Figure 1: Public Health Events Reported during this week

- A total of 142 events of public health importance including 30 deaths were reported.
- Completeness and timeliness of health facility reports were 99% for both.
- Ongoing Lassa fever outbreaks in two counties.
- Measles outbreak in three counties.

### Reporting Coverage

**Table 1: Health Facility Weekly IDSR Reporting Coverage, Liberia, Epi week 46, 2019**

<table>
<thead>
<tr>
<th>County</th>
<th>Expected Report from Health Facility</th>
<th>Reports Received</th>
<th>Report Received on Time</th>
<th>Completeness (%)</th>
<th>Timeliness (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bomi</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Bong</td>
<td>57</td>
<td>57</td>
<td>57</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Gbarpolu</td>
<td>16</td>
<td>16</td>
<td>13</td>
<td>100</td>
<td>81</td>
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<td>34</td>
<td>34</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Grand Cape Mount</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>100</td>
<td>100</td>
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<tr>
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<td>24</td>
<td>24</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
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<td>19</td>
<td>19</td>
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<td>100</td>
</tr>
<tr>
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<td>59</td>
<td>59</td>
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<td>100</td>
</tr>
<tr>
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<td>59</td>
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</tr>
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<td>26</td>
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<td>100</td>
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<td>83</td>
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<td>100</td>
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<td>100</td>
</tr>
<tr>
<td>River Gee</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Sineo</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>100</td>
<td>100</td>
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<tr>
<td><strong>Liberia</strong></td>
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<td><strong>844</strong></td>
<td><strong>841</strong></td>
<td><strong>99</strong></td>
<td><strong>99</strong></td>
</tr>
</tbody>
</table>

Legend:
- The national target for weekly IDSR reporting is 80%.
- Health facility timeliness is monitored at District level.
- All fifteen counties submitted their weekly IDSR report to the national level on time.
Vaccine Preventable Diseases

Measles

- Forty-three (43) suspected cases were reported from Sinoe (34), Maryland (2), Nimba (2), Grand Bassa (2), one each from Grand Gedeh, River Gee, and Grand Cape Mount Counties.
- Fourteen (14) specimens were collected and eleven tested with five positive, six negative, and three pending laboratory confirmation.
  - Confirmed cases from Sinoe County.
- Vaccination status among suspected cases:
  - Vaccinated 35 (81.4%), Not vaccinated 7 (16.3%), Unknown 1 (2.3%).
- Age distribution among suspected cases:
  - <1 year: 3 (7%), 1 – 4 years: 7 (16.3%), ≥5 years: 33 (76.7%)
- Cumulatively, since Epi-week one, 1,569 suspected cases have been recorded; Of these, 676 have been tested by the laboratory and results showed 237 positive, 423 negative and 16 indeterminate.
- Epi-classification is as follows: 1,130 (72.7%) confirmed (237 lab-confirmed, 784 clinically confirmed, 109 epi-linked) (See Table 2, Figure 2)
  - Cumulative vaccination status among lab confirmed: 92 (38.8%) vaccinated, 55 (23.2%) not vaccinated, 90 (38%) unknown.
  - Age distribution among lab confirmed: <1 year: 14 (5.9%), 1 – 4 years: 23 (9.7%), ≥5 years: 200 (84.4%).
  - Of the 423 specimens tested negative for measles, 294 specimens were tested for rubella, as follows: 130 positive, 155 negative, 9 equivocal.

Public Health Action

- Case Management, active case search, health education, and community engagement are ongoing in affected districts and communities.

Table 2: Annualized Non-Measles Febrile Rash Illness Rate by Counties, Liberia, Epi-week 1 - 46, 2019

<table>
<thead>
<tr>
<th>Reporting County</th>
<th>Lab confirmed</th>
<th>Epi-linked</th>
<th>Clinically confirmed</th>
<th>Indeterminate (Equivocal)</th>
<th>Discarded (Negative)</th>
<th>Pending</th>
<th>Total</th>
<th>Annualized Non-Measles Febrile Rash Illness Rate</th>
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<tbody>
<tr>
<td>Bomi</td>
<td>11</td>
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<td>13</td>
<td>2</td>
<td>18</td>
<td>0</td>
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<tr>
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<td>0</td>
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<td>1</td>
<td>21</td>
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<td>10</td>
<td>0</td>
<td>92</td>
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<td>2</td>
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<td>90</td>
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<td>0</td>
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<td>25</td>
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<td>106</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>146</td>
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<tr>
<td>Margibi</td>
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<td>37</td>
<td>0</td>
<td>88</td>
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<td>2</td>
<td>0</td>
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<td>0</td>
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<td>2.6</td>
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<td>41</td>
<td>0</td>
<td>106</td>
<td>8.0</td>
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<td>0</td>
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<tr>
<td>Rivercess</td>
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<td>11</td>
<td>66</td>
<td>3</td>
<td>53</td>
<td>0</td>
<td>150</td>
<td>66.7</td>
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<td>144</td>
<td>2</td>
<td>15</td>
<td>0</td>
<td>209</td>
<td>13.2</td>
</tr>
</tbody>
</table>

Liberia 237 109 784 16 423 0 1569 10.8

Target Achieved >=2 Below Target <2
Figure 2: Cumulative Epi-classification Measles Cases by Reporting weeks, Liberia, Epi-week 1 - 46, 2019

Figure 3: Cumulative Confirmed Measles Cases Reported by Health District, Liberia, Epi-week 1 - 46, 2019
Acute Flaccid Paralysis (Suspected Polio)
- Two (2) cases were reported from Bomi and Grand Gedeh Counties
- Specimens were collected for both cases and pending laboratory confirmation
- Cumulatively, since Epi week one, 63 cases have been recorded
  - Proportion of cases reported with sample collected and tested 94% (n=59/63), 4 pending lab confirmation
  - Laboratory confirmed (+) zero

Neonatal Tetanus
- Zero case reported
- Cumulatively, since Epi-week one, 33 clinically diagnosed cases have been recorded:
  - Attributable death 24.2% (n=8)

Viral Hemorrhagic Diseases
Ebola Virus Disease (EVD)
- Zero alert reported
- Cumulatively, since Epi-week one, 14 EVD alerts have been recorded and all tested negative

Lassa fever
- Fourteen (14) suspected cases reported from Bong (4), Margibi (3), Grand Bassa (3), Lofa (2), Montserrado (1), and Nimba (1) Counties
  - Two deaths reported from Nimba and Montserrado Counties
  - Specimens were collected and tested and result negative for all cases
- Cumulatively, since Epi week one, 161 suspected cases have been recorded:
  - Proportion of suspected cases reported with sample collected 97% (n=156)
  - Proportion of suspected cases with specimens tested is 80.1% (n=129)
  - Laboratory confirmed 31% (n=40)
  - Case fatality in confirmed cases is 32.5% (13/40)
  - Epi-classification is as follows: 40 positive, 89 negative, and 32 suspected

*Figure 4: Cumulative Epi classification Lassa fever Cases Reported, Liberia, Epi-week 1 - 46, 2019*
Liberia IDSR Epidemiology Bulletin
2019 Epi-week 46 (November 11–17, 2019)

Yellow fever
♦ One (1) suspected case reported from Bomi County
  o Specimen was collected and pending laboratory confirmation
♦ Cumulatively, since Epi-week one, 104 suspected cases have been recorded:
  o Zero laboratory confirmed
  o Proportion of suspected cases reported with sample collected 97.1% (100/103)
  o Proportion of sample collected and tested 92% (n=91/100)

Monkeypox
♦ Zero case was reported
♦ Cumulatively, since Epi week one, 58 suspected cases have been reported, 12 specimens shipped to Atlanta for confirmation and one pending shipment

Dengue fever
♦ Zero case was reported
♦ Cumulatively, since Epi-week one, 1 suspected case has been recorded

Meningitis
♦ Zero case was reported
♦ Cumulatively, since Epi-week one, 52 suspected cases have been recorded
  o Forty-three tested negative and three pending Laboratory confirmation
  o Six specimens were not collected from Gbarpolu (2), Lofa, Maryland, Nimba and Montserrado Counties

Events of Public Health Importance

Maternal Mortality
♦ Four (4) deaths were reported from Nimba, Montserrado, Sinoe and Bong Counties
♦ Causes of death: Postpartum Hemorrhage (2), Sepsis (1), and Anesthetic complication (1)
♦ Reporting sites: health facilities 4 (100%)
♦ Cumulatively, since Epi-week one, 257 maternal deaths have been recorded and the major attributable causes are:
  post-partum hemorrhage 109 (42.4%), Eclampsia 35 (13.6%), and Sepsis 31 (12%)

Table 3: Annualized and Cumulative Maternal Death Reported by County, Liberia, Epi-week 1 - 46, 2019

<table>
<thead>
<tr>
<th>County</th>
<th>Estimated Annual Live birth (4.3%)</th>
<th>Current week</th>
<th>Cumulative</th>
<th>% of Cumulative Maternal deaths</th>
<th>Annualized Maternal Mortality Ratio/100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland</td>
<td>7347</td>
<td>0</td>
<td>14</td>
<td>6</td>
<td>230</td>
</tr>
<tr>
<td>Bong</td>
<td>18775</td>
<td>1</td>
<td>37</td>
<td>14</td>
<td>225</td>
</tr>
<tr>
<td>Grand Gedeh</td>
<td>6770</td>
<td>0</td>
<td>13</td>
<td>5</td>
<td>214</td>
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<tr>
<td>Margibi</td>
<td>11345</td>
<td>0</td>
<td>18</td>
<td>7</td>
<td>181</td>
</tr>
<tr>
<td>Sinoe</td>
<td>5534</td>
<td>1</td>
<td>9</td>
<td>3</td>
<td>175</td>
</tr>
<tr>
<td>Nimba</td>
<td>24970</td>
<td>1</td>
<td>38</td>
<td>13</td>
<td>160</td>
</tr>
<tr>
<td>Bomi</td>
<td>4546</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>160</td>
</tr>
<tr>
<td>Montserrado</td>
<td>62479</td>
<td>1</td>
<td>82</td>
<td>33</td>
<td>157</td>
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<tr>
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<td>116</td>
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<td>9</td>
<td>4</td>
<td>91</td>
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<td>11</td>
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<td>257</td>
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</table>
**Neonatal Mortality**

- Twenty-three (23) deaths were reported from Montserrado (14), Nimba (3), Grand Gedeh (2), and one each from Gbarpolu, Grand Kru, Maryland, and Margibi Counties
- Causes of deaths: Asphyxia (13), Sepsis (8), Preterm (1), and one pending investigation
- Reporting sites: health facilities 20 (87%) and Community 3 (13%)
- Cumulatively, since Epi-week one, 672 neonatal deaths have been reported (See Table 4) and the major attributable causes are: asphyxia 337 (50.1%), sepsis 224 (33.3%) and preterm 55 (8.1%)

<table>
<thead>
<tr>
<th>County</th>
<th>Estimated Annual Live birth (4.3%)</th>
<th>Current week</th>
<th>Cumulative</th>
<th>% of Cumulative Maternal deaths</th>
<th>Annualized Maternal Mortality Ratio/100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Kru</td>
<td>3130</td>
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<td>6.1</td>
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<td>4.4</td>
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<td>0.5</td>
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<td>0.3</td>
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<td><strong>100</strong></td>
<td><strong>3.9</strong></td>
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</tbody>
</table>

**Other Reportable Diseases**

**Animal Bites (Human Exposure to Rabies)**

- Forty-four (44) cases reported: Bong (7), Montserrado (6), Nimba (6), Grand Cape Mount (5), Maryland (5), Grand Bassa (4), Sineo (3), Gbarpolu (2), Rivercess (2), Margibi (2), and one each from Bomi and Grand Kru
- Cumulatively, since Epi-week one, 1,644 cases of animal bites have been recorded

**Acute Bloody Diarrhea (Suspected Shigellosis)**

- Eleven (11) cases reported from Sineo (9), Bong (1), and Grand Gedeh (1) Counties
  - Five (5) specimens were collected and pending laboratory confirmation
- Cumulatively, since Epi-week one, 278 acute bloody diarrhea cases have been recorded with 159 stool specimens collected and 90 tested. Results: 13 positive and 77 negative

**Severe Watery Diarrhea (Cholera)**

- Two (2) suspected cases reported from Margibi and Grand Bassa Counties
  - Two specimens were collected and pending laboratory confirmation
- Cumulatively, since Epi-week one, 113 suspected cases have been recorded with 58 specimens collected and 51 tested negative and zero positive

**Unexplained Cluster of Health Events**

- Zero unexplained death was reported
- Cumulatively, since Epi-week one, 13 cases of unexplained death has been reported
## Points of Entry

- Zero IDSR alert detected and verified
- A total of 4174 travelers were recorded for the week (See Table 5)

### Table 5: Total Travelers, IDSR Alerts Detected and Verified at Points of Entry, Liberia, Epi-week 46, 2019

<table>
<thead>
<tr>
<th>Type of Ports</th>
<th>Point of Entry</th>
<th>Weekly total</th>
<th>Arrival</th>
<th>Departure</th>
<th>Yellow Book Issued</th>
<th>Yellow Book Damage</th>
<th>Card Replaced</th>
<th>Travelers Vaccinated</th>
<th>Alerts Verified</th>
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<td>0</td>
</tr>
<tr>
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<td><strong>Total Traveler for the Week</strong></td>
<td><strong>4527</strong></td>
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</table>

*Note: Yellow book issue for both arrival and departure; Vaccination coverage for both arrival and departure*

## AFRO Public Health Events

The National Public Health Institute of Liberia continues to monitor acute public health emergencies and outbreaks occurring in the African Region in order to ensure preparedness and preventive measures are implemented.

During this week, 64 ongoing events are being monitored through WHO Health Emergencies Program in the African Region. Key events highlighted during the week include the following:

- Yellow fever in Nigeria
- Cholera in Burundi
- Ebola virus disease in Democratic Republic of the Congo
- Circulating vaccine derived poliovirus type 2 in Cote d’Ivoire

*Source: WHO Week 46 Bulletin on Outbreaks and Other Emergencies*
Public Health Measures

National level
- Providing technical logistical and financial support to counties
  - Heighten surveillance in affected and surrounding communities
  - **URGENCY! URGENCY! URGENCY!**
    - No Human Rabies Vaccine in Country to provide post exposure prophylaxis

County level
- Publication of situational reports to inform stakeholders
- Active case search ongoing in affected and surrounding communities
- Contact tracing, health education, and community engagement ongoing in affected communities
- Case management ongoing for isolated cases

Outbreaks

**Lassa fever**

**District 3A & B, Grand Bassa County**
- **One new** confirmed case reported
  - 53-year-old male, resident of sawmill camp, LAC
  - Onset of illness was on November 16, 2019
  - Sought medical care at LAC, admitted on November 18
  - Isolated, specimen collected and sent to NRL on November 18
  - NRL released laboratory result – positive by RT-PCR – on November 20
  - Case in isolation and undergoing ribavirin treatment
  - 8 contacts generated and followed up
  - 5 Health care work – all no risk
  - **Cumulative:** 14 confirmed cases reported Jan- Nov
  - 10 alive, recovered and discharged
  - 1 in isolation
  - confirmed deaths (CFR = 21%)

**Jorquelleh District, Bong County:**
- No new case reported
- 24-year-old female, resident of plum valley community
- Onset of illness was on October 27
- Sought medical care at Phebe Hospital and admitted
- Isolated, specimen collected and sent to NRL
- Expired on November 5
- Safe and dignified burial conducted
- NRL released laboratory result – **positive by RT-PCR** – on November 9
- 22 contacts including 16 healthcare workers and 6 family members
  - High Risk: 12 contacts (6 healthcare workers and 6 family members)
  - Low Risk: 10 contacts
- Total of 131 contacts generated (including 36 healthcare workers, 89 patients and 6 family members)
- No epidemiological link established with previous cases
- Cumulative: 14 confirmed cases reported
- 4 deaths in confirmed cases (CFR = 29%)

**Measles**

**Jaede District, Sinoe County**
- 34 suspected cases reported including five confirmed cases this week
- Plan to conduct mini campaign in affected and surrounding communities
- Total of 49 suspected cases
- All were treated and discharged
- Median age 16 years, range: 2 – 36 years

**Grand Gedeh: Gbao District**
- No new case reported this week
- Conducted 4-days mini campaign and vaccinated 250 children (Nov 4-7, 2019), ages 6-59 months, in affected and surrounding communities
- Total of 57 suspected cases
- 3 lab confirmed
- All were treated and discharged
- 63% (n=36) not vaccinated
Bong County: Kpaai District
- No new case reported this week
- Total of 20 suspected cases
- 3 lab confirmed

Public Health Actions
- Active case search and community engagement ongoing in affected and surrounding communities

Notes
- Completeness refers to the proportion of expected weekly IDSR reports received (target: ≥80%)
- Timeliness refers to the proportion of expected weekly IDSR reports received by the next level on time (target: ≥80%). Time requirement for weekly IDSR reports:
  - Health facility - required on or before 5:00pm every Saturday to the district level
  - Health district - required on or before 5:00pm every Sunday to the county level
  - County - required on or before 5:00pm every Monday to the national level
- Non-polio AFP rate is the proportion of non-polio AFP cases per 100,000 among the estimated population under 15 years of age in 2017 (annual target: ≥2/100,000)
- Non-measles febrile rash illness rate refers to the proportion of Negative measles cases per 100,000 population
- Annualized maternal mortality rate refers to the maternal mortality rate of a given period less than one year and it is the number of maternal deaths per 100,000 live births
- Annualized neonatal mortality rate refers to the neonatal mortality ratio of a given period less than one year and it is the number of neonatal deaths per 1,000 live births
- Epi-linked refers to any suspected case that has not had a specimen taken for serologic confirmation but is linked to a laboratory confirmed case
- Confirmed case refers to a case whose specimen has tested positive or reactive upon laboratory testing, or has been classified as confirmed by either epidemiologic linkage with a confirmed case, or clinical compatibility with the disease or condition
- Case Fatality Rate (CFR) is the proportion of deaths among confirmed cases
## Appendix 1: Summary of immediately reportable diseases, conditions, and events by County during Epi week 46 and cumulative report, Liberia, 2019

<table>
<thead>
<tr>
<th>Counties</th>
<th>No. of Health District Reported</th>
<th>Acute Diarrhea (Shigella)</th>
<th>Acute Diarrhea (Cholera)</th>
<th>Severe Acute Diarrhea (Cholera) (Repeater)</th>
<th>Lassa fever</th>
<th>Measles</th>
<th>Meningitis</th>
<th>Maternal Mortality</th>
<th>Neonatal Mortality</th>
<th>Neonatal Tetanus</th>
<th>Ebola Virus Disease</th>
<th>Yellow fever</th>
<th>Monkeypox</th>
<th>Dengue Fever</th>
<th>Buruli Ulcer</th>
<th>MDRTB</th>
<th>Unexplained Cluster of deaths</th>
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### D = Dead
### A = Alive
Epidemiological bulletin published with support of WHO and CDC

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National Public Health Institute of Liberia (NPHIL)

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To prevent and control public health threats by promoting healthy outcomes and serving as a source of knowledge

VISION
A center of excellence to create health outcomes for Liberians through a strong preventive health system and expertise

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