# Immunity to HAV and/or HBV Among Inmates Living with HIV

**Nivedha Poondi, PharmD Candidate[1]; Jysheng Hou, PharmD Candidate[1]; Sarah Michienzi, PharmD[1]; Mahesh Patel, MD[2]; Melissa Badowski PharmD, MPH[1]**

1. University of Illinois at Chicago, College of Pharmacy, Department of Pharmacy Practice, Chicago, IL, 2. University of Illinois at Chicago, Department of Medicine-Section of Infectious Diseases, Chicago, IL

## BACKGROUND

- Hepatitis A (HAV) and B viruses (HBV) are vaccine-preventable diseases.
- Incarcerated patients have greater risk factors for acquiring both HAV and HBV, such as intravenous drug use, high risk sexual activity, and tattoos.[1]
- The prevalence of HBV is **five times greater** in those who are incarcerated than in the general population, and there are no guidelines mandating routine HBV vaccinations for inmates.[2,3]
- Recent studies have shown that providing vaccinations is a more effective and less costly approach to decrease the burden of these diseases.[4]
- Screening upon entry to prison provides an ideal public health opportunity to assess vaccination status and administer vaccination while incarcerated.

## RESEARCH DESIGN AND METHODS

- Retrospective, electronic medical record review of incarcerated adults receiving human immunodeficiency virus (HIV) telemedicine care in 26 prisons in Illinois, USA, between January 1, 2019 through December 31, 2019.
- Statistical analysis included Chi-squared testing and descriptive statistics.

**Inclusion Criteria:**
- Adults ≥18 years of age
- Confirmed diagnosis of symptomatic or asymptomatic HIV/AIDS
- Incarcerated in the Illinois Department of Corrections (IDOC) during the retrospective study period
- Available data for HAV/HBV serologies, HIV-1 viral load, and CD4 count during incarceration

**Exclusion Criteria:**
- Age <18 years
- No documented HAV/HBV serologies, HIV-1 viral load, and CD4 count during incarceration

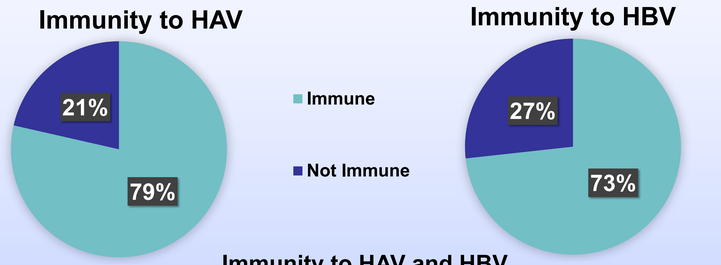
## ENDPOINTS

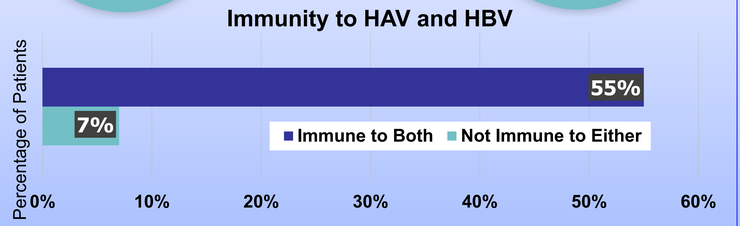
- **Primary Objective**: assess rates of HAV and/or HBV immunity in individuals living with HIV in IDOC.
- **Secondary Objective**: assess factors associated with vaccination status.

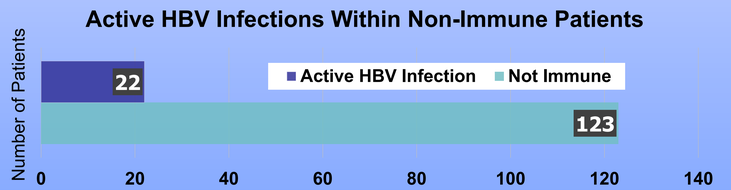
## BASELINE DEMOGRAPHICS

| Characteristic | Category | Number of Patients |
|---|---|---|
| Age | 18-50 | 348 (67.1%) |
| | 51-100 | 171 (32.9%) |
| Sex | Male | 480 (92.5%) |
| | Female | 39 (7.5%) |
| Race | Black | 392 (75.5%) |
| | White | 72 (13.9%) |
| | Latino | 29 (5.6%) |
| | Other | 26 (5.0%) |
| CD4 Count | ≤200 cells/mm$^3$ | 26 (5.0%) |
| | >200 cells/mm$^3$ | 493 (95%) |
| CD4% | 0-25% | 153 (29.5%) |
| | 26-50% | 350 (67.4%) |
| | 51-75% | 16 (3.1%) |
| Viral Load | Detectable (>20 copies/mL) | 78 (15%) |
| | Undetectable (≤20 copies/mL) | 441 (85%) |

## RESULTS




- Among the 524 patients analyzed, the majority were Black men (75%) with an average age of 44 years.
- 397 patients had existing data for HBV vaccination, where 5% had HBV infection, 1.4% had an equivocal HBV surface antibody and negative HBV surface antigen, and 70% had documented immunity.
- In patients who had a detectable HIV-1 viral load, 16 were not immune to HAV, 17 were not immune to HBV, and 3 were not immune to both HAV and HBV.
- In patients who had a CD4 count of >200 cells/mm$^3$, 88 were not immune to HAV, 117 were not immune to HBV, and 26 were not immune to both HAV and HBV.
- **Immunity did not vary based on CD4 count, age, gender, or race (p > 0.05).**

## CONCLUSIONS

- Providing HAV and HBV vaccinations to the incarcerated can increase immunity and reduce transmission within this vulnerable population.
- This is of particular importance for patients living with HIV as this is an indication for vaccination.
- Based on these findings, the telemedicine study team has been able to assess serologies and advocate for vaccination for inmates living with HIV entering the IDOC.
- Over time, we expect our interventions to result in further improvements in rates of immunity.

## REFERENCES

1. Hunt DR, Saab S. Viral hepatitis in incarcerated adults. Am J Gastroenter. 2009;104(4):1024-1031.
2. Gupta S, Altice FL. Hepatitis B virus infection in US correctional facilities: A review of diagnosis, management, and public health implications. J Urban Health. 2009;86(2):263-279.
3. Charuvastra A, Stein J, Schwartzapfel B, Spaulding A, Horowitz E, Macalino G, Rich JD. Hepatitis B vaccination practices in state and federal prisons. Public Health Rep. 2001;116(3):203-209.
4. Chahal HS, Peters MG, Harris AM, McCabe D, Volberding P, Kahn JG. Cost-effectiveness of hepatitis B virus infection screening and treatment or vaccination in 6 high-risk populations in the United States. Open Forum Infect Dis. 2018;6(1):ofy353.

## DISCLOSURES

The authors of this presentation have no disclosures concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.