

Incidence of Lassa fever disease in hotspot communities of West Africa: insights from the Enable programme

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Background

Lassa fever (LF), a haemorrhagic illness caused by Lassa virus, is endemic in West Africa and has pandemic potential. Due to the absence of a licensed vaccine, LF has been placed on the WHO priority pathogen list. However, the design of successful vaccine efficacy trials depends on reliable estimates of LF disease incidence, severity, risk groups.

Methods

We conducted two prospective household-based cohort studies in LF-endemic countries, (ENABLE 1.0 and 1.5) through the ENABLE research programme, following approximately 25 000 participants in eight sites across five countries. Participants were contacted every two weeks to identify suspected LF disease and referred for RT-PCR testing. Baseline household surveys assessed potential risk factors for LF disease and knowledge and attitudes towards LF disease and vaccination.

Results

ENABLE 1.0 estimated LF disease incidence at 1.27 (95% CI 0.88–1.84) per 1 000 person-years, compared with 5.67 (95% CI 3.68–8.73) per 1 000 person-years in ENABLE 1.5. ENABLE 1.5 used more active case finding, broader testing criteria, age-stratified sampling and community selection informed by historical surveillance data. These results suggest that LF disease remains rare but may be underdetected in hotspot communities. Children appeared to be at similar risk to adults, with cases observed in children under two years of age. Among 71 confirmed cases, the crude case fatality rate was 7%, and 52% tested positive for malaria by rapid diagnostic test. The within-household attack rate in households

with an index case was 2% at 100 days, although it was not possible to distinguish person-to-person transmission from repeated rodent spillover. Consuming rodent meat was the only statistically significant household risk factor identified (aOR 4.5, $p=0.01$).

Conclusion

ENABLE provides evidence to inform future LF vaccine trial design. The results suggest that trials will require large sample sizes, but careful community selection and active surveillance may improve feasibility. Children should be included in vaccine development, and household prevention should focus on reducing rodent exposure.

The ENABLE programme found that Lassa fever disease remains relatively rare in West African hotspot communities, but incidence may be underestimated without active surveillance and broader testing. Findings suggest that future vaccine trials will need large sample sizes, include children, and focus prevention efforts on reducing rodent exposure, especially rodent meat consumption.