

## Virtual Mentor

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### CLINICAL PEARL

#### Diagnosis and Treatment of Chronic Hepatitis C in Incarcerated Patients

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The prevalence of chronic hepatitis C infection among prison inmates in the United States is between 12 and 35 percent, compared to about 1.3 percent in the nonincarcerated population [1]. The prevalence of end-stage liver disease, likely reflecting the elevated rates of hepatitis C virus infection, is estimated to be three times higher in prison than in the general population [2]. These high rates of disease raise complex questions about the diagnosis and treatment of hepatitis C in incarcerated patients. In a 2003 meeting funded by the Centers for Disease Control (CDC) and National Institutes of Health (NIH), hepatitis C experts failed to reach consensus on optimal approaches to prevention, identification, and treatment of the disease among prisoners [3]. Nevertheless, recognizing several facts about hepatitis C provides a foundation for treatment of incarcerated patients (see table 1).

Table 1. Hepatitis C facts and figures

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| <ul style="list-style-type: none"><li>• Screening identifies patients who need further medical evaluation.</li><li>• Evaluation requires advanced tests, including liver biopsy in most cases.</li><li>• Treatment is virtually never urgent; most individuals can put off treatment for several years without detrimental consequences.</li><li>• It usually takes decades for cirrhosis to develop in an individual with chronic hepatitis C.</li></ul> | <ul style="list-style-type: none"><li>• Mortality from complications of liver disease is low in individuals with hepatitis C, and most will never develop cirrhosis or end-stage liver disease.</li><li>• Current treatment is effective only about 50 percent of the time.</li><li>• Treatment is expensive, associated with myriad adverse events, and requires regular injections and monitoring.</li></ul> |
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### Screening

Screening for serum antibodies against hepatitis C virus using ELISA (Enzyme-Linked ImmunoSorbent Assay) is straightforward and relatively inexpensive. These are the same assays used to screen the blood supply, and they have high sensitivity and specificity rates. Given the prevalence of hepatitis C in incarcerated individuals, the CDC recommends that all inmates be screened at the time of incarceration, but, if that is not possible, it recommends that those with high risk factors, such as intravenous drug use, be tested [1]. Most prison systems, however, do not offer routine screening [3]. Moreover, when offered screening after receiving health

education on hepatitis C, only 8.5 percent of prisoners in one study accepted testing for the infection [4].

### **Further Diagnostic Evaluation**

Further evaluation is necessary in those with serum antibodies against the hepatitis C virus present in their blood. A reverse-transcription-polymerase chain reaction assay to detect viral nucleic acid in serum is generally performed and increases the specificity of diagnosis to essentially 100 percent. Concurrent testing for viral genotype is usually carried out during this period. While the need for liver biopsy in all patients with chronic hepatitis C is debatable, it is generally recommended to assess the grade of inflammation and stage of fibrosis [5, 6]. Molecular diagnostic tests and liver biopsy would place a significant financial burden on prison systems if provided to all incarcerated patients with chronic hepatitis C. These types of evaluations also require the services of medical subspecialists, such as hepatologists and pathologists experienced in liver biopsy interpretation, who are not likely to be part of a system's routine medical staff.

### **Treatment**

Treatment of chronic hepatitis C is virtually never urgent (one rare exception is the presence of cryoglobulinemia with renal insufficiency). Progression of fibrosis is slow, and it generally takes decades for cirrhosis to develop [7, 8]. Restriction of heavy alcohol use in prisons and jails may slow overall progression rates [7]. Mortality from complications of liver disease is low in individuals with chronic hepatitis C, and most will never develop cirrhosis [9]. Hence, the vast majority of infected individuals can wait a few years to start treatment without detrimental consequences.

The current standard therapy for chronic hepatitis C is peginterferon plus ribavirin, which yields a sustained virological response rate defined as undetectable viral nucleic acid in serum 6 months and longer after stopping treatment in approximately 50 percent of treated patients [10]. Treatment responses are lower for patients infected with genotype 1 isolates—the majority in the United States—but better for those with genotype 2 or 3. Treatment is also longer (48 weeks) for genotype 1 than genotypes 2 and 3 (24 weeks). Peginterferon is administered by injection once a week and ribavirin is taken orally twice a day. Peginterferon is expensive and, along with ribavirin, is associated with many adverse events that require relatively frequent blood tests and monitoring by a physician or nurse. Patients with psychiatric disorders, which are not uncommon in the incarcerated population, have increased neuropsychiatric side effects. Further, many incarcerated patients with chronic hepatitis C are co-infected with HIV or the hepatitis B virus, making treatment more complicated. Several new antiviral agents currently in clinical trials will probably be indicated for use along with peginterferon with or without ribavirin [10].

When a patient with chronic hepatitis C develops cirrhosis, treatment is aimed at ameliorating the complications. Ultimately, the only treatment for individuals with end-stage liver disease is transplantation. Costs associated with organ

transplantation, lifelong immunosuppressive therapy, and medical follow-up would decimate the health care budgets of most prison systems [2]. There are also ethical reservations about providing incarcerated individuals with scarce cadaveric organs. Why offer a transplant to a convicted murderer but not an active alcohol abuser? Why transplant a liver into a criminal instead of giving that organ to a child with an inherited liver disease? These complex ethical questions must be resolved by government and society.

### **Concluding Considerations**

Routine screening of incarcerated individuals for hepatitis C virus infection will produce many newly diagnosed patients. Most state prisoners serve an average of 30 months [3], and, given the natural history of chronic hepatitis C, the majority of inmates can probably wait until release from state correctional systems for further evaluation and possible treatment without deleterious consequences. One potential drawback to this plan is that many of these individuals do not have health insurance or ready access to medical care after their release from prison. Another concern is that the small minority of patients with advanced fibrosis and severe inflammation (“early” cirrhosis) may progress to cirrhosis with clinical complications if treatment is delayed a few years.

The moral and ethical questions are much more challenging in the case of long-term or lifelong prison patients with chronic hepatitis C. Society must realize that appropriate evaluation and treatment, including the participation of subspecialty physicians, will be tremendously expensive. No data on cost effectiveness, including figures for decreasing the need for liver transplantation if early medical treatment is initiated in prisons, are available.

Finally, prisons and jails provide a setting to educate high-risk individuals about hepatitis C and other infectious diseases, such as hepatitis B and AIDS, that are prevalent in incarcerated patients. Interventions aimed at curbing drug addiction are also critical in a significant percentage of the incarcerated population.

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### Relevant Web Sites

CDC Infectious Diseases: Hepatitis.

[http://www.cdc.gov/correctionalhealth/ID\\_Hepatitis.htm#C](http://www.cdc.gov/correctionalhealth/ID_Hepatitis.htm#C). Accessed January 9, 2008.

The National Hepatitis C Prison Coalition (Includes Federal Bureau of Prisons and State-by-State Practice Guidelines). <http://www.hcvinprison.org/>. Accessed December 18, 2007.

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