



## Medicine and the Epidemic of Incarceration in the United States

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Over the past 40 years, the number of people in U.S. prisons has increased by more than 600% — an unprecedented expansion of the criminal justice system. On January 1, 2008, one of every 100 adults,

or more than 2.3 million people, were behind bars.<sup>1</sup> An estimated 10 million Americans are incarcerated each year.<sup>2</sup> With only 5% of the world's population, the United States has a quarter of the world's prisoners. No other country locks up more of its citizens.

For black Americans, especially men with no college education, incarceration has become an alarmingly common life experience. By middle age, black men in the United States are more likely to have spent time in prison than to have graduated from college or joined the military,<sup>3</sup> and they are far more likely than whites to be sent to prison for drug offenses despite being no more likely than whites to use drugs.<sup>3</sup>

Much of the increase in the

prisoner census is a result of the “War on Drugs” and our country's failure to treat addiction and mental illness as medical conditions. The natural history of these diseases often leads to behaviors that result in incarceration. The medical profession has the chance both to advocate for changes in the criminal justice system to reduce the number of people behind bars who would be better served in community-based treatment and to capitalize on the tremendous public health opportunities for diagnosing and treating disease and for linking patients to care after release.

Deinstitutionalization of the mentally ill over the past 50 years and severe punishment for drug users starting in the 1970s have shifted the burden of care for ad-

diction and mental illness to jails and prisons. The largest facilities housing psychiatric patients in the United States are not hospitals but jails. More than half of inmates have symptoms of a psychiatric disorder as defined by the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV), and major depression and psychotic disorders are four to eight times as prevalent among inmates as in the general population — yet only 22% of state prisoners and 7% of jail inmates receive mental health treatment while incarcerated.<sup>4</sup>

The medical care that many inmates receive, in combination with a different environment, can be lifesaving. Yet correctional facilities are fundamentally designed to confine and punish, not to treat disease. The harsh and socially isolating conditions in jail or prison often exacerbate mental illness, especially when inmates are placed under solitary confinement, as is common

Prevalence of Medical Conditions among Federal and State Prisoners, Jail Inmates, and the Noninstitutionalized U.S. Population.*				
Condition	Federal Inmates	State Inmates	Jail Inmates	U.S. Population
Any chronic medical condition	38.5	42.8	38.7	NA
Diabetes mellitus	11.1	10.1	8.1	6.5
Hypertension	29.5	30.8	27.9	25.6
Prior myocardial infarction	4.5	5.7	2.1	3.0
Persistent kidney problems	6.3	4.5	4.1	NA
Persistent asthma	7.7	9.8	8.6	7.5
Persistent cirrhosis	2.2	1.8	1.8	NA
Persistent hepatitis	4.6	5.7	4.6	NA
HIV infection	0.9	1.7	1.6	0.5
Symptoms of mental health disorders	39.8	49.2	60.5	10.6
Major depressive disorder	16.0	23.5	29.7	7.9
Mania disorder	35.1	43.2	54.5	1.8
Psychotic disorder	10.2	15.4	23.9	3.1

\* Data are from the Bureau of Justice Statistics and a 2009 study from the Cambridge Health Alliance. NA denotes not available.

in the “super maximum” facilities that have proliferated extensively in recent years.

Substance use and dependence are highly prevalent in the incarcerated population. More than 50% of inmates meet the DSM-IV criteria for drug dependence or abuse, and 20% of state prisoners have a history of injection-drug use.<sup>4</sup> Up to a third of all heroin users — approximately 200,000 — pass through the criminal justice system annually. With growing numbers of drug users in correctional facilities, the prevalence of infectious diseases has increased correspondingly. As many as a quarter of all Americans infected with HIV and one in three with hepatitis C pass through a correctional facility each year.<sup>2</sup> Chronic noninfectious diseases are also disproportionately prevalent in correctional facilities (see table).

The impact of incarceration

extends far beyond the approximately 10 million people who are put behind bars each year. In low-income minority communities where a large portion of the male population is in correctional facilities at any given time, incarceration delivers a devastating blow to stable relationships, resulting in risky sexual partnerships that lead to increased rates of sexually transmitted diseases and HIV transmission and may increase rates of unwanted pregnancy. The disproportionate incarceration of young black men is also associated with low wages and rising unemployment rates, which further exacerbate disparities in health. Because no country has ever incarcerated people at such high rates, the full extent of the social and public health consequences will not be known for years to come.

Nearly all prisoners will eventually return to the community,

and the post-release period presents extraordinary risks to individuals and costs to society. In the 2 weeks after release, former inmates are 129 times more likely to die from a drug overdose than members of the general public and 12 times more likely to die of any cause.<sup>5</sup> Yet most released inmates lack medical insurance, and Medicaid benefits have often been terminated upon incarceration.<sup>2</sup> Although discharge-planning practices vary considerably, inmates are typically released with no more than a 2-week supply of even crucial medications such as insulin and with no primary care follow-up, so the burden of care falls predominantly on emergency rooms and is financed primarily by the public sector.<sup>2</sup> Addressing the health needs of this vulnerable population is thus not only an ethical imperative, but also of crucial importance from both a fiscal and a public health perspective.

Correctional facilities are a critical component of the public-safety infrastructure, but many observers believe that the social and economic costs associated with the unprecedented expansion of the U.S. correctional system now far outweigh the benefits. State correctional spending has increased by 300% since 1980, to \$50 billion annually; it's now the fastest-growing area of government spending after Medicaid.<sup>1</sup> In Rhode Island, the average cost in 2008 of incarcerating an inmate for 1 year was \$41,346; for an inmate in a super maximum security setting, the cost jumps to \$109,026 annually. Five states now spend more on corrections than they do on higher education.<sup>1</sup> As alternatives to incarceration, addiction and mental health treatment programs are

more humane and cost-effective and ultimately better address the underlying problems, but political support for these approaches is crippled by policymakers' fear of being labeled "soft on crime."

There are tremendous medical and public health opportunities that can be created by addressing the health care needs of prisoners and former prisoners. Perhaps foremost among these is that opened up by health care reform: the Affordable Care Act will permit most former prisoners to receive health insurance coverage, which will offer them greater access to much-needed medical care. Such access could redirect many people with serious illnesses away from the revolving door of the criminal justice system, thereby improving overall public health in the communities to which prisoners return and decreasing the costs associated with reincarceration due to untreated addiction and mental illness. To achieve these gains, we will need to ensure linkages

to medical homes that provide substance-use and mental health treatment for reentering populations. Partnerships between correctional facilities and community health care providers — especially community health centers and academic medical centers — can capitalize on health gains made during incarceration and improve the continuity of care for former inmates during the critical post-release period. The success of this effort will determine not only the health of released prisoners, but that of our society as a whole.

Locking up millions of people for drug-related crimes has failed as a public-safety strategy and has harmed public health in the communities to which these men and women return. A new evidence-based approach is desperately needed. We believe that in addition to capitalizing on the public health opportunities that incarceration presents, the medical community and policymakers must advocate for alternatives to

imprisonment, drug-policy reform, and increased public awareness of this crisis in order to reduce mass incarceration and its collateral consequences.

Disclosure forms provided by the authors are available with the full text of this article at [NEJM.org](http://NEJM.org).

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## The Long-Term Effects of In Utero Exposures — The DES Story

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It has been 40 years since the *Journal* published a seminal article by Herbst et al. (1971;284:878-81) noting the association of in utero exposure to a synthetic nonsteroidal estrogen, diethylstilbestrol (DES), and the development of a rare clear-cell adenocarcinoma (CCA) of the vagina in young women 15 to 22 years later. The identification of an in utero exposure that caused alterations to the anatomical and histologic structure of the female genital tract, infertility, and malig-

nant transformation has changed medical thinking about both the embryologic development of the genital tract and the mechanism of carcinogenesis.

DES was developed in 1938 and used widely, including as a supplement to cattle feed in the 1960s and in humans for symptom relief from estrogen-deficiency states, postpartum lactation suppression, and treatment of prostate and breast cancer. Despite some evidence to the contrary, a 1948 study suggested that

DES taken in early pregnancy prevented miscarriage.<sup>1</sup> Over the subsequent two decades, and despite mounting evidence of lack of efficacy, DES was commonly prescribed for that purpose. Ultimately, however, it was acknowledged to be ineffective in the prevention of miscarriage. The exact number of offspring exposed to DES in utero is unknown but is thought to be several million.

The Registry for Research on Hormonal Transplacental Carcinogenesis had collected information