Immune response after rabies pre-exposure prophylaxis and a booster dose in Australian bat carers

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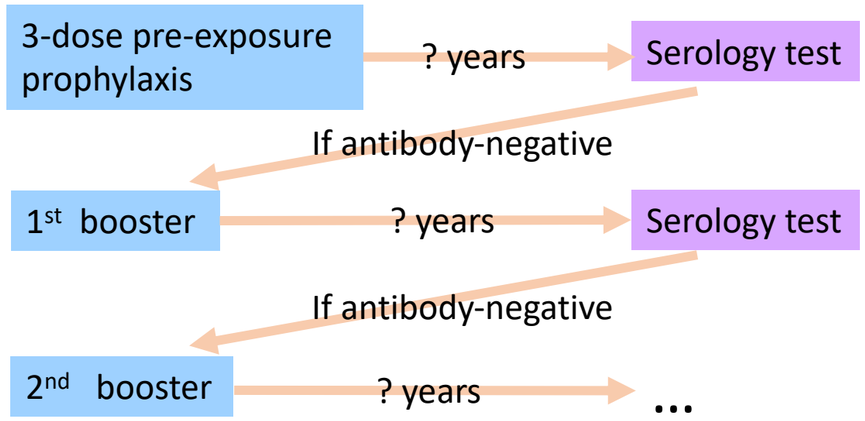
Introduction

- Rabies is an invariably fatal, but vaccine-preventable viral zoonosis in humans.[1] Although Australia is currently rabies-free, bat lyssavirus, which is closely related to rabies, has been widely identified Australian bats.[2]
- Periodic vaccination against rabies is essential for individuals at continuing risk of rabies exposure.
- There is limited evidence on long-term immunogenicity after a three-dose intramuscular (3IM) pre-exposure prophylaxis (PrEP) and single IM booster dose.
- This study investigated post-PrEP and post-booster persistence of antibodies in Australian bat carers in order to generate evidence for optimal PrEP and testing/booster intervals.



Methods

- Data from 305 bat carers who received 3IM PrEP/booster doses and had post-PrEP/booster serology test results were included and analysed.
- The proportion of **antibody-negative (<0.5 EU/mL)** individuals after PrEP/booster dose were examined.

Results

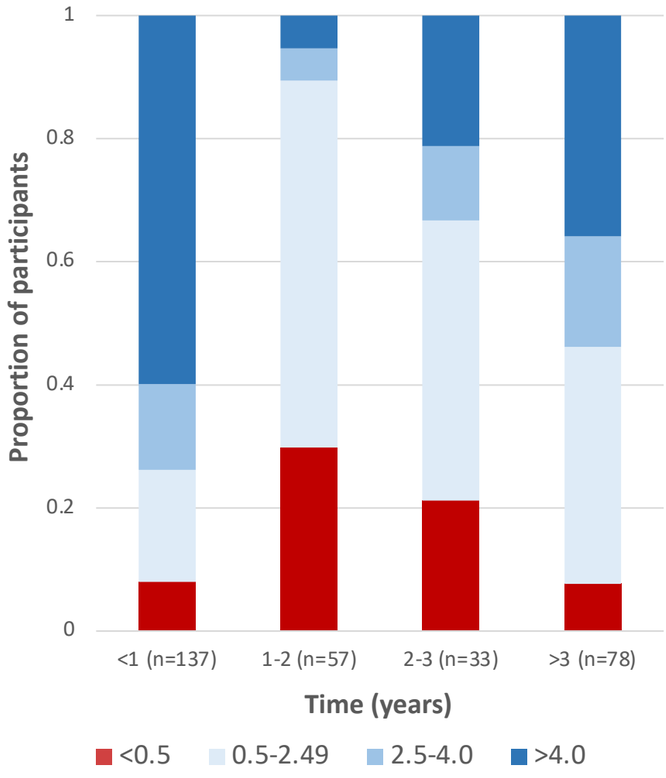


Figure 1. Antibody titre levels (EU/mL) stratified by time since 3IM PrEP in the sample of 305 Australian bat carers

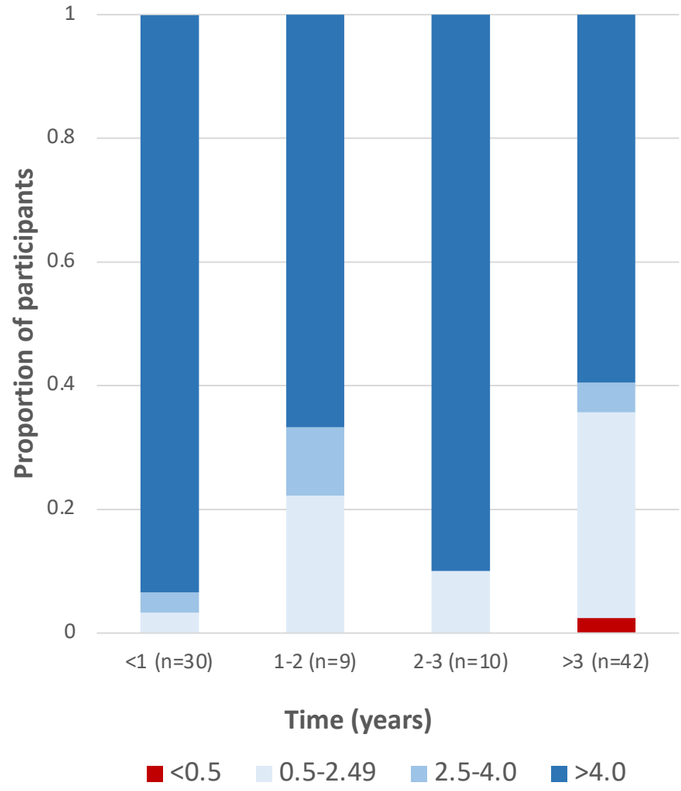


Figure 2. Antibody titre levels (EU/mL) stratified by time since the first booster dose in the sample of 91 Australian bat carers

Conclusion

- For individuals at continuing risk of rabies exposure, a serology test should be performed **one year** after 3-dose intramuscular pre-exposure prophylaxis, followed by a booster if the antibody level is below the protective threshold.
- The interval between the first booster dose and subsequent serology tests should be **no longer than three years**.
- Age is an important predictor of rabies antibody positivity. Older individuals are more likely to turn antibody-negative quickly after vaccination.
- Future research should be undertaken to provide more insight into the appropriate timing of subsequent booster doses.

References:
1. World Health Organization. Rabies vaccines: WHO position paper, April 2018–Recommendations. Vaccine, 2018. 36(37): p. 5500-5503.
2. Merritt, T., et al., Australian bat lyssavirus. Australian Journal of General Practice, 2018. 47(3): p. 93-96.

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