

Opportunities to Address the Hepatitis C Epidemic in the Correctional Setting

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An estimated 15%–40% of incarcerated persons in the United States are infected with hepatitis C virus (HCV). Approximately 1.4 million HCV-infected persons pass through the corrections system annually, accounting for one-third of the total number of HCV-infected persons in the United States. This high prevalence of HCV infection is due to the substantial increase in drug-related arrests over the past 2 decades. Although the hepatitis C epidemic in the corrections system may be viewed as a burden on correctional health systems, it is an important public health opportunity and an obligation. Research on the implementation of cost-effective HCV screening, prevention, and treatment programs among incarcerated persons is essential. Testing, education, and, when appropriate, treatment of prisoners should be a cornerstone of the public health response to the hepatitis C epidemic in the United States.

EPIDEMIOLOGY OF INCARCERATION

The incarcerated population in the United States has increased dramatically over the past 2 decades, from 313 prison and jail inmates/100,000 persons in 1985 to 615 inmates/100,000 persons in 1996 to 702 inmates/100,000 persons in 2002, the most recent year for which data are available (figure 1) [1, 2]. With >2 million persons incarcerated, the United States now leads the world in percentage of total population behind bars [3]. This has been fueled in large part by the so-called “war on drugs”—an increase in drug-related arrests coupled with strict mandatory sentencing requirements [4]. Over the past 20 years, the number of people incarcerated for drug-related offenses has increased from 40,000 to 450,000 [1]. Consistent with the nature of the offenses for which they were arrested, the incarcerated population has a high rate of reported drug use. Eighty-three percent of state inmates and 73% of federal inmates report past drug use, and 20% of state inmates and 13% of federal inmates report a history of injection drug use [5].

Given that the leading risk factor for acquiring hepatitis C virus (HCV) infection is injection drug use, it is not surprising that the prevalence of HCV in the incarcerated population is high. However, recent estimates of the magnitude of the HCV epidemic in prisons are staggering. Studies in several state correctional systems have documented prevalences of HCV infection of 29%–42%, and nationally it is estimated that between 15% and 30% of all prisoners may be HCV positive [6]. These rates indicate that the prevalence of HCV among prisoners is 8–20 times higher than that of the general US population [7]. The greater participation of incarcerated women in drug-related high-risk behaviors suggests that the prevalence among female inmates may be even higher [8]. Additionally, an important subset of HCV-infected persons is those who are coinfecting with HIV. Each year, ~100,000 persons coinfecting with HIV and HCV are released from the corrections system, which is ~50% of all coinfecting people in the United States [9–11]. Hepatitis C is now a leading cause of illness and death in some correctional facilities [12].

The large number of people infected with HCV in the corrections setting is compelling for its implications not only for health care within the corrections setting but also for public health in the United States. Critical to understanding the public health dimension of the hepatitis C epidemic is the high rate of turnover in the

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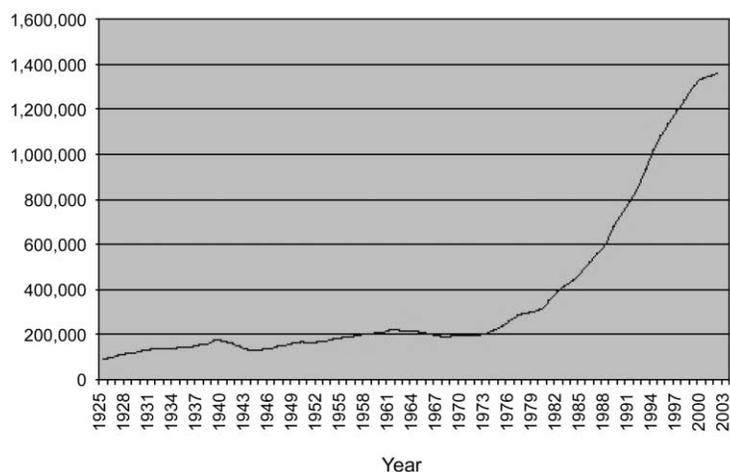


Figure 1. Growth in population of state and federal prisoners, 1925–2002. Data were compiled by the Sentencing Project (Washington, DC). Available at: http://www.sentencingproject.org/issues_01.cfm#chart.

incarcerated population each year. In 2000, there were >10 million releases from jail, representing an estimated 8 million persons [8]. This flow of people through the system translates into an 800% annual rate of turnover in the jail population and a 50% rate of turnover in the prison population [7].

Viewed from a public health perspective, this incredible movement of people through the nation's prisons and jails provides an opportunity and an obligation to reach millions of persons at high risk of HCV infection who are traditionally outside the reach of the mainstream public health and medical systems [13]. It is estimated that 1.4 million HCV-infected persons are released from incarceration every year, representing about one-third of all infected people in the United States [8]. Appropriately identifying incarcerated persons as a group at high risk of acquiring HCV infection carries with it an obligation to act to decrease morbidity and mortality from chronic infection. Doing so would likely have an enormous effect on the HCV epidemic, because at least 50% of people infected with HCV in the United States have not been identified [8] and are therefore unaware of the critical importance of modifying their health-related risk behaviors to decrease morbidity from the infection (e.g., by cessation of alcohol use and/or by undergoing treatment) and to decrease transmission to others. By targeting diagnosis, prevention, and treatment interventions for hepatitis C in the correctional health system, there is great potential to effect significant benefit to millions of persons and to influence the HCV epidemic nationally.

ADDRESSING HEPATITIS C IN THE SETTING OF INCARCERATION

Obstacles. Although the Centers for Disease Control and Prevention (CDC) lists correctional facilities among the sites where hepatitis screening and interventions should take place [12],

corrections and public health officials have been slow to institute screening and treatment programs for hepatitis C in prisons, and only a small number of inmates are currently treated [14]. There are several possible explanations for the reluctance to institute such programs.

First, identification of HCV-infected persons by use of a successful screening program would require the provision of expensive treatment if clinically indicated and if there is an adequately long duration of sentence. Recent estimates of the cost of a course of treatment range from \$7000 to \$20,000/patient [15], but cost-benefit analysis has demonstrated that treatment of hepatitis C in the community meets the same standard of cost-effectiveness as many routinely provided treatments [16]. However, as described above, incarcerated persons have a much higher burden of disease than the general public. In a setting where resources for health services may be limited, chronic hepatitis, which is often clinically silent for decades after infection, may not receive top priority. Although the financial implications of instituting treatment of hepatitis C in correctional health systems are significant, they should not represent an insurmountable obstacle. In our experience, a well-developed systematic evaluation and treatment program costs <5% of the total correctional health care services budget (in a state facility with disease prevalence of ~25%) [11, 17].

In addition to financial concerns, the logistics of incarceration pose unique challenges to the establishment of screening and treatment programs. The variable length of inmates' sentences, high turnover, and frequent transfer of prisoners within and between facilities may cause difficulties in access to subspecialty evaluation and initiating and completing the complicated antiviral therapy for HCV infection.

Feasibility. Despite these challenges, our own experience of treating incarcerated persons in Rhode Island has demon-

strated that administering therapy for hepatitis C is feasible and effective [11]. Of 93 prisoners initially identified for treatment, only 3 were excluded because of unstable mental illness. Ninety-nine percent of the patients reported a history of substance abuse, and 76% reported a history of injection drug use. There is often concern with regard to adverse psychological effects of antiviral therapy for HCV infection, but none of the patients discontinued treatment because of psychiatric issues, and there were no reports of suicidal ideation or attempts during treatment. Six months after the initiation of treatment, 63% of the patients exhibited virological response, and 43% exhibited sustained virological response for 6 months after the completion of treatment. Not only do these results demonstrate that treatment for hepatitis C in the setting of incarceration is effective, but the low incidence of contraindicating adverse psychological effects suggests that this setting may actually provide an ideal safe environment for the treatment of mentally ill persons with chronic HCV infection.

Development of guidelines. The American Public Health Association and the CDC both have guidelines that support a combination of screening, education, counseling, referral for substance abuse counseling, and medical treatment for inmates with chronic HCV infection [12, 18]. Many state and federal correctional systems are in the process of adapting and developing treatment protocols for hepatitis C to address the challenges of their specific systems [14]. Among the policies that have been developed are a minimum duration of incarceration to be eligible for treatment [19] and protocols for the evaluation and treatment of uncomplicated HCV infection by general internists [14].

Testing and prevention programs must be included hand in hand with treatment for chronic hepatitis C. Screening persons who are at high risk of acquiring HCV infection is a critical first step in a comprehensive response, because many persons are unaware of their infection. Whether mandatory, routine, or risk-based screening programs are most effective will require further investigation; however, all HIV-infected inmates should be offered screening for antibodies to hepatitis viruses.

In addition, education about behaviors to reduce the acquisition or transmission of HCV infection is a central component of hepatitis C prevention efforts. Critical elements in the education message include explanation of the risks of sharing needles and options for harm reduction (e.g., needle exchange programs or other ways of acquiring sterile syringes, such as through syringe prescription) [20]. In addition, programs should address the specific needs of inmates to include discussion of safer-sex techniques and strategies to negotiate sexual decision making. The impact of continued substance abuse should be made clear, specifically that alcohol abuse accelerates progression of the disease [21]. Finally, inmates should

be made aware of treatment options for hepatitis C, even if they are not candidates for treatment while incarcerated [5].

Additional management considerations for inmates who are infected with HCV include providing referral for vaccination and for treatment for substance abuse. All persons with chronic liver disease should be immunized against hepatitis A virus, and persons with chronic HCV infection who are at risk of acquiring hepatitis B virus (HBV) infection should also be immunized against HBV. Vaccination may reduce the risk the risk of fulminant liver failure and the need for liver transplantation for HCV-infected patients. When a vaccine for HCV becomes available, the setting of incarceration will provide an opportunity for widespread implementation of vaccination against the virus, as is advocated for HBV [6].

Delivery of services. Despite the associated challenges, correctional systems across the country are accelerating the development of programs of treatment for hepatitis C, not only in an effort to improve inmate and public health but perhaps also as a result of pending legal actions. The ability of lawsuits to improve clinical care through the courts was substantially diminished by the Prison Litigation Reform Act of 1995; nevertheless, class-action lawsuits have been filed in several states—Montana (2001), New Jersey (2002), Michigan (2002), Maine (2003), and Oregon (2003)—on the basis of the 1976 Supreme Court ruling in *Estelle vs. Gamble* that “deliberate indifference” to inmate health needs constitutes cruel and unusual punishment, which is prohibited by the 8th amendment to the US Constitution [22]. Such legal actions are likely to act as catalysts for the institution of treatment for hepatitis C among inmates. Alabama is an example: In November 2003, the Alabama Department of Corrections announced that its contract with Prison Health Services now includes treatment and prevention of HCV and education about it [23]. Although consensus is emerging slowly, it is becoming widely accepted that access to antiviral therapy for inmates cannot be categorically denied, and guidelines allowing reasonable access to care are becoming the norm [24].

Lessons from HIV/AIDS. Much can be learned from successful HIV/AIDS treatment programs that have already been established in correctional settings, and efficiencies may be achieved by coupling efforts toward hepatitis C with existing testing, prevention, and treatment programs for HIV. In addition, experience with HIV-infected ex-offenders has shown that providing continuity of care after release serves both individual health and public safety purposes [25].

Linkage to medical care has been associated with improved access to health services, as well as reduced recidivism [19, 26], and other studies have demonstrated that continuity of care helps the ex-offender work toward rehabilitative goals and readjustment to the community [27]. The process of preparing an inmate for treatment for hepatitis C requires sobriety, treat-

ment for substance abuse, and/or stabilizing mental illness. Thus, it is possible that positive effects on recidivism and addiction will accrue to those inmates who become motivated to address their HCV infection.

As with any disease, there are unique issues relating to screening, counseling, and treating patients with HCV infection. Although HIV/AIDS health services in prisons may provide a framework for initiating programs for HCV, research will be necessary to assess the success of health services for HCV, the validity of interventions, and the cost-effectiveness of novel therapies and vaccine candidates as they become available [28].

ADDRESSING THE CHALLENGE THROUGH RESEARCH

Addressing the health issues of the incarcerated population is best approached by engaging in well-designed investigations of interventions. Currently, there is a dearth of research on hepatitis C in the incarcerated population.

Over the past 2 decades, research conducted on the prison population has been extremely limited in an effort to protect vulnerable populations. The primary concern surrounding the participation of prisoners in research is whether prisoners can exercise autonomy given the inherently coercive nature of incarceration. The Department of Health and Human Services has limited research on prisoners to the following categories [29]: minimal risk studies of the causes, effects, and processes of incarceration; minimal risk studies of prisons as institutional structures or of prisoners as incarcerated persons; research on conditions affecting prisoners as a class; and research that holds a reasonable probability of improving the health or well-being of the subject.

Thus, the restrictions do specify that research on conditions particularly affecting prisoners as a class, such as hepatitis and HIV, is permissible. Why, then, is there not more research on hepatitis C in prisons? Part of the answer may lie in the numerous institutional, cultural, legislative, and regulatory barriers to conducting research in prisons. For example, more than half of the states have legislation or regulations restricting research with prisoners [28], and some states entirely prohibit research with prisoners. Inmates in the Federal Bureau of Prisons are generally prohibited from participating in biomedical research and drug testing [28]. Furthermore, the institutional review board approval process for research in prisons can be prohibitively arduous [30]. The patchwork nature of regulations, as well as an ethical backlash against a time when prisoners were used as populations of convenience, contributes to the current paucity of research in prisons [31].

These disparate regulations exist to protect prisoners from coercion and violations of their autonomy. Recently, researchers at the University of Iowa investigated the ability of prisoners to provide informed consent without coercion [32]. They stud-

ied a group of particularly vulnerable inmates—those with diagnosed mental illness—and found that, with careful explanation of the study protocol, mentally ill inmates were capable of providing informed consent. Furthermore, they reported that the reasons inmates cited for agreeing to participate in the research study—such as wanting to avoid boredom, interest in meeting new people, or desire to appear helpful—did not rise to the investigators' definition of coercion.

This is an important contribution to the debate of whether research on prisoners is ethical. More discussion is needed with regard to when excluding prisoners as research subjects is protection and when it is simply exclusion and isolation. There are categories of issues affecting the delivery of health care in correctional settings that can be evaluated only in correctional settings. In addition, there are areas in which there would be minimal or no risk posed by collecting, analyzing, and disseminating data with regard to the delivery of health care in prisons, such as well-designed knowledge, attitudes, and belief surveys or analysis of costs associated with various interventions and approaches. Finally, from a quality assurance perspective, it should be recognized that the collection and internal analysis of retrospective experience is already occurring. Prohibitions about the use of inmates as subjects of research have stifled the correctional health community from sharing and discussing their experiences, often slowing the improvement of care for the patients. Physicians and researchers must persevere in efforts to decrease barriers to appropriate research about conditions that disproportionately affect prisoners as a class and demonstrate that this research is necessary and, when appropriately conducted, ethical, because it stands to benefit a particularly underserved group of people.

CONCLUSION

The high proportion of hepatitis C in the prison population is largely driven by the significant increase in the number of persons who are incarcerated for drug-related offenses, because injection drug use is the leading risk factor for hepatitis C. The high turnover of people in the corrections system each year creates a flow of high-risk persons who may have access to health care only when incarcerated.

The vast majority of all persons who are incarcerated each year return to their communities. If their infection is undiagnosed, these persons may continue to practice high-risk behaviors and either acquire a new infection or transmit an existing infectious disease to others. Additionally, they may worsen their health status by continuing to engage in substance abuse and/or by avoiding or being unable to obtain medical care. This scenario both worsens the health status for individuals and leads to increased morbidity and ultimate expense for the US health-care system.

Corrections systems face a number of obstacles as they at-

tempt to address the hepatitis C epidemic within their institutions. However, treatment of hepatitis C in the corrections setting is possible. As guidelines for addressing hepatitis C in prisons are developed, initiatives should include testing, education, treatment, and prevention services, including vaccination when indicated.

Concerns about the cost of treating hepatitis C in prisons are best resolved by formulating rational guidelines and generating evidence about use of resources. In the effort to generate guidelines for services for hepatitis C, much can be learned from the successful implementation of HIV/AIDS health services in correctional health-care systems. In many cases, it may be appropriate and cost-effective to add HCV diagnosis and prevention programs onto existing HIV diagnosis and prevention programs, because the primary risk factor for both infections is injection drug use in this population.

Despite the financial and logistic challenges of engaging in testing, prevention, and treatment of hepatitis C in correctional health care systems, the magnitude of the epidemic behind prison walls requires creative and resourceful action. This will best be achieved by collaboration between public health officials and the corrections system. Stakeholders such as state and federal lawmakers will need to be involved, and granting agencies should support research to generate evidence on which to base future interventions.

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