported mental health counseling at any time in the past, in the year prior to admission, at the time of arrest, or following admission.

We determined the self-reported prevalence of common chronic conditions that routinely require ongoing medical treatment, including diabetes mellitus, hypertension, prior myocardial infarction, persistent kidney problems, persistent asthma, cirrhosis, and HIV/AIDS.

In addition, we created another category defining inmates as having “any chronic condition” if they reported any condition likely requiring follow-up medical attention, even if not identified as causing a persistent problem by the inmate. In this category, we included a prior diagnosis of 1 or more of the following: diabetes mellitus, hypertension, HIV/AIDS, paralysis, prior malignancy (excluding skin cancers), prior stroke or brain injury, angina, arrhythmia, arteriosclerosis, myocardial infarction, other heart problems (coronary, congenital, rheumatic), persistent kidney problems, current problems with asthma, and persistent problems with cirrhosis, persistent hepatitis, and arthritis. The SISFCF included a question about “other” types of cancer, a question not included in the SILJ. “Other cancer” adds only 9160 and 704 individuals to state and federal “chronic” indicators, respectively. We did not include pregnancy or sexually transmitted diseases other than HIV/AIDS in our definition of “any chronic condition.”

We compared the crude and age-adjusted prevalence of selected chronic conditions among inmates with the prevalence of such conditions among a nationally representative sample of the noninstitutionalized US population from the 2003–2004 National Health and Nutrition Examination Survey (NHANES).<sup>11</sup> The 2003–2004 NHANES included questions regarding a prior diagnosis of diabetes mellitus, hypertension, myocardial infarction, and persistent asthma that were nearly identical to those of the inmate surveys, and staff for the 2003–2004 NHANES tested participants aged 18 to 49 years for HIV. We included comparisons of both crude and age-adjusted prevalences of these chronic conditions among inmates and the nonincarcerated population.

Because most standard access to care measures, such as having a usual source of care or avoiding needed care because of costs, are meaningless in incarceration settings, we developed 5 clinically based access to care measures:

1. *Access to medical examinations.* To assess this measure, we created a marker for inmates with a persistent medical problem routinely requiring medical assessment. For this indicator, we first combined inmates reporting pregnancy at the time of admission with those reporting a persistent problem with diabetes mellitus, the heart or kidneys, hypertension, cancer, stroke or brain injury, paralysis, cirrhosis, arthritis, asthma, hepatitis,

- or a sexually transmitted disease. (Unfortunately, the surveys did not specifically assess access to care for inmates with HIV.) We then determined whether medical personnel had examined inmates for their persistent conditions at any time since incarceration.
2. *Access to pharmacotherapy.* To assess this measure, we first determined the number of inmates who had a condition routinely treated with pharmacotherapy (hypertension, diabetes mellitus, stroke or brain injury, persistent arthritis, asthma, cirrhosis, or HIV/AIDS) and had been taking a prescription medication at the time of admission. We then determined whether these prisoners continued taking that medication following incarceration. Surveyors did not collect medication names or query inmates about new medications begun during incarceration.
  3. *Access to prescription medication.* To further assess access to prescription medication, we determined the number of inmates who had received any prescription drug for any indication prior to incarceration. We then determined the proportion of such inmates who did not receive that medication following incarceration.
  4. *Access to laboratory tests.* To assess this measure, we defined prisoners as needing routine laboratory monitoring if they had 1 of the following conditions: diabetes mellitus, persistent hypertension, kidney problems, cirrhosis, prior myocardial infarction, or HIV/AIDS. We then determined whether these prisoners had undergone at least 1 blood test of any kind since incarceration.
  5. *Adequacy of acute care.* To assess this measure, we analyzed data from inmates with a serious injury (knife or gunshot wounds, broken bones, internal injuries, being knocked unconscious, or sexual assault). We then determined whether these prisoners received any medical examination for their injuries.

Finally, we focused on receipt of mental health care. For inmates reporting any prior diagnosis of a mental condition, we determined the proportion ever receiving a medication for that condition. Next, we determined the proportion of this population taking medication at the time of arrest and since incarceration. We also determined the proportion of inmates with any history of a mental condition who had ever received counseling, who had received counseling in the year prior to admission, and who had received counseling since incarceration. Finally, we repeated all mental health analyses using only those inmates with a prior diagnosis of bipolar disorder or schizophrenia.

### Statistical Analysis

We used SAS version 9.1 (SAS Institute Inc, Cary, NC) to analyze bivariate relationships. We used SUDAAN version 9.0.3 (Research Triangle Institute, Research Triangle Park, NC) to estimate variance via restricted-access SILJ design variables. For the SISFCF, we calculated variance using the generalized variance estimates available with the survey documentation. We applied sample weights supplied by the Bureau of Justice Statistics to account for nonresponse and survey design and to yield national estimates. We performed direct age standardization via published techniques.<sup>12</sup>

**RESULTS**

Go to:

Based on our analysis, US federal prisons held 129 196 inmates and state prisons 1 225 680 in 2004. In 2002, local jails held 631 241 inmates. The overwhelming majority of inmates were male, were younger than 35 years, and were disproportionately Black or Hispanic. About 200 000 (10%) were military veterans. The majority were parents of minor children at the time of incarceration or at the time of the survey.

Nonresponse to individual items was uncommon. Among federal inmates, 2.1% were missing data on prescription medications at admission and 2.8% on prior diagnosis of PTSD; 6.0% were missing data for HIV testing and 15.8% for duration of incarceration. No data were provided for sexual assault or gunshot wounds in federal prisons. Among state inmates, 1.2% were missing data on prescription medications at admission and 1.7% on prior diagnosis of PTSD; 4.0% were missing data regarding HIV testing and 6.3% for duration of incarceration. Among jail inmates, 0.5% were missing data on the duration of incarceration and 2.2% on prior diagnosis of PTSD; 5.2% were missing data on HIV testing.

**Chronic Medical Problems**

Chronic conditions were common among inmates; 49 702 federal inmates (38.5% [SE = 2.2%]), 524 116 state inmates (42.8% [SE = 1.1%]), and 244 336 local jail inmates (38.7% [SE = 0.7%]) had at least 1 chronic medical condition ([Table 1](#)).

**TABLE 1**  
**Demographic and Health Characteristics of Inmates in US Federal and State Prisons and in Jails: SISFCF, 2004, and SILJ, 2002**

Inmates had rates of diabetes, hypertension, prior myocardial infarction, and persistent asthma comparable to those of the US noninstitutionalized, nonelderly population. However, following age standardization to the 2000 US census, the prevalence of these conditions appeared to be higher for inmates than for the general population, except for prior myocardial infarction among jail inmates ([Table 2](#); see also the appendix to [Table 1](#), available as a supplement to the online version of this article at <http://www.ajph.org>). More than 20 000 inmates reported testing positive for HIV, including 1023 federal inmates (1.0% [SE = 3.1%]), 15 115 state inmates (1.6% [SE = 1.6%]), and 4245 local jail inmates (1.2% [SE = 0.2%]); this percentages did not substantially change when only inmates aged 18–49 years (the age group that underwent HIV testing in the NHANES sample) were included.

**TABLE 2**  
**Age-Standardized Prevalence of Select Chronic Conditions Among Adult Federal and State Prisoners, Jail Inmates, and the US Noninstitutionalized Population**

**and the Noninstitutionalized US Population: SISFCF, 2004, SIL J, 2002, and NHANES, 2003–2004**

**Access to Medical Services**

Among inmates with a persistent medical problem, 13.9% of federal inmates, 20.1% of state inmates, and 68.4% of local jail inmates had received no medical examination since incarceration. More than 1 in 5 inmates were taking a prescription medication for some reason when they entered prison or jail; of these, 7232 federal inmates (26.3%), 80 971 state inmates (28.9%), and 58 991 local jail inmates (41.8%) stopped the medication following incarceration. Prior to incarceration, slightly more than 1 in 7 inmates were taking a prescription medication for an active medical problem routinely requiring medication (as defined in the Methods section). Of these, 3314 federal (20.9% [SE = 6.7%]), 43 679 state (24.3% [SE = 3.3%]), and 28 473 local jail inmates (36.5% [SE = 1.7%]) stopped the medication following incarceration.

Only a small portion of prison inmates (3.9% [SE = 6.5%] of federal and 6.4% [SE = 3.2%] of state inmates) with an active medical problem for which laboratory monitoring is routinely indicated had not undergone at least 1 blood test since incarceration. However, most local jail inmates with such a condition (60.1% [SE = 1.8%]) had not undergone a blood test.

Following serious injury, 650 federal inmates (7.7%), 12 997 state inmates (12.0%), and 3183 local jail inmates (24.7%) were not seen by medical personnel ([Table 3](#)).

**TABLE 3**  
**Access to Medical Care for Inmates of Federal Prisons, State Prisons, and Local Jails: SISFCF, 2004, and SIL J, 2002**

**Mental Health**

Mental health problems were ubiquitous: 19 117 federal inmates (14.8% [SE = 2.6%]), 312 768 state inmates (25.5% [SE = 1.3%]), and 157 634 local jail inmates (25.0% [SE = 0.7%]) had at least 1 previously diagnosed mental condition ([Table 1](#)); most of them had taken medications at some point prior to incarceration. However, a much smaller proportion of inmates with a mental health diagnosis were taking psychiatric medication at the time of their arrest: 25.5% (SE = 7.5%) of federal, 29.6% (SE = 2.8%) of state, and 38.5% (SE = 1.5%) of local jail inmates. Among inmates with a previously diagnosed mental condition who had been treated with a psychiatric medication in the past, 69.1% (SE = 4.8%) of federal, 68.6% (SE = 1.9%) of state, and 45.5% (SE = 1.6%) of local jail inmates had taken a medication for a mental condition since incarceration. A similar pattern was apparent for prearrest and postincarceration counseling ([Table 4](#)).

**TABLE 4**

Condition	Prevalence (%)
Schizophrenia	1.1
Bipolar disorder	1.1
Major depression	1.1
Other mental conditions	1.1

## Prevalence of Diagnosed Mental Conditions Among Inmates of State and Federal Prisons and Local Jails, and Use of Psychiatric Medications and Counseling Before and During Incarceration: SISFCF, 2004, and SILJ, 2002

Among prison inmates with schizophrenia or bipolar disorder who had ever been treated with psychiatric medication, the proportion on treatment was approximately 1 in 3 at the time of arrest and nearly 2 in 3 during incarceration (see appendix to [Table 2](#), available as a supplement to the online version of this article at <http://www.ajph.org>). Among jail inmates with schizophrenia or bipolar disorder, the pattern of low treatment rates at arrest and high treatment rates following incarceration was also present, although less pronounced than in the prison population.

### DISCUSSION

[Go to:](#)

Mass incarceration as part of the war on drugs has created a burgeoning inmate population in the United States. Earlier studies of inmates have been based on extrapolations from noninstitutionalized Americans, single institutions, or data from either federal or state prisons alone or jail systems alone. Our study adds to the existing literature by analyzing a large, nationally representative sample of the entire US inmate population. More than 800 000 inmates report having 1 or more chronic medical condition, and their access to medical care appears to be poor, particularly in jails. Our data also demonstrate that prisons are holding and treating many mentally ill people who were off treatment at the time of arrest.

Our age-standardized prevalence estimates for rates of hypertension and diabetes were higher than estimates from earlier population-based projection models (18.3% and 4.8%, respectively).<sup>13</sup> Although the rates of asthma in our study were similar to the rates in the earlier study (8.5%),<sup>13</sup> our figures include only those with active asthma, whereas the earlier estimates included any prior diagnosis. Furthermore, the earlier projections were based on models that used data from NHANES III that included laboratory testing (diabetes) and physical examination (hypertension) as part of diagnostic criteria; including these measurements as part of the diagnostic criteria among inmates would have increased our prevalence estimates.<sup>13</sup>

Improved management of chronic conditions in prisons and jails may have important implications for community health and in reducing health care disparities, because the vast majority of inmates are eventually released. Approximately 12 million inmates are released annually (William J. Sabol, PhD, chief, Corrections Statistics, Bureau of Justice Statistics, oral communication, April 2008). This high turnover of a population with elevated rates of treatable conditions offers a substantial public health opportunity. Indeed, in response to a congressional request, the National Commission on Correctional Health Care issued an extensive report in 2002 titled *The Health Status of Soon-To-Be-Released Inmates*<sup>8</sup>; although it included recommendations of specific strategies to improve inmates' health, no congressional action has ensued (R. Scott Chavez, PhD, MPA, vice president, National Commission on Correctional

Health Care, oral communication, July 2008). Nonetheless, minimizing inmates' physical and mental disability is an important step in reintegrating them into family and employment roles.

The prevalence of HIV in prisons is higher than in the noninstitutionalized population, although it is declining.<sup>14,15</sup> A high incidence of blood-borne illnesses among inmates has also been documented.<sup>16,17</sup> Limited privacy in prison may make prisoners reluctant to comply with treatment of HIV, and sexual coercion and bartering may facilitate transmission. Similarly, untreated bleeding injuries (as documented in our data) pose an obvious transmission risk. Hence, poorly managed HIV may lead prisons to function as “amplifiers” of this and other infectious illnesses and add to the burden of untreated and advanced disease borne by inmates, families, and communities following inmates' release.

We estimate that nearly 500 000 inmates have a previously diagnosed mental condition. Moreover, Bureau of Justice Statistics estimates that include undiagnosed symptoms of mental health problems (such as hallucinations) suggest that the number of inmates with a psychiatric illness may be even higher.<sup>18</sup> The rates of mental illness among inmates are thought to be higher than among the US population as a whole. Although we did not directly compare rates of mental illness among inmates and the general US population, our estimates were derived directly from inmates, as opposed to a representative sampling of unincarcerated Americans.<sup>13</sup>

Sadly, in the United States, many inmates do not receive psychiatric treatment at the time of arrest, even those with schizophrenia or bipolar disorder. However, the low rate of treatment of inmates prior to arrest could be viewed as hopeful news, implying that greater access to outpatient mental health care might reduce the staggering toll of crime and incarceration.<sup>19</sup>

As with indicators for access to medical care, access to psychiatric care appears to be worse in jails than in prisons. The jump in rates of psychiatric treatment during incarceration may reflect limited access to psychiatric treatment among those with mental disorders prior to incarceration, and prisons' new societal role as asylums following the mass closures of inpatient mental health facilities in the 1980s (the largest mental institutions in the United States are urban jails<sup>7</sup>); conversely, psychiatric medications may be overprescribed in prisons. Furthermore, the use of psychiatric medication is measured differently than that of other prescription drugs. The increase in counseling from prearrest to incarceration supports the notion that a genuine improvement in the availability of psychiatric care occurs during incarceration.

Vast improvements in inmate health care are possible. Salutary reforms could include decreasing incarceration rates; making health care systems in prison nonprofit and autonomous from prison authorities; increasing communicable disease education, prevention, and treatment<sup>20-22</sup>; making condoms available<sup>23</sup>; improving care for chronic conditions; providing targeted cancer screening<sup>24</sup>; increasing the availability of addiction and mental health treatment; providing better supervision to reduce physical and sexual assault; maintaining Medicaid eligibility for inmates<sup>8</sup>; and improving the planning of inmates' discharge and facilitating their reintegration into the community.<sup>25-27</sup>

## Limitations

Although access to care in local jails appears to be worse than in federal and state prisons, this result may simply reflect the shorter duration of incarceration among jail inmates. We were unable to validate inmates' responses; however, the anonymous and confidential nature of the survey should have maximized inmates' candor. It is possible that some inmates who reported taking prescription medications that were discontinued at the time of incarceration had actually been switched to a therapeutic equivalent but did not recognize it as such or had a condition that no longer warranted treatment at admission. Furthermore, among those with chronic conditions, no assessment of medications begun following incarceration was possible. Although our measures of access to care among inmates have not been validated, we believe that they have sufficient face validity to support a presumption that health care in prisons and jails is far from adequate. Unfortunately, we have no information on the quality of pharmacological and other medical care. Hence, our data refer only to the most minimal standards of care (i.e., any medical evaluation, any testing, or any treatment).

## Conclusions

Providing inmates with health care is politically unpopular. Indeed, former Surgeon General Richard H. Carmona stated that the Bush administration had blocked the release of the Surgeon General's Report, *Call to Action on Corrections in Community Health*, for fear that the report would increase government spending on inmates.<sup>28</sup> However, the constitutional, public health, and human rights imperatives of improving health care in prisons and jails are clear.

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[Go to:](#)

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## Human Participant Protection

[Go to:](#)

The institutional review board of the Cambridge Health Alliance approved this study.

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[Go to:](#)

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