

## High Prevalence of Chronic Hepatitis B Infection among Injection Drug Users in Iran: The Need to Increase Vaccination of Adults at Risk

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**Abstract-** We measured the prevalence of HBV surface antigen (HBsAg) among male injection drug users (IDUs) in Detention, Tehran, Iran. A cross-sectional survey included 499 male IDUs arrested by police during a predetermined police sweep in Tehran (February, 2006). A questionnaire was filled out for each individual. Blood specimens were collected for HBsAg testing. Prevalence of HBsAg was 5.8% (95% CI 3.6-7.9). The majority of chronic HBV infections, 69.2%, were among adults age 25 to 34 years. The high prevalence of HBsAg highlights the need for special efforts to increase vaccination among adult populations at risk for HBV infection in order to reducing continuing transmission and stave off future high burden of disease.

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**Key words:** Prevalence; hepatitis B surface antigen; drug users; vaccination

### Introduction

Hepatitis B virus (HBV) is transmitted through parenteral and sexual exposures and causes serious acute and chronic infection of the liver. Chronic infection, marked by long-term detection of hepatitis B surface antigen (HBsAg) in the blood, can lead to the severe complications of hepatocellular carcinoma and liver failure requiring transplantation in a substantial proportion of cases. HBV continues to infect many people worldwide, particularly in developing countries of Asia despite the availability of a safe and effective vaccine for nearly three decades (1, 2). After a period of attempting to vaccinate adults at high risk for infection as a strategy for control, most countries adopted World Health Organization guidelines of including HBV vaccination into routine infant vaccination schedules by the early 1990s (3-6).

The persistence of the virus to this date is due to the very long chronic infectious stage, incomplete vaccina-

tion coverage of infants in many endemic areas, and continuing transmission to adults susceptible and at risk. Iran implemented universal infant vaccination for HBV in 1993. Recognizing the large number of teenagers that would remain susceptible to this day, in a nation that is very young, special vaccination campaigns have been mounted in recent years (7, 8). Vaccination drives have focused on the birth cohorts immediately preceding 1993; that is, persons born in 1992-1990 in order to target youth age 14 to 17 years. The programs appear to be having some success. Prior to 1993, the estimated prevalence of chronic infection in the general population of Iran was 3%. Today, the prevalence is estimated to be substantially lower at 1.5% to 2.0% (7-10). However, high prevalence of HBV may exist in somewhat older populations traditionally at higher risk for infection, particularly injection drug users (IDU). Meanwhile, Iran has one of the highest per capital numbers of opioid users in the world, with a substantial and potentially growing proportion of IDU (11, 12). The situation may call

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for revisiting a policy of targeting adults in high risk populations, IDU in particular. We recently had the opportunity to measure the level of chronic HBV infection in a population of male IDU.

## Patients and Methods

Methods of the survey have been described previously (13). In brief, participants were male IDU detained by police during a "sweep" in Tehran, Iran in 2006, who agreed to participate in an HIV seroprevalence survey. Upon intake at the mandatory detoxification center, we offered serological screening for infectious diseases, including testing for HBsAg (DiaSorin, Spain), and a brief questionnaire on parenteral and sexual exposures. Of 499 inmates approached, 452 (90.6%) consented to participate and provided a specimen. Records were kept separate from the jail system and referrals for treatment and care were given through the university medical center. The study was approved by the Ethics Committee of the Tehran University Medical School.

## Results

Overall, the prevalence of HBsAg was 5.8% (95% CI 3.6-7.9). The majority of chronic HBV infections, 69.2%, were among adults age 25 to 34 years. No one under the age of 25 years tested positive for HBsAg. Diverse parenteral exposures were reported inside and outside of jails, including tattooing (27.7%), ever sharing injection equipment (27.2%), cuts with sharp implements while in jail (24.6%), and sharing injection equipment in jail (6.2%). More than one-third (37.6%) started injecting drugs before the age of 25 years. More than three-fourths (76.8%) were sexually active and 5.8% reported male-male sex while in jail.

## Discussion

Our survey documents a high prevalence of chronic HBV infection among adult IDU in detention in Iran, nearly three times as high as estimated for the country as a whole (7). Given that entire study population was born before the 1993 policy of newborn vaccination, and given the high reported levels of continuing exposures, our survey also points to the high potential for further transmission of HBV to susceptible adults. In the context of a growing IDU population in Iran (11, 12), this level of HBV infection will translate into many severe complications in the near future – a tragedy given the disease is preventable. While it is encouraging that no youth (i.e., those under 25 years) in our study were in-

fectured, many among them are presumably still susceptible being born in 1989 at the latest. Moreover, the recent attempts to increase vaccination coverage of teenagers age 14 to 17 after 2007 will also miss this group. Special efforts will be needed to reach adult IDU to increase vaccination coverage. Incorporation of routine HBV screening, vaccination, and, in the long-term treatment, into the jail health system, detoxification clinics, and harm reduction programs are important steps in reducing further transmission and the future burden of this disease.

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