



Systematic Review on Lassa Fever Vaccine Development Efforts in Africa – 2000 to 2024

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Background

- Lassa fever is an acute viral haemorrhagic illness endemic to West Africa - It poses a persistent public health threat
- With an estimated: 100,000 to 300,000 infections annually – up to 5,000 deaths per year
- Primary transmission occurs through contact with excreta of Mastomys rats; Secondary transmission happens via human-to-human spread especially in healthcare settings
- Despite recurring outbreaks over decades, no licensed vaccine currently exists, the World Health Organization classifies Lassa fever as a priority disease highlighting the need for urgent action.

Objectives

- This review evaluates the current landscape of Lassa fever vaccine development in Africa exploring progress, challenges, and opportunities for future vaccination strategies and interventions.

Methods

Comprehensive Literature Search

- PubMed
- Scopus
- Web of Science
- ClinicalTrials.gov
- WHO Clinical Trials Registry
- AJOL (African Journals Online)

Targeted Keywords

Focused on Lassa fever vaccine development

Inclusion Criteria

- Preclinical or clinical studies
- Involvement of African populations or institutions

Exclusion Criteria

- Studies on non-African populations
- Non-English articles
- Research unrelated to vaccine development

Data Extraction

- Vaccine platform types (e.g., viral vector, DNA)
- Clinical trial phases
- African country participation
- Funding sources and partnerships
- Reported outcomes and challenges

- Review process guided by the PRISMA framework
- Descriptive analysis used to summarize findings and assess the vaccine development landscape in Africa

Results

Vaccine Candidates and Platforms/African Involvement

- Diverse platforms:** 17 Lassa fever vaccine candidates span technologies like live attenuated, viral vectors, mRNA, DNA, and VLPs.
- Clinical trials:** 4 vaccines have entered human trials, including those by INOVIO, IAVI, and Oxford.
- Global support:** CEPI is funding multiple platforms aimed at West African implementation.
- Regional engagement:** Countries like Nigeria, Sierra Leone, Liberia, and Ghana are participating in research and trial planning.
- National leadership:** Nigeria's NCDC and Irrua Hospital are key players in ongoing trials and case monitoring.

Challenges

- Regulatory and Infrastructure Gaps
- Financial and Sustainability Constraints
- Community and Data Barriers

Strengths and Progress

- Strengthened international collaboration
- Global recognition and ethical commitment
- Improved regulatory support

Conclusions and Recommendations

Conclusion

- Lassa fever continues to pose a major public health threat
- Vaccine research is advancing
- Growing global interest and support
- Challenges remain

Recommendations

- Strengthen African Research Capacity
- Enhance Regulatory Frameworks
- Increase Funding and Domestic Ownership
- Community Engagement and Trust Building
- Foster Cross-Sector Partnerships
- Plan for Sustainable Deployment

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