Evaluating a high-dose vs. standard-dose hepatitis B vaccine series in patients living with HIV

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Background

- Patients living with HIV are at risk of failing to produce antibodies and build immunity after administration of a hepatitis B vaccine series[1]
- Compared to HIV alone, co-infection of HIV and hepatitis B increases the likelihood of developing cirrhosis and increases rates of liver-related mortality[1]
- CDC/ACIP recommends a high-dose 40mcg hepatitis B vaccine at 0, 1, 2, and 6 months in patients living with HIV in contrast to the standard-dose vaccine series[2]

Months	0	1	2	6
Standard-Dose Series	20mg	20mg		20mg
High-Dose Series	40mg	40mg	40mg	40mg

Purpose

- To determine the most efficacious hepatitis B vaccine series in immunocompromised patients living with HIV
- To determine efficacy of a mixed-dose vaccine series to understand the applicability of implementing high-doses in patients who have already begun a standard-dose series
- This study compares the development of immunity after administration of a 20mcg 3-dose (standard-dose) series or 40mcg 4-dose (high-dose) series

Methods

- Approved by Institutional Review Board
- Retrospective chart review
- Patients who received at least one dose of a hepatitis B vaccine between January 1, 2017 and April 4, 2019 were reviewed

Patient Criteria

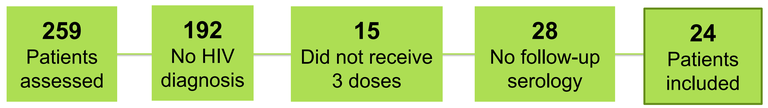
Inclusion
- HIV infection
- 20-100 years old
- At least 3 doses of a hepatitis B vaccine

Exclusion
- Completion of series prior to diagnosis of HIV infection
- No baseline serology
- No follow-up serology after completion of series
- Vaccines administered at less than the minimum interval requirements

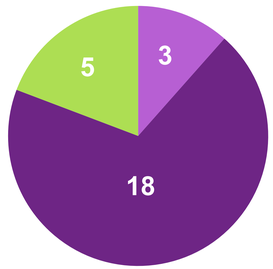
Primary Outcome

- Percentage of patients who developed immunity following completion of a series

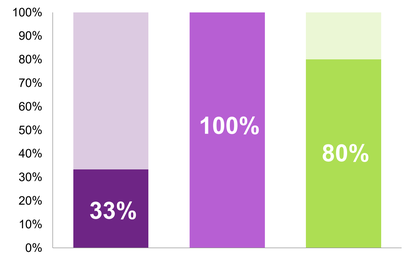
Results



Type of Vaccine Series



Patients Achieving Immunity



Standard Mixed High n = 26

Results, cont.

- 1 patient received both a standard-dose and high-dose series
- 1 patient received two standard-dose series

Lessons Learned

- Efficacy of high-dose shows promising outcomes
  - Aligns with CDC/ACIP recommendations
- Efficacy of mixed-dose vaccine series provides applicability to real-world practice
- Exclusion criteria identified follow-up opportunities
  - Complete vaccine series
  - Obtain post-series serology

Challenges/Limitations

- Limitation: sample size
  - Inability to statistically show significant difference between vaccine series
- Future opportunities:
  - Compare Engerix-B with Heplisav-B in patients living with HIV

References

1. Ni JD, Xiong YZ, Wang XJ, et al. Does increased hepatitis B vaccination dose lead to a better immune response in HIV-infected patients than standard dose vaccination: a meta-analysis? *Int J STD AIDS.* 2013 Feb;24(2):117-22.
2. Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Hamborsky J, Kroger A, Wolfe S, eds. 13th ed. Washington D.C. Public Health Foundation, 2015. Chapter 10, Hepatitis B; 149-174.