

# Protective antibody responses to vaccination for hepatitis B in a sexual health clinic, Sydney, Australia

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## Background

- People living with HIV (PLWH) have a reduced antibody response to hepatitis B vaccination.<sup>1-2</sup>
- At Clinic 16 Northern Sydney Sexual Health, PLWH receive a 3-dose vaccination schedule which has changed over time from 10µg to 20µg of Hepatitis B surface antigen (HBsAg) IM per dose, usually using H-B-Vax II.
- The Australian Immunisation Handbook currently suggests a schedule using 40µg of Engerix-B at 0-1-2-6 months.<sup>2</sup>
- Our aim was to determine responses to our schedule using H-B-Vax II.

## Methods

- A retrospective cross-sectional study of PLWH at our clinic was performed.
- Patients were included if they had at least one previous documented non-protective level (<10IU/L) of hepatitis B surface antibody (HBsAb).
- CD4 cell count at first vaccination, plus dosage, formulation, schedule type and administration dates of hepatitis B vaccination were recorded with follow-up HBsAb results.

## Results

- Between June 2000 and July 2015, 58 patients (including 16 with a past history of vaccination or infection) received at least one dose of vaccine and at least one HBsAb result
- 33 (57%) had a protective HBsAb response, although 8 (14%) required further vaccination due to lost HBsAb after the initial course.
- The most common schedule was 0-1-6 month dosing.
- Of the 42 patients with no prior history of vaccination, 31 received H-B-Vax II, 1 received Engerix-B 20µg, and in 10 patients the vaccine brand was not documented
- Of 13 who received a 20µg H-B-Vax II dose, 10 (77%) developed protective levels of HBsAb compared with 3 out of 18 (17%) receiving a 10µg H-B-Vax II dose (P<0.001).
- There was no significant difference in outcome by CD4 count.

Figure 1: Response to H-B-Vax II 20µg vaccination

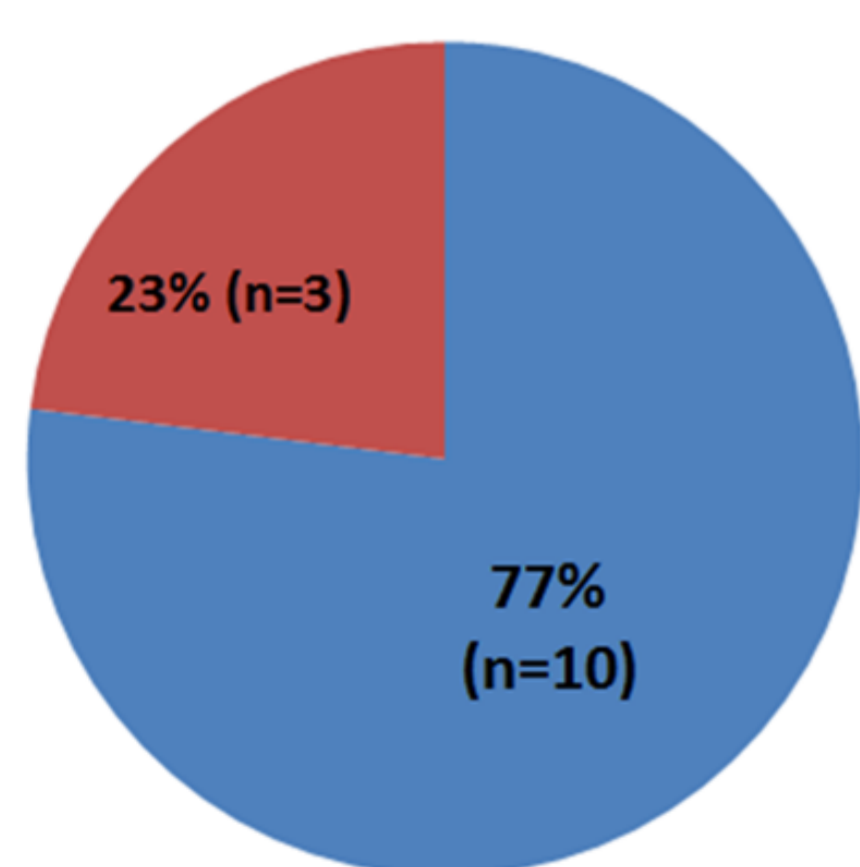
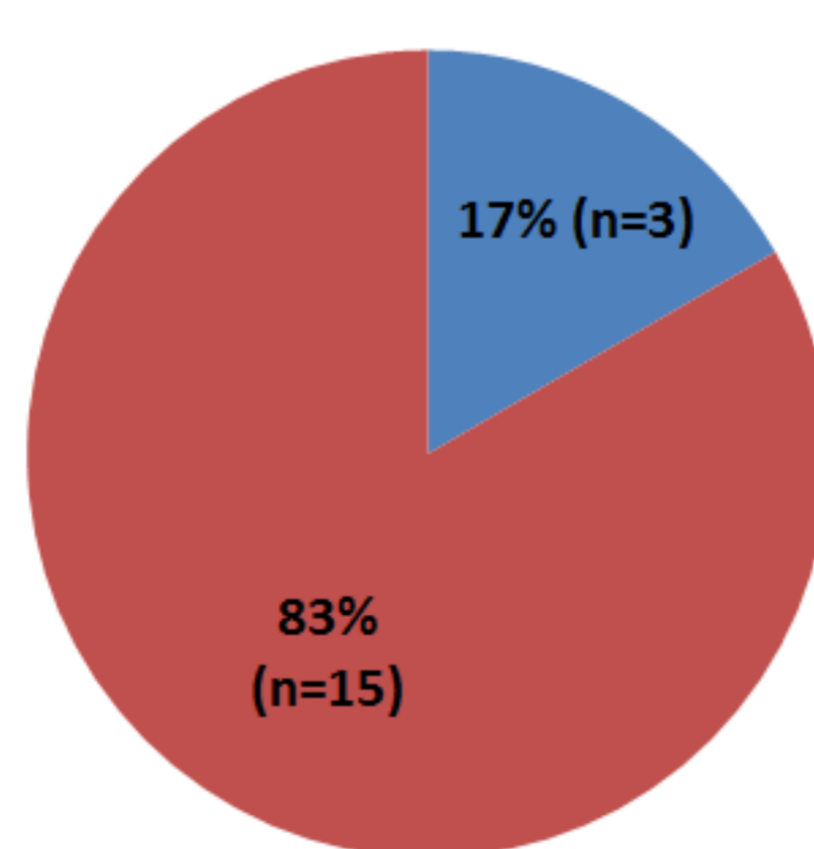


Figure 2: Response to H-B-Vax II 10µg vaccination



## Conclusions

- Protective responses to 10µg of H-B-Vax II were significantly lower than to the 20µg dose, which produced immunity in approximately three-quarters of those vaccinated.
- We suggest a 20µg and 40µg dose of H-B-Vax II, and a 40 µg dose of Engerix-B, be evaluated in a 4-dose schedule.

Table 1: Patient Demographics		
Variables	N	%
<b>Number of participants</b>	58	100
<b>Gender:</b>		
Male	48	83
Female	10	17
<b>Country of birth:</b>		
Australia	25	43
Other	19	33
Unknown	14	24
<b>Hepatitis B status at registration:</b>		
Natural immunity	2	3
Previous vaccination	12	21
Not vaccinated/immune/infected	44	76
Current hepatitis B infection	0	0
<b>CD4 count at 1<sup>st</sup> vaccination:</b>		
<50	2	3
51-100	1	2
101-200	6	10
201-350	13	22
351-500	16	28
>500	18	31
Unknown	2	3
<b>Viral load at 1<sup>st</sup> vaccination:</b>		
Undetectable	9	16
<100,000	39	67
≥100,000	7	12
Unknown	3	5
<b>Antiretroviral (ART) therapy at 1<sup>st</sup> vaccination:</b>		
Yes	26	45
No	31	53
Unknown	1	2

## References

- Whitaker JA, Roupheal NG, Edupuganti S, Lai L, Mulligan MJ. Strategies to increase responsiveness to hepatitis B vaccination in adults with HIV-1. The Lancet Infectious Diseases 2012 12;12(12):966-76.
- Department of Health. 3.3 Groups with special vaccination requirements. 2015. [cited 2016 Feb 16]. Available from: <http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home-handbook10part3-handbook10-3-3#3-3-3>