A Clinical Care Cascade for Hepatitis B Virus Vaccination in a Current Era HIV Clinic

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BACKGROUND

- Hepatitis B virus (HBV) infections remain a global health issue with complications including liver cirrhosis and hepatocellular carcinoma. Individuals co-infected with Human Immunodeficiency Virus (HIV) and HBV have increased liver-related morbidity and mortality compared to those with HBV mono-infection.
- Vaccination is a potent intervention to prevent HBV infection, but certain critical populations including people living with HIV are less likely to achieve seroprotection after vaccination.
- Seroprotection (antibody to hepatitis B surface antigen [HBsAb] titer ≥10 IU/mL) was historically poor, with trial rates ranging from 34 to 88% and improving with immunologic reconstitution and viral suppression.
- We hypothesized that the seroprotection rates (SPR) in a clinic population of Veterans would reflect the improving immunologic status of the cohort.

METHODS

We reviewed the HBV serologies and vaccination records of Veterans with HIV engaged in care at the Baltimore Veterans Affairs Infectious Disease Clinic over the past 20 years.

Dates of the most recent vaccination and HBsAb titer were used to assess SPR and the ultimate seroprotection status of the cohort. Maximum viral load and CD4 count through one calendar year were used to assess immunologic status.

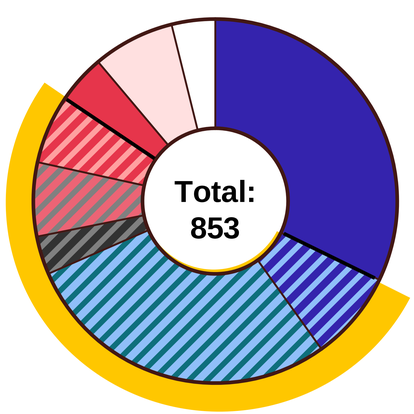
274 Vaccinated responder
68 Vaccinated responder, HBcAb+
242 Resolved, immune
29 Chronic Infection
56 Resolved, nonimmune
52 Vaccinated nonresponder, HBcAb+
37 Vaccinated nonresponder
62 Refused vaccination
33 No post-vaccination serology

Seroprotection rates after HBV vaccination have improved, but a minority of people living with HIV have persistent immunologic anergy to HBsAg

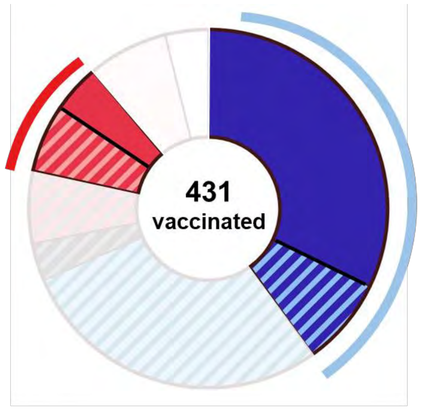
RESULTS

Overall, **79%** of the clinic shows **seroprotective HBsAb titers**. Of the patients who remain nonimmune **43**% (89 of 207) have been vaccinated without seroprotection.

Over half the clinic population is HBV core antibody positive.



Core Ab positive: 447 (52%)

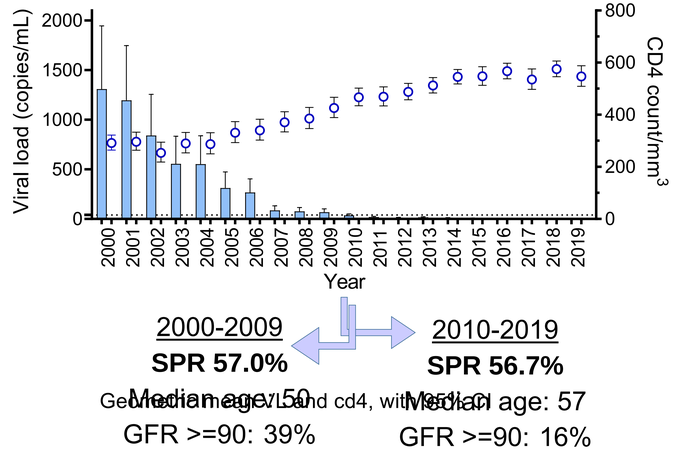


Vaccinated subset: 342 (43%) immune

RESULTS

The immunologic status of the cohort improved:

- Percentage of virally suppressed patients improved from 22.5% of 507 in 2000 to 50.7% of 554 in 2009 and to 86.6% of 261 in 2019.
- The geometric mean CD4 count improved from 292 /mm^3 (95% CI 229-297) in 2000, to 426 /mm^3 (95% CI 388-467) in 2009, and to 547 /mm^3 (95% CI 509-588) in 2019.



CONCLUSIONS

Despite the improved immunologic status of this cohort, the SPR from 2010 onwards showed no improvement compared to the prior decade: 56.7% compared to 57.0%. The apparently static response rates may reflect comorbid conditions, including aging of the cohort and declining renal function. Response rates in the second decade may further reflect intrinsic immunologic anergy seen in re-vaccination attempts of prior non-responders.

We anticipate revaccination with more immunogenic adjuvants will improve HBV seroprotection in this cohort of vaccine nonresponders.

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