From Outbreak to Opportunity: Leveraging Lassa Fever Trends from 2018 to 2025 to Strengthen Trial Site Preparedness and Vaccine Acceptance in Ebonyi State, Nigeria

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Background

- Lassa fever (LF) is an acute viral haemorrhagic illness caused by Lassa virus (Frame et al., 1970; WHO, 2024).
- LF is endemic in West Africa, causing ~100,000–300,000 infections and 5,000 deaths annually (Besson & Metral, 2024; African CDC, n.d).
- Nigeria contributes the highest burden, and Ebonyi State is one of the country's most affected states, with recurrent outbreaks since 2005 (Ehichioya et al., 2010; Agboeze et al., 2019)
- Understanding local epidemiology is critical for vaccine trial planning and preparedness

Objectives

- To analyze temporal and geographic trends of Lassa fever cases in Ebonyi State, 2018–2025
- To identify hotspots and seasonal peaks to inform community engagement and recruitment for vaccine trials
- To generate evidence that supports preparedness for the Phase 2b Lassa vaccine trial at AEFUTHA

Methods

- Using retrospective design, analysis of Ebonyi State 2018–April 2025 confirmed Lassa fever surveillance data was conducted
- Data extracted included: age, sex, source state and Local Government Area (LGA) of case, year and month of confirmation, and survival outcome
- Descriptive statistics carried out included: seasonal trends, geographic distribution of cases by source state and LGA, and survival outcome
- Ethics approval was obtained from the Health Research Ethics Committee of AEFUTHA.

Results

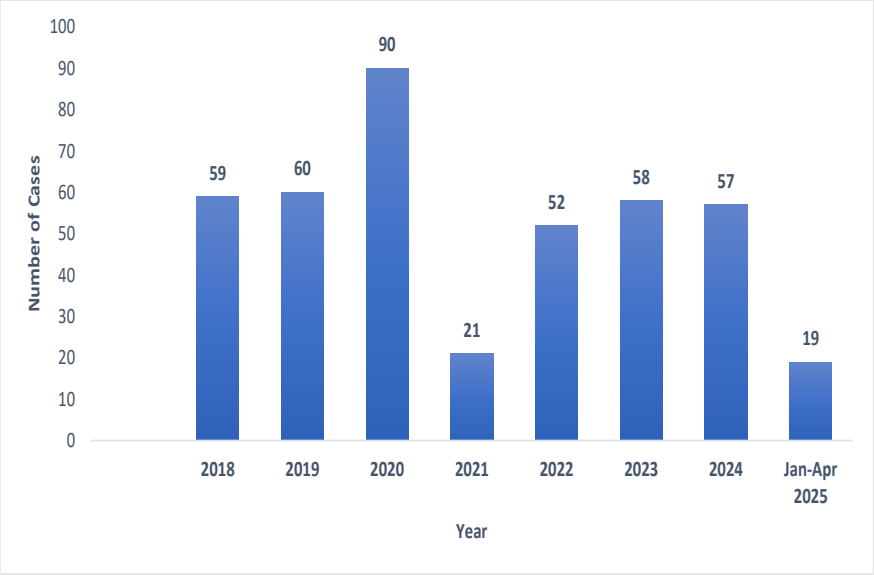

Figure 1: Annual Confirmed Lassa Fever Cases in Ebonyi State Nigeria 2018-April 2025 (N=416)

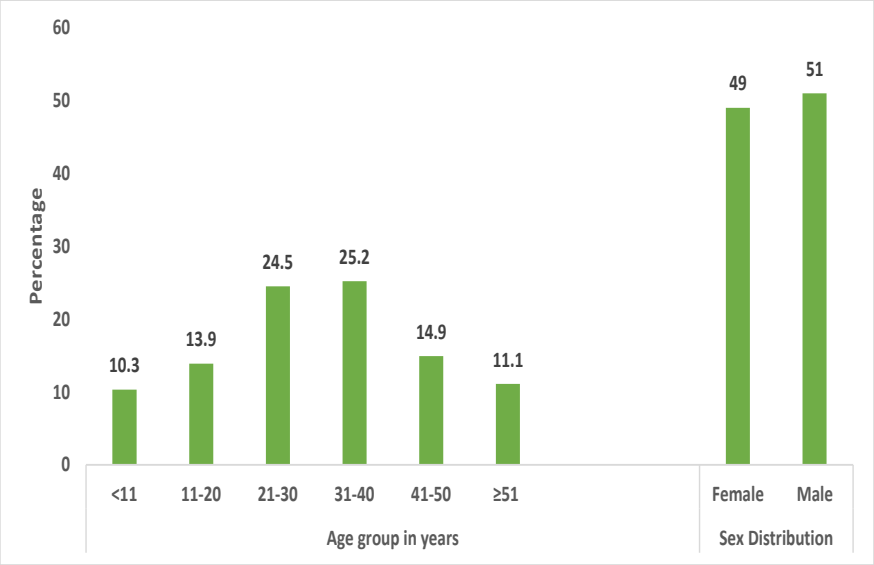

Figure 2: Age and Sex Distribution of Confirmed Lassa Fever Cases in Ebonyi State, Nigeria, from 2018 - April 2025 (N=416)

Results

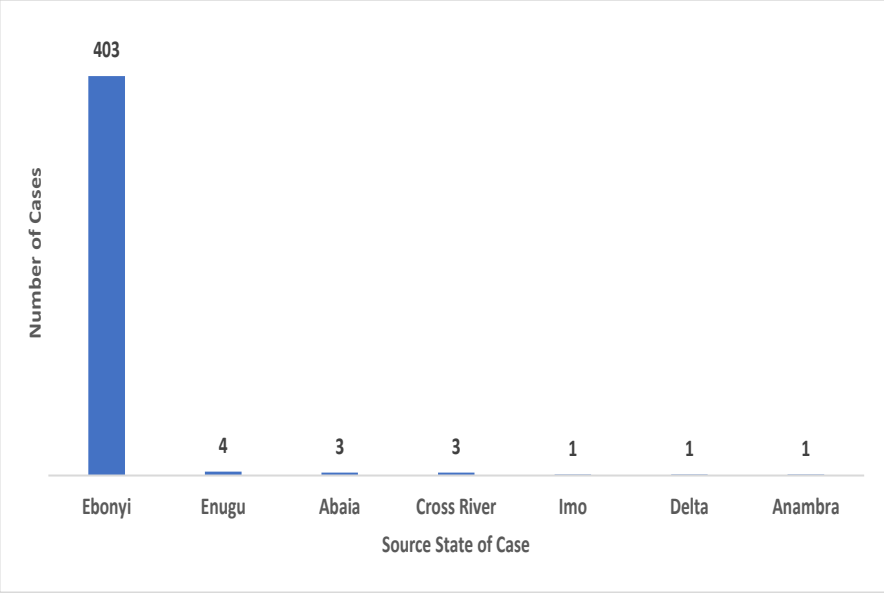

Figure 3. State-Level Origin of Confirmed Lassa Fever Cases in Ebonyi State, Nigeria, 2018–April 2025 (N=416)

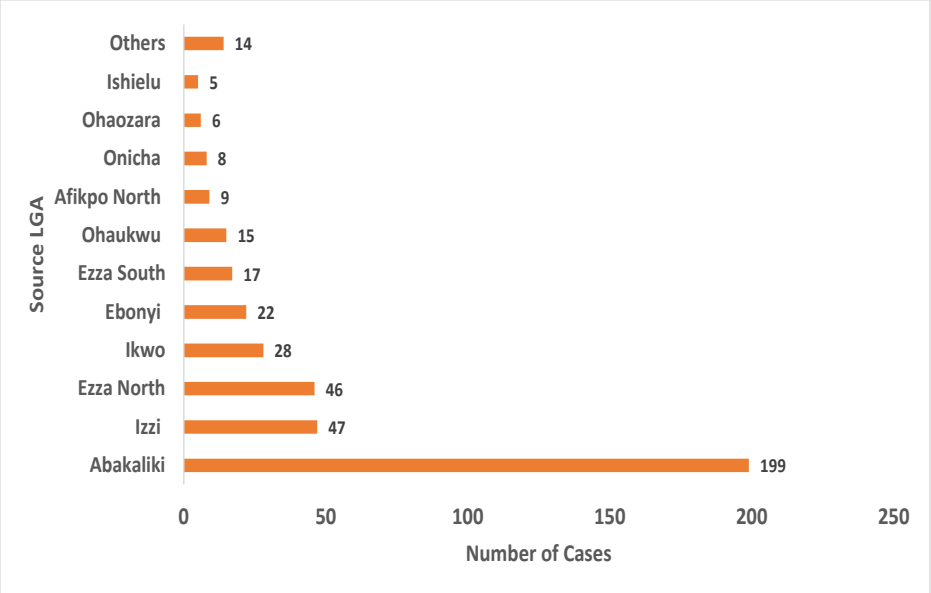

Figure 4: Local Government Area Origin of Confirmed Lassa Fever Cases in Ebonyi State, Nigeria, 2018–April 2025 (N=416)

Results

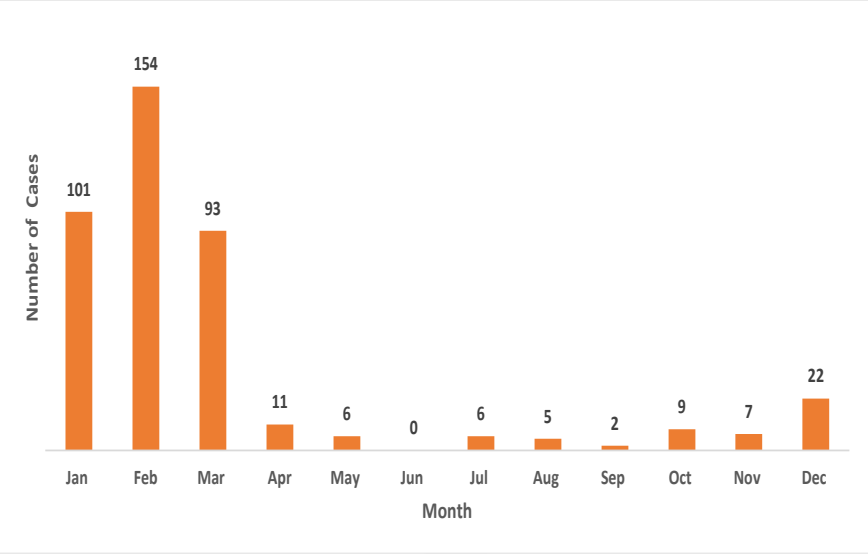

Figure 5. Monthly Distribution of Confirmed Lassa Fever Cases in Ebonyi State, Nigeria, 2018 - April 2025 (N=416)

Table 1. Outcomes of Confirmed Lassa Fever Cases in Ebonyi State, Nigeria 2018-April 2025 (N=416)

Year	Number of Cases (N)	Survival Rate (%)	Case Fatality Rate (%)	Unknown Outcome (%)
2018	59	79.7	20.3	0.0
2019	60	40.0	31.7	28.3
2020	90	56.7	26.7	16.7
2021	21	52.4	42.9	4.8
2022	52	53.8	44.2	1.9
2023	58	43.1	56.9	0.0
2024	57	49.1	50.9	0.0
2025	19	42.1	57.9	0.0
2018 – April 2025	416	53.4	38.5	8.2

Conclusion

- Lassa fever remains endemic in Ebonyi State with predictable seasonal peaks in January–March
- The highest burden was in Abakaliki, Izzi, and Ezza North LGAs, mainly affecting young adults (21–40 years)
- Case fatality rates were high, showing gaps in early diagnosis and critical care
- Findings provide evidence base for vaccine trial readiness and community engagement for effective recruitment and participant retention

Recommendations

- Strengthen surveillance, diagnostics, critical care, and rodent control in hotspot LGAs
- Align vaccine trial timelines with Jan–Mar peak; prioritize high-burden LGAs
- Use culturally sensitive communication; engage religious and traditional leaders
- Integrate trial preparedness into outbreak response; invest in systems and regional collaboration
- **Keywords**: Lassa Fever; Trend Analysis; Vaccine Trial; Retrospective Studies

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