Background
Lassa fever, caused by arenavirus Lassa virus (LASV), is an acute viral hemorrhagic disease that affects up to 300,000 individuals and causes up to 5,000 deaths per year in West Africa.
Currently available LASV diagnostic methods are difficult to operationalize in low resource health centers.

Objective
To understand diagnostic gaps and prioritize diagnostic development, we conducted a landscape and developed use cases for:
1. Case detection and management
2. Surveillance
3. Outbreak response
4. Clinical trials of vaccines and therapeutics in LASV-affected countries.

Selected references

Results

Figure 1: Geographic distribution of Lassa fever.

Figure 2: Challenges with Lassa fever detection.

Figure 3: Laboratory levels in Lassa-affected countries.
Adapted from the WHO Consultation on Technical and Operational Recommendations for Clinical Laboratory Testing Harmonization and Standardization (2008). ILFRC, Institute of Lassa fever Research and Control, ISTH, Irrua Specialist Teaching Hospital, KGH, Kenema Government Hospital, WHO, World Health Organization.

Table 1: Use cases for LASV diagnostics.

<table>
<thead>
<tr>
<th>INTENDED USE CASE</th>
<th>TARGET USE SETTING/DIAGNOSTIC NEEDS</th>
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<tbody>
<tr>
<td></td>
<td>1.</td>
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<td></td>
<td>Health centres</td>
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<tr>
<td>Case detection, management</td>
<td>MDx *</td>
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<td>Surveillance</td>
<td>MDx *</td>
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<td>Outbreak response</td>
<td>MDx *</td>
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<tr>
<td>Clinical trials (vaccine, therapeutics)</td>
<td>MDx *</td>
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Discussion

Prioritize development of effective and affordable:

- **Point-of-care and near patient diagnostics** able to detect multiple LASV strains – can be used at multiple health facilities for different use cases.
- **Syndromic panels** useful to differentiate between LASV and other pathogens to improve fever management.
- **Rapid diagnostic tests** for screening.
- Tests able to distinguish between active infection and effects of vaccination prior to vaccine efficacy studies.

Other considerations to improve Lassa fever preparedness:

- **Strengthen laboratory capacity** in affected countries to implement current and new diagnostics.
- **Harmonize Lassa fever case definitions**.
- **Evaluate new, effective and safe vaccines and therapeutics** to improve prevention and patient outcomes.
- **Diagnostics to support animal host surveillance**.