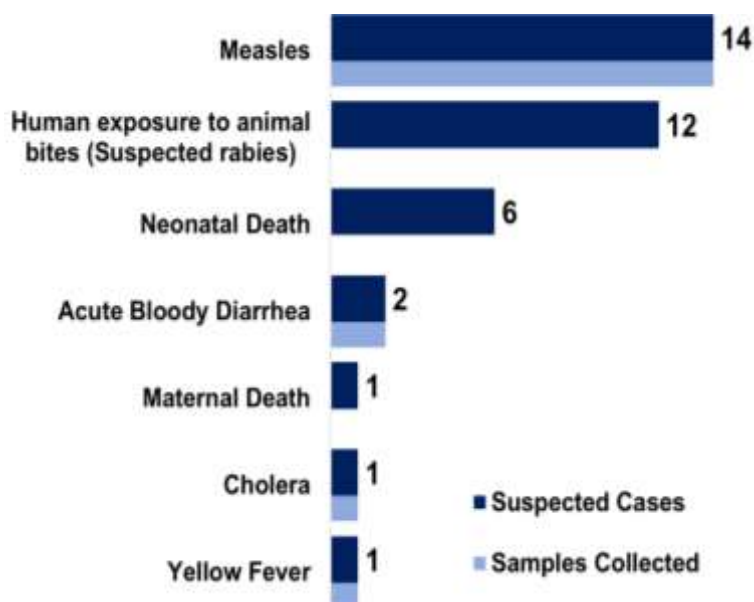


Country Population: 4,373,279 | Volume 09, Issue 48 Nov. 27-Dec. 3, 2017 | Data Source: CSOs from 15 Counties and Lab

Highlights

Figure 1. Public Health Events Reported in Epi-week 48



Keynotes and Events of Public Health Significance

- A total of **37** suspected cases of immediately reportable diseases and events including **8 deaths** were reported from **11 counties**
 - Montserrado, Rivercess, and Grand Gedeh Counties were identified through laboratory reports
- Health facility reporting **completeness and timeliness are 33%** respectively
- Ten** confirmed cases of measles were reported from Montserrado and Rivercess Counties

Reporting Coverage

Table 1. Weekly IDSR Reporting Coverage, Liberia, Epi week 48, 2017

County	Number of Expected Report from Health Facility	Number of Reports Received	Number Received on Time	Completeness (%)	Timeliness (%)
Bomi	23	-	-	-	-
Bong	55	-	-	-	-
Gbarpolu	15	7	7	47	47
Grand Bassa	33	-	-	-	-
Grand Cape Mount	32	1	1	3	3
Grand Gedeh	24	-	-	-	-
Grand Kru	19	19	19	100	100
Lofa	59	59	59	100	100
Margibi	55	55	55	100	100
Maryland	25	25	25	100	100
Montserrado	283	-	-	-	-
Nimba	74	74	74	100	100
Rivercess	19	-	-	-	-
River Gee	19	11	11	58	58
Sinoe	35	-	-	-	-
Liberia	770	251	251	33	33

Legend	≥80	<80

- Eight of the fifteen counties submitted weekly IDSR report on time
- The national target for weekly IDSR reporting is 80%

251 (33%)

Health facilities out of 759 reported timely IDSR data

31 (34%)

Health districts out of 91 reported IDSR data

251 (33%)

Health facilities reported IDSR data

Vaccine Preventable Diseases

Measles

- Fourteen (14) suspected cases were reported from Montserrado (10), Rivercess (1), Grand Kru (1), Grand Gedeh (1), and Nimba (1) Counties. *The suspected cases from Montserrado, Rivercess, and Grand Gedeh Counties were identified through laboratory reports.*
- Ten (10) cases have been confirmed positive:
 - Montserrado County (Commonwealth - 2, Bushrod - 2, St. Paul -1 and Somalia Drive - 4 Districts)
 - Rivercess County (Doedain District - 1)
- Six of the fourteen suspected cases reported this week were less than 5 years old and all had unknown vaccination status
- Cumulatively, since Epi week one, 1,607 suspected cases have been reported and have been classified as follow: 255 are laboratory confirmed, 199 epi-linked, 336 compatible, 814 discarded, and 3 pending testing. Of the 840 equivocal and negative cases, 835 (98.6%) samples have been tested for rubella, of which, 342 (40.8%) were positive

Public Health Actions

- Case management initiated for all the suspected cases
- Sample was collected from the suspected cases and sent to the National Reference Laboratory for confirmation

Figure 2. Comparative weekly trend of suspected cases of measles reported, Liberia, Epi weeks 1 – 48, 2016 & 2017

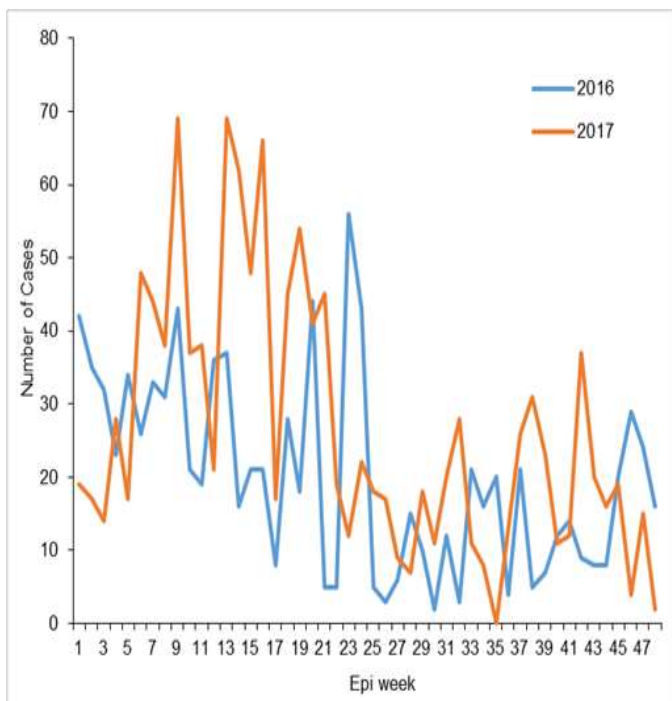
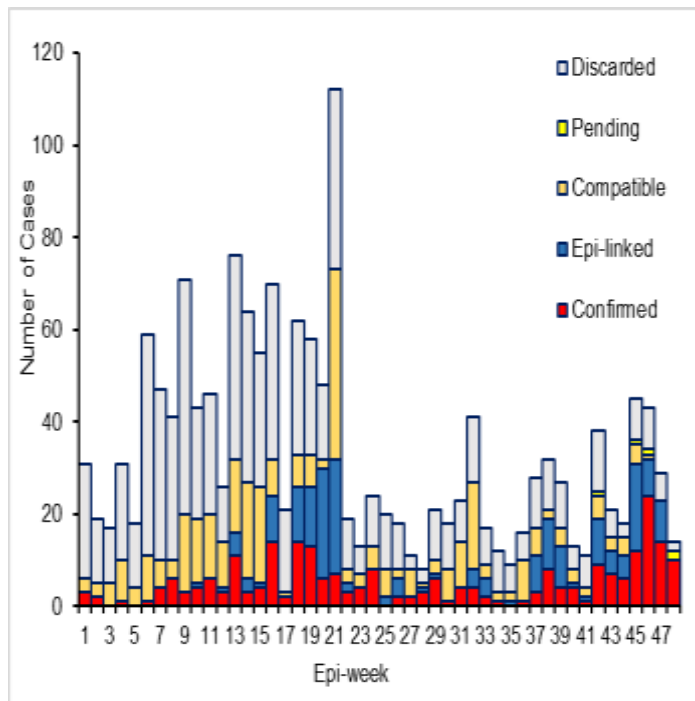


Figure 3. Epi-classification of measles cases reported, Liberia, Epi weeks 1 – 48, 2017 (n=1607)



Note: The x-axis showing only odd number of the Epi week

Acute Flaccid Paralysis (Suspected Polio)

- Zero cases of Acute Flaccid Paralysis were reported this week
- Cumulatively, since Epi week one, 75 Acute Flaccid Paralysis cases have been reported, of which, 73 (97.3%) have tested negative for poliovirus and 2 (2.7%) are pending laboratory confirmation

Neonatal Tetanus

- Zero cases of Neonatal tetanus were reported this week
- Cumulatively, since Epi-week one, 18 clinically diagnosed cases have been reported

Viral Hemorrhagic Diseases

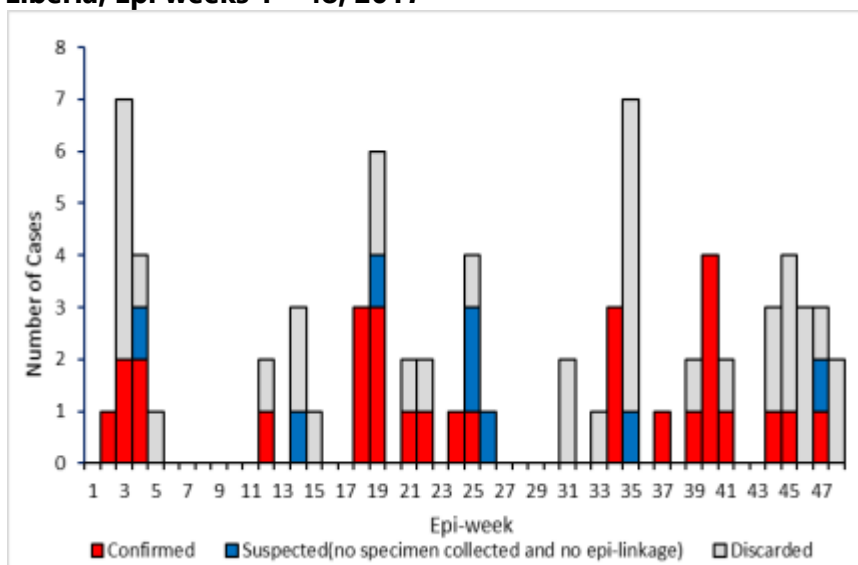
Ebola Virus Disease (EVD)

- Zero EVD alerts were reported this week
- Cumulatively, since Epi-week one, 495 EVD alerts have been reported, all of which have tested negative by PCR

Lassa fever

- Zero suspected cases of Lassa Fever were reported this week
- Cumulatively, since Epi-week one, 76 suspected cases have been reported to include 15 cases that were identified through laboratory record review
- Of the 76 suspected cases reported, samples have been collected for 66 of which 29 have been confirmed positive by RT-PCR (19), ELISA-Antibody (IgM) (9) and ELISA-Antigen (1), 38 negatives while 9 are considered as suspected cases due to lack of adequate samples for testing
- A total of 11 deaths have been recorded among confirmed cases. The case fatality rate among confirmed cases is 37.9%.

Figure 4. Epi-classification of Lassa fever cases reported, Liberia, Epi weeks 1 – 48, 2017



Note: The x-axis showing only odd number of the Epi week

Yellow fever

- One suspected case of Yellow Fever was reported from Grand Cape Mount County
- Cumulatively, since Epi-week one, 167 suspected cases have been reported, all but one tested negative at the National Reference Laboratory (NRL). A presumptive-positive test result was released by the NRL for a sample from Rivercess County in week 47. The sample has been sent to Institute Pasteur Laboratory in Dakar, Senegal for confirmatory testing.

Figure 5. Geographical distribution of presumptive positive Yellow fever case, Rivercess County, Epi week 47, 2017



Meningitis

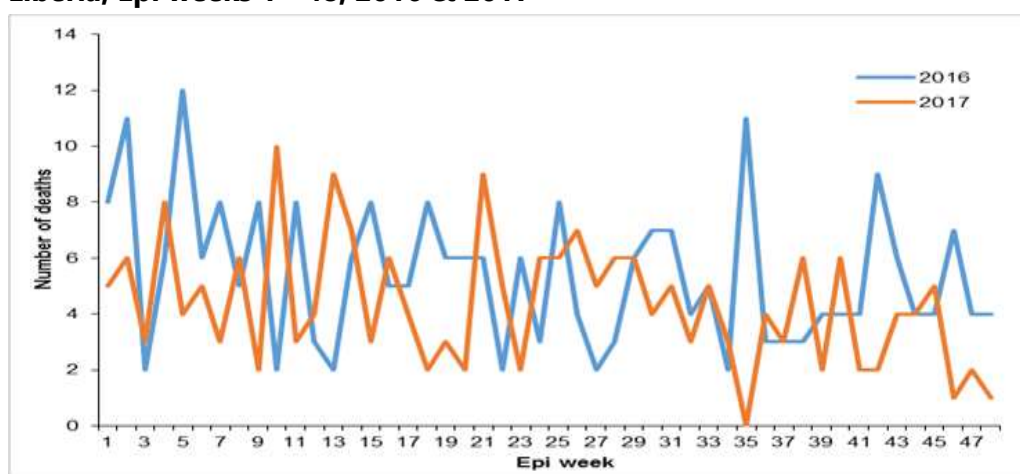
- Zero suspected cases of meningitis were reported this week
- Cumulatively, since Epi-week one, 65 suspected cases have been reported
- Of the 65 suspected cases, 31 (including 13 deaths) were reported as part of an outbreak in four counties (Grand Bassa, Montserrado Sinoe and Grand Kru), with *Neisseria meningitidis* serogroup C confirmed in 14 cases, and 1 streptococcus pneumonia including 11 deaths (case fatality rate among confirmed cases is 80%)

Events of Public Health Importance

Maternal Mortality

- One maternal death was reported from River Gee County
- Reported cause of death was Anemia
- The death was reported to have occurred in the health facility
- Cumulatively, since Epi-week one, 214 maternal deaths have been reported (see Table 3 for causes of death)

Figure 6. Comparison of the weekly trend of Maternal Deaths Reported, Liberia, Epi weeks 1 - 48, 2016 & 2017



Note: The x-axis showing only odd number of the Epi week

Table 2. Cumulative Maternal Deaths Reported by Counties, Liberia, Epi weeks 1 - 48, 2017

County	Annual Live birth ¹	Current week	Cumulative	% of Cumulative Maternal deaths	Annualized Maternal Mortality Ratio/100,000
Grand Kru	3002	0	7	3	758
Grand Bassa	11494	0	22	12	622
Bomi	4361	0	8	5	596
River Gee	3707	1	7	3	614
Margibi	10883	0	17	8	508
Grand Gedeh	6494	0	12	2	500
Bong	17289	0	25	11	470
Sinoe	5308	0	9	5	429
Maryland	7048	0	8	6	369
Nimba	23953	0	27	13	339
Gbarpolu	4323	0	5	2	376
Lofa	14354	0	13	8	294
Montserrado	57974	0	50	25	280
Rivercess	3463	0	3	1	188
Grand Cape Mount	6588	0	1	1	49
Liberia (National)	180242	1	214	100	386

Number of live birth is at 4.3% of the estimated population for 2017 (Source: EPI/MoH)

Table 3. Causes of Maternal Death, Liberia, Epi weeks 1 - 48, 2017 (n=214)

Maternal Death	Frequency	Percent (%)
Post-partum hemorrhage	72	34.1
Anemia	33	15.4
Sepsis	27	12.3
Eclampsia	20	9.5
Unknown	11	5.2
Ruptured uterus	10	4.3
Cardiac pulmonary failure	9	4.3
Renal failure	6	2.8
Congestive Heart failure	6	2.8
Pre-eclampsia	4	1.9
Abruptio placenta	3	1.4
Multiple organ failure	2	0.9
Obstructed labor	2	0.9
Respiratory Distress	2	0.9
Amniotic fluid embolism	2	0.9
Dissimilated intravascular coagulation	1	0.5
Umbilical Hernia (Omphalocele)	1	0.5
Spinal shock	1	0.5
Uterine Prolapsp	1	0.5
Prolong Labour	1	0.5
Total	214	100

Neonatal Mortality

- Six Neonatal deaths were reported from River Gee (3), Grand Kru (2) and Maryland (1) Counties
- Causes of death were:
 - Birth asphyxia (2)
 - Preterm (2)
 - Sepsis (2)
- All of the deaths were reported to have occurred at health facility
- Cumulatively, since Epi week one, 534 neonatal deaths have been reported

Figure 5. Causes of Neonatal Death, Liberia, Epi weeks 1 - 48, 2017 (n=534)

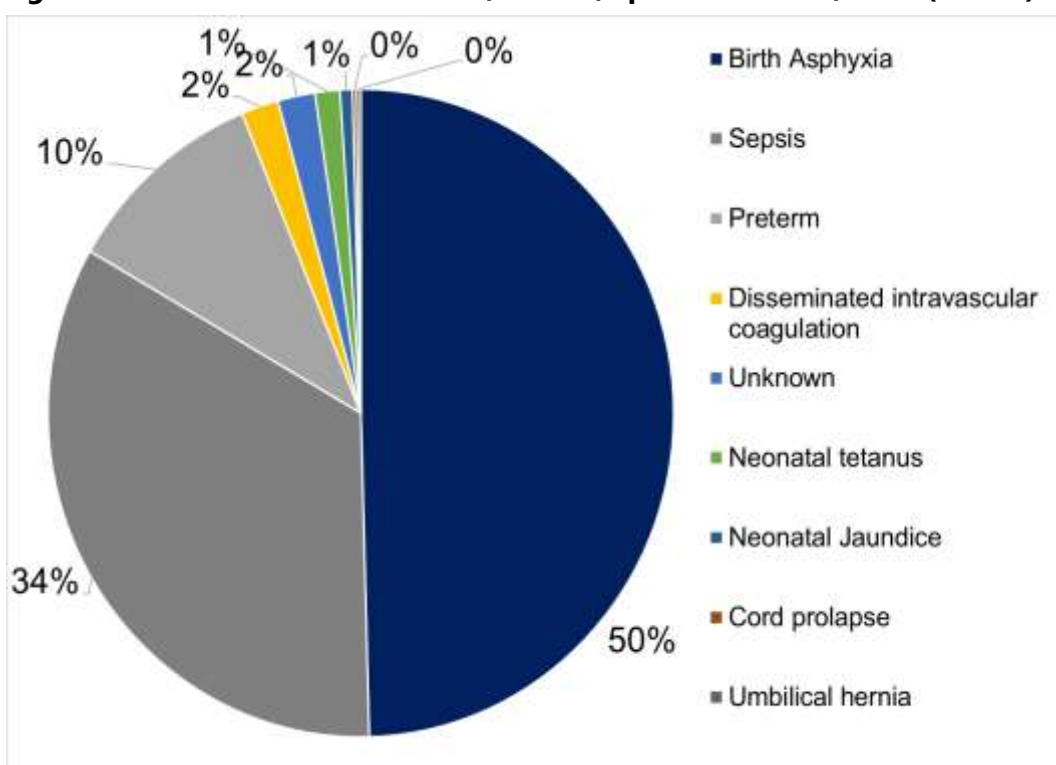


Table 4. Cumulative Neonatal Deaths Reported by Counties, Liberia, Epi weeks 1 – 48, 2017

County	Annual Live birth 4.3% (EPI 2017)	Current Week	Cumulative Neonatal deaths	% of Cumulative Neonatal deaths	Annualized Neonatal Mortality Rate
River Gee	3707	3	41	8	35.9
Maryland	7048	1	52	10	24.0
Sinoe	5308	0	25	5	15.3
Grand Kru	3002	2	15	3	16.2
Rivercess	3463	0	13	3	12.2
Lofa	14354	0	51	10	11.5
Bong	17289	0	60	12	11.3
Grand Gedeh	6494	0	21	4	10.5
Montserrado	57974	0	186	36	10.4
Gbarpolu	4323	0	10	2	7.5
Grand Bassa	11494	0	18	3	5.1
Margibi	10883	0	19	4	5.7
Nimba	23953	0	16	3	2.2
Bomi	4361	0	3	1	2.2
Grand Cape Mount	6588	0	4	1	2
Total	180242	6	534	100	9.6

Human Exposure to Animal Bites (Suspected Rabies)

- Twelve events of animal bites were reported from River Gee (3), Maryland (3), Nimba (2), Margibi (2), Gbarpolu (1), and Lofa (1) Counties
- Cumulatively, since Epi-week one, 1,170 events of animal bites have been reported

Bloody Diarrhea (Shigellosis)

- Two suspected cases of acute bloody diarrhea was reported from Margibi County
- Cumulatively, since Epi-week one, 248 cases of acute bloody diarrhea have been reported
- Stool specimens have been collected from 127 cases including 2 in the current week
- A total of 116 stool samples have been tested, 4 rejected due to poor sample quality, 1 positive and 5 pending epi classifications. Of the 116 tested, shigella was isolated through culture from 20 (16%) samples and no growth seen in 95 (84%) were negative.

Severe Acute Watery Diarrhea (Cholera)

- One suspected dead case of cholera was reported from Nimba County
- Cumulatively, since Epi-week one, 147 suspected cases of cholera have been reported, including 5 deaths attributable to cholera
- A total of 64 stool samples have been collected including one in the current week and sent to the National Reference Laboratory. Sixty-one of the samples tested had no growth and two positive of vibro cholera



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Outbreaks

Bong Lassa Fever Outbreak update as of November 30, 2017

- Since 2017, Bong County have reported 21 suspected cases of which 7 have been confirmed positive with one sample pending laboratory confirmation. The case fatality rate among confirmed cases since this year is 71%
 - All those cases were reported from Phebe Hospital Isolation Unit
- On 13th November, 2017, the Bong County Health Team (BCHT) notified the National Public Health institute of Liberia (NPHIL) about a confirmed Lassa fever case of a 5 years old female from Frog Island, Suakoko District, and Bong County. Since epi week 45, the number of suspected cases increased to Nineteen (19) with 3 deaths. The case fatality rate is 50% among confirmed cases.
 - The index case is a 36 year-old male (business man) from Phebe Airstrip community (endemic zone of Lassa fever in Bong) who presented with clinical signs and symptoms were fever, diarrhea, vomiting and later on started bleeding from nose, rectum and mouth with date of onset 4th October 2017
 - Since epi week 45, eleven suspected cases have been reported from two Districts (Jorquelleh and Suakoko)
 - Three deaths have been recorded (1 death in confirmed and 2 in suspected)
 - One case still in admission and is currently stable at Phebe Hospital Isolation unit
 - Nine samples collected and sent to the National Reference Laboratory, of which 6 tested negative, two confirmed positive, while one pending laboratory confirmation
 - Seven of the cases are females while 4 are males

Public Health Actions

- Contact monitoring has been initiated
- Active case search is ongoing in affected communities
- Isolation and management cases ongoing at Phebe Hospital

Rivercess Presumptive-positive Case of Yellow Fever

- A 35-year old female from Keyah Community, District #4, Grand Bassa County, with symptom onset on 16 November 2017 presented at the Larkpazee Community Clinic in Jowein District, Rivercess County on 21 November 2017 with yellow sclera, generalized body pain, fever, weakness, vomiting, headache, neck pain and cough
- Yellow fever was considered a differential diagnosis by clinicians upon examination and a blood specimen was collected on the same day and transported to the national reference Laboratory in Margibi County for testing
- Laboratory results released by the national reference laboratory on 28 November 2017 showed positive IgM for Yellow fever. This result is reported as 'Presumptive positive' as per the established protocol
- In line with established protocol, the sample has been sent to the reference laboratory in Dakar, Senegal, for confirmatory testing
- The patient has been treated in the OPD and discharged for home-based care. Vaccination status of the case has not been authenticated although she was earlier reported to have been previously vaccinated for Yellow fever in 2009 during a nation-wide preventive campaign
- Public Health response to the incident has been initiated through active case search for additional cases, case management, strengthening routine vaccination, and community engagement
- No new suspected case has been reported to-date



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Public Health Actions and Thematic Updates

Coordination

- All response pillars (Epi Surveillance, Case Management, Laboratory, IPC, Social Mobilization, Psychosocial, Dead body management and Coordination) are activated and fully operational
- Daily coordination meeting is ongoing at county level
- CHT has capacity to continue response efforts, with support from both national and WHO
- Follow up on stock balances at county level include; YF vacc. 120 doses, LLITNs 1995 pcs, N/S 20 ctn, R/L 23 ctn, PCM 500mg 3 cans, Ibuprofen 0, hand hygiene products 0
- Routine health services are still being provided in the county
- A team is setup to conduct detail investigation in Yarnee district where we have a suspected case of Monkey Pox currently treated at the St. Francis hospital

Surveillance and contact tracing

- Cumulative case count is 2, which include 1 lab. Confirmed & 1 suspected with 0% CFR
- A total of 14 contacts (Rivercess 8, Bassa 6) has been line listed for daily follow ups
- Active case search continues in affected district and all adjacent districts
- Surveillance activities are heightened at both community and health facility levels

Case Management

- Symptomatic treatment for confirmed case is ongoing
- Distributed Long Lasting Insecticides Treated Nets (LLITNs) to confirmed patient household.

Social Mobilization and Community engagement

- Conducted advocacy meetings with both community leaders and key stakeholders at county level
- Yellow fever messages have been developed for airing and distribution to all communities including adjacent districts in neighboring Nimba and Grand Bassa counties
- Community engagement meetings were conducted in Barchue town and Larkpazee towns in Jowein district
- Communication plan on yellow fever outbreak is being developed
- CHAs are being mobilized to create intensive community awareness in all communities in the county
- Radio talk show has been arranged for December 1, 2017 on radio RBS in Cestos city
- Jingle on Yellow Fever is being aired on RBS

Laboratory investigation

- Additional sample was collected from confirmed case for further confirmation
- Further orientation of DSO on sample collection and packaging was conducted by team

Infection Prevention and Control (IPC)

- Mentoring and strengthening of IPC practices at facilities and communities in affected district are ongoing
- Conducted inventory of supplies at county level; there are stock out on hand hygiene products

Public Health Measures

National level

- Validation of the National Action Plan for Health Security
- National response team has been dispatched to Bong County to support investigation of Lassa Fever Outbreak
- Weekly meeting with the laboratory to ensure data verification and harmonization
- Circulated zero draft of the National Action Plan for Health Security
- Work with Counties to determine response state of preparedness (lab specification for CSF collection and transportation, medical supplies and IPC)



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- Follow up with counties to conduct maternal deaths investigation, revision of forms and implementation of recommendations made
- Counties are encouraged to conduct health education for all public health diseases based on risk
- Counties are encouraged to update their cholera preparedness plans and review existing stocks of supplies for repositioning

Notes

- *Completeness* refers to the proportion of expected weekly IDSR reports received (target: $\geq 80\%$)
- *Timeliness* refers to the proportion of expected weekly IDSR reports received by the next level on time (target: $\geq 80\%$). 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: $\geq 2/100,000$)
- *Non-measles febrile rash illness rate* refers to the proportion of discarded 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



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Appendix 1: Summary of immediately reportable diseases, conditions, and events by County during Epi week 48 and cumulative reports, Liberia, 2017

Counties	No. of Health Districts	No. of Health District reported	Acute Flaccid Paralysis (Polio)		Acute Bloody Diarrhoea (Shigellosis)		Severe Acute Watery Diarrhoea (Cholera)		Human Exposure to Animal bites (Suspected Rabies)		Lassa Fever		Measles		Meningitis		Maternal Mortality	Neonatal Mortality	Neonatal Tetanus		VHF (including EVD)		Yellow Fever		Other Diseases/Events		
			A	D	A	D	A	D	A	D	A	D	A	D	A	D	D	D	A	D	A	D	A	D	A	D	A
Bomi	4	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bong	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gbarpolu	5	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Bassa	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Cape Mount	5	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Grand Gedeh	6	-	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Kru	5	-	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Lofa	6	6	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Margibi	4	4	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maryland	6	-	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Montserrado	7	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nimba	6	6	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rivercess	6	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
River Gee	4	4	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0
Sinoe	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Weekly	91	31	0	0	2	0	0	1	12	0	0	0	14	0	0	0	1	6	0	0	0	0	1	0	0	0	0
Cumulative Reported			75	0	248	0	145	6	1170	1	38	19	1350	2	61	2	214	534	14	4	36	275	152	1	1821	24	
Cumulative Laboratory Confirmed			0	0	18	0	2	0	0	0	29	4	255	0	1	0			0	0	0	0	1	0	0	0	0

Note: **A** = Alive
D = Dead

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National Public Health Institute of Liberia (NPHIL)

PURPOSE

In collaboration with the Ministry of Health, NPHIL strengthens existing infection prevention and control efforts, laboratories, surveillance, infectious disease control, public health capacity building, response to outbreaks, and monitoring of diseases with epidemic potential.

OUR MISSION

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

GOALS

Contribute to the development and sustainability of the public health workforce

Develop, enhance, and expand the surveillance and response platform

Develop and strengthen the laboratory system and public health diagnostics

Develop, enhance, and expand process and structures to protect environmental and occupation health

Expand, conduct, and coordinate public health and medical research to inform Liberian public health policies

Ensure sustainable financing and operations of the NPHIL

Epidemiological bulletin published with support of WHO and CDC

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