

Insights into long-term antibody response in Lassa fever: A five-year follow-up study of Lassa fever survivors in Nigeria

Ephraim Ogbaini-Emovon^{1,&}, David Wozniak^{2,3}, Anke Thielebein^{2,3}, Yemisi Ighodalo^{1,3}, Thomas Olokori¹, Rachael Omiunu¹, Abubakar Taju¹, Mette Hinrichs³, Jonas Müller^{2,3}, Rita Esumeh¹, Oluwasola Babatunde¹, Paulson Ebhodaghe¹, Ganiyu Igenegbale¹, Rosemary Giwa¹, Anienu Ekanem¹, Nosa Akpede¹, Donatus Adomeh¹, Sylvanus Okogbenin¹, Cyril Eramah¹, Joseph Okoguale¹, Danny Asogun¹, George Akpede¹, Mojeed Rafiu¹, Kelly. Iraoyah¹, Osahogie Ediawe¹, Wilson Oviennia¹, Peter Okokhere¹, Ruben Agbons Eifediyi¹, Stephan Günther^{2,3}, Lisa Oestereich^{2,3}

¹Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria, ²Bernhard-Nocht-Institute for Tropical Medicine (BNITM), Hamburg, Germany, ³German Center for Infection Research (DZIF), Partner site Hamburg, Lübeck, Borstel, Riems, Germany

&Corresponding author: Ephraim Ogbaini-Emovon, Irrua Specialist Teaching Hospital, Irrua, Nigeria. Email: epogbaini@yahoo.com

Citation: Ephraim Ogbaini-Emovon et al., Insights into long-term antibody response in Lassa fever: A five-year follow-up study of Lassa fever survivors in Nigeria. *Journal of Interventional Epidemiology and Public Health*. 2025;8(ConfProc):00079.

DOI: <https://doi.org/10.37432/JIEPH-CONFPRO5-00079>

LINK: <https://afenet-journal.org/insights-into-long-term-antibody-response-in-lassa-fever-a-five-year-follow-up-study-of-lassa-fever-survivors-in-nigeria/>

Received: 31 May 2025, **Accepted:** 09 Jul 2025, **Published:** 19 Aug 2025

Keywords: Lassa fever, Lassa virus, Immunoglobulin G, Neutralization tests

This is part of the proceedings of the ECOWAS 2nd Lassa fever International Conference in Abidjan, September 8 – 11, 2025

© Ephraim Ogbaini-Emovon et al. *Journal of Interventional Epidemiology and Public Health*. This is an Open Access article distributed under the terms of the Creative Commons Attribution International 4.0 License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction

Lassa fever (LF), a viral hemorrhagic fever caused by *Lassa virus* (LASV), remains a persistent public health threat in West Africa. Despite anecdotal reports of immunity following infection, no licensed vaccine or therapeutic exists. Understanding the **immune response**, especially the **antibody dynamics** in LF survivors, is essential for guiding **vaccine development** and **public health interventions**. This study aimed to assess long-term **serologic responses**, specifically the kinetics and neutralization capacity of antibodies, including **cross-neutralization** of LASV strains over 60 months' post-convalescence.

Methods

This longitudinal, prospective study was conducted at Irrua Specialist Teaching Hospital in collaboration with the Bernhard Nocht Institute for Tropical Medicine (BNITM), Germany. A cohort of 159 LF survivors was followed for 60 months' post-discharge. Sera were collected at up to 12 time points and assessed for anti-LASV **IgG**

antibodies using ELISA (targeting **glycoproteins (GP)** and **nucleoproteins (NP)**). Neutralization assays using live virus were performed under **BSL-4** conditions at BNITM.

Results

IgG titers against LASV GP increased during late convalescence, while anti-NP IgG was detectable early during acute infection. Antibody levels remained high for up to five years. Sera demonstrated robust **neutralizing activity** against native LASV (Lineage II) and cross-neutralization against LASV Lineages II, III, IV, V, and VII. However, cross-neutralization was limited against Lineage V. Despite stable IgG titers, a late decline in neutralization capacity was observed.

Conclusion

LASV-specific antibodies persist in survivors for up to five years, with substantial neutralizing and cross-neutralizing activity against most LASV lineages, excluding Lineage V. However, a potential late decline in functional neutralization

capacity was noted. An extended follow-up cohort is underway to further evaluate long-term immunity and implications for vaccine strategies.