

# South Sudan

## Integrated Disease Surveillance and Response (IDSR)

Epidemiological Update W49 2018 (Dec 10- Dec 16)



- Completeness for IDSR reporting at the county level was 74% . Completeness for EWARS reporting from IDPs was 71%.
- A total of 15 alerts were reported, out of which 33% were verified, 7% risk assessed & 0 required a response.
- The suspected Ebola virus case that was reported from Rejaf, Jubek on 15 Dec 2018 has been confirmed negative for Ebola Zaire virus on PCR testing in Uganda.
- A Yellow Fever outbreak has been confirmed in Sakure, Nzara county, Gbudue state following one laboratory confirmed case. Out of the 35 additional samples collected by the investigating team, two (2) samples have tested presumptively positive for Yellow Fever and additional testing is being carried out.
- The confirmed rubella outbreak in Malakal PoC is still ongoing with 12 additional cases being reported since week 49. There are 15 laboratory confirmed cases so far.
- The reported clusters of acute watery diarrhea in Pibor has been investigated and three (3) initial samples have tested negative for *Vibrio cholera*. Further testing to identify the causative agent(s) for the diarrheal illness is ongoing. WASH cluster partners have been advised to step in and fill the identified gaps in WASH services.
- There was no new suspect Rift Valley Fever (RVF) case reported from Yirol East in week 49. A total of 58 suspect human cases including 6 confirmed; 3 probable; 48 non-cases; and 01 pending classification (with no definitive lab. test results) have been reported. Nine confirmed animal cases (cattle).
- No new HEV cases were reported in week 49. A total of 147 HEV cases (18 confirmed by PCR) have been reported in Bentiu PoC in 2018. Current response entails surveillance, case follow up, WASH and discouraging communities from using stagnant water for domestic and recreational purposes.
- In light of the confirmed EVD outbreak in North Kivu, the South Sudan EVD contingency plan has been updated and implemented to mitigate the risk of EVD importation and enhance readiness capacities.

# SURVEILLANCE PERFORMANCE

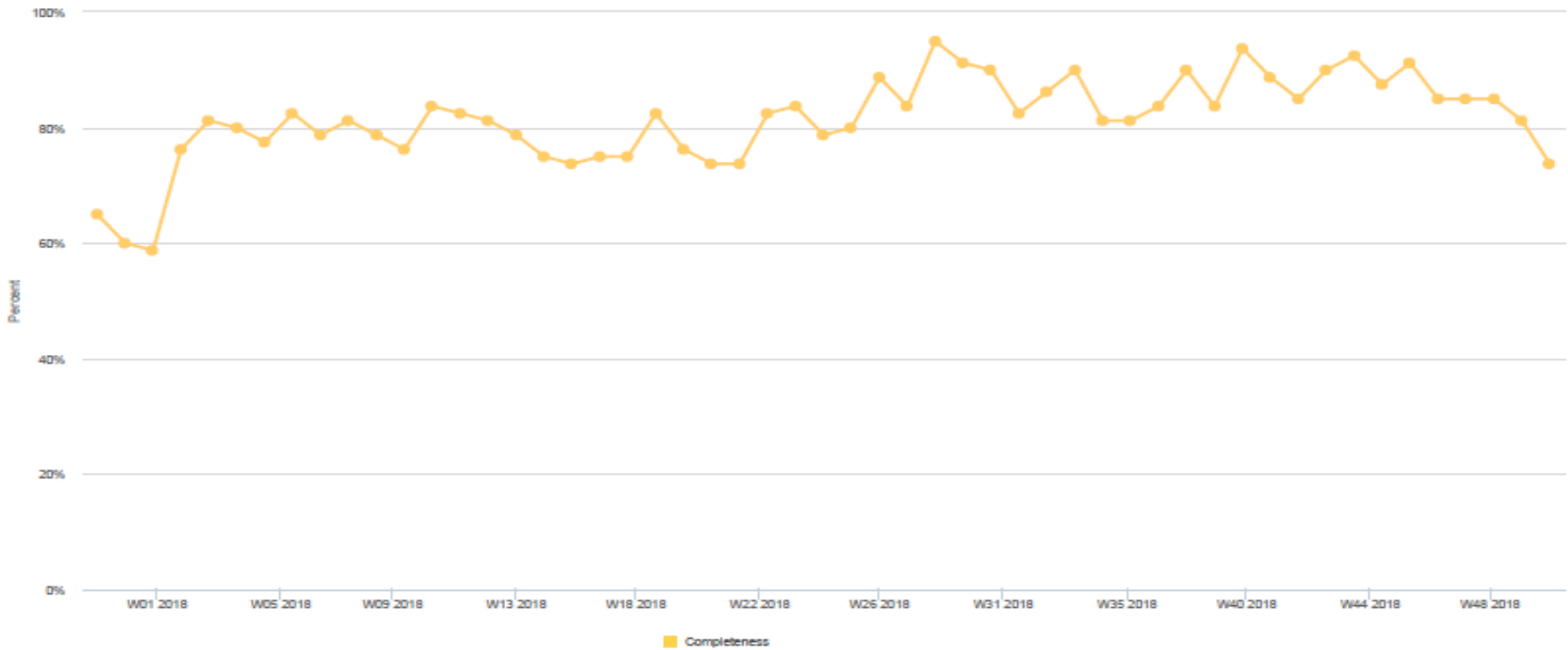
For the Integrated Disease Surveillance (IDSR) network and Early warning alert and response network (EWARN)

Table 1 | IDSR surveillance performance indicators by county (W50 2018)

Hub	Reporting		Performance (W50 2018)		Performance (Cumulative 2018)	
	# counties	# reports received	Completeness	Timeliness	Completeness	Timeliness
Aweil	5	5	100%	100%	89%	87%
Bentiu	9	6	67%	67%	78%	54%
Bor	11	3	27%	27%	58%	48%
Juba	6	6	100%	100%	89%	76%
Kwajok	7	7	100%	100%	100%	89%
Malakal	13	10	77%	77%	60%	32%
Rumbek	8	3	38%	38%	99%	91%
Torit	8	7	88%	88%	95%	75%
Wau	3	2	67%	67%	91%	75%
Yambio	10	10	100%	100%	99%	99%
<b>South Sudan</b>	<b>80</b>	<b>59</b>	<b>74%</b>	<b>74%</b>	<b>83%</b>	<b>74%</b>

- Completeness for IDSR reporting at county level was 74% in week 50 and cumulatively at 83% for 2018.
- Timeliness for IDSR reporting at county level was 74% in week 50 and cumulatively at 74% for 2018.

Figure 1 | Trend in IDSR completeness over time<sup>1</sup>

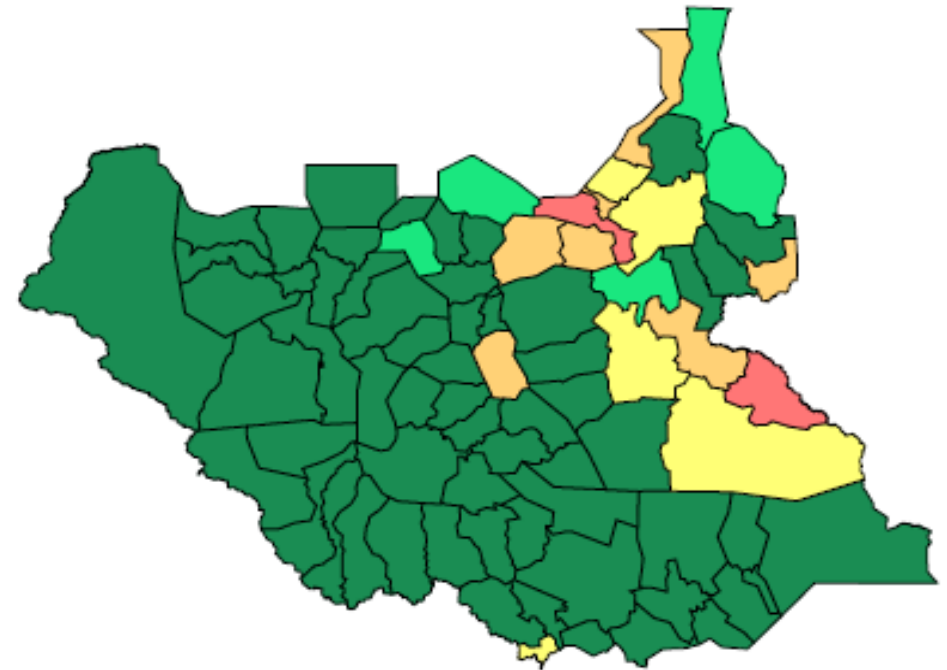
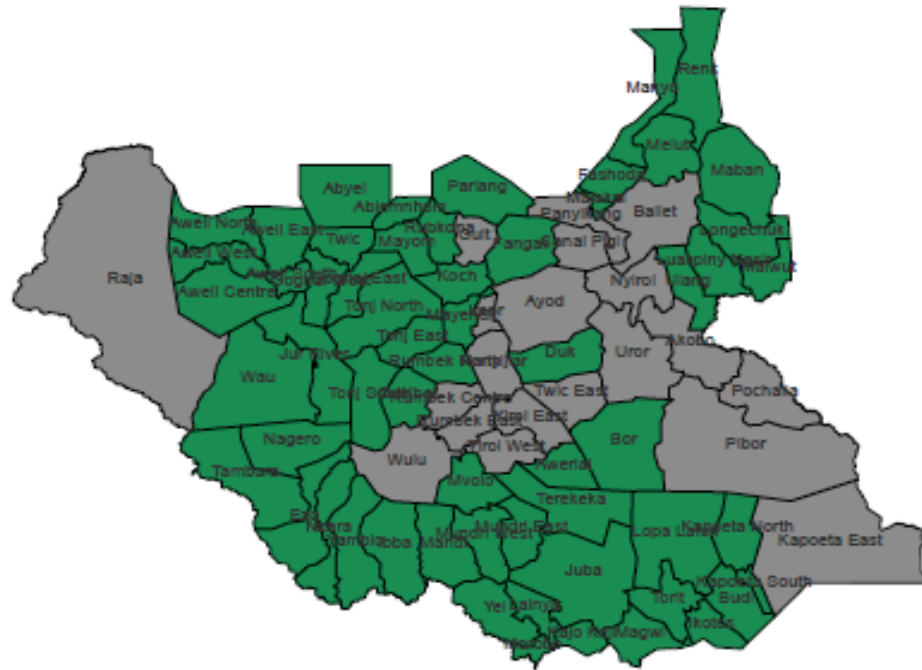


<sup>1</sup> Completeness footnote (to be drafted)

The graph shows completeness for weekly reporting at county level. A downward trend is noted in the last three weeks. The national IDSR reporting completeness in week 50 stands at 83%.

Map 1a | Map of IDSR completeness by county (W50 2018)

Map 1b | Map of IDSR completeness by county (2018)



- Counties that submitted their IDSR reports in W50 are shown in green in map 1a.
- Counties that did not submit their IDSR reports in W50 are shown in grey in map 1a.

Table 4 | EWARS surveillance performance indicators by partner (W50 2018)

Partner	Performance		Reporting (W50 2018)		Reporting (Cumulative 2018)	
	# sites	# reports received	Completeness	Timeliness	Completeness	Timeliness
CMD	3	3	100%	100%	57%	55%
GOAL	2	2	100%	100%	100%	94%
HLSS	2	1	50%	50%	50%	50%
IMA	7	6	86%	86%	73%	72%
IMC	6	4	67%	67%	92%	92%
IOM	9	9	100%	100%	90%	90%
IRC	1	1	100%	100%	100%	92%
Medair	2	2	100%	100%	95%	92%
MSF-E	2	1	50%	50%	66%	53%
MSF-H	3	1	33%	33%	55%	40%
SMC	6	4	67%	67%	58%	58%
UNIDO	3	1	33%	33%	34%	34%
UNKEA	2	2	100%	100%	88%	86%
World Relief	1	1	100%	100%	96%	88%
TRI-SS	7	0	0%	0%	40%	40%
LIVEWELL	4	4	100%	100%	48%	48%
Total	62	44	71%	71%	67%	64%

Timeliness and completeness for EWARN/IDP reporting stands at 71% for week 50, while the cumulatively completeness and timeliness are 67% and 64% respectively for 2018.

# EVENT-BASED SURVEILLANCE

Alert management including detection;  
reporting; verification; risk assessment; & risk  
characterization



Table 7 | Alert performance indicators by Hub

Hub	W50		Cumulative (2018)	
	# alerts	% verif.	# alerts	% verif.
Aweil	1	100%	47	96%
Bentiu	2	0%	97	72%
Bor	4	50%	81	74%
Juba	1	100%	85	69%
Kwajok	1	100%	48	93%
Malakal	2	0%	93	78%
Rumbek	0	0%	64	75%
Torit	0	0%	61	85%
Wau	1	0%	68	76%
Yambio	3	0%	114	58%
<b>South Sudan</b>	<b>15</b>	<b>33%</b>	<b>754</b>	<b>75%</b>

Table 8 Summary of key alert indicators

W50	Cumulative (2018)	
15	754	Total alerts raised
33%	75%	% verified
0%	0%	% auto-discarded
7%	3%	% risk assessed
0%	1%	% requiring a response

Out of 15 alerts that were received in week 50, 33% were verified and 7% were risk assessed. None of the alerts required a response. Cumulatively, 754 alerts were received and 75% were verified while 3% were risk assessed.

Table 9 | Alert performance indicators by event

Event	W50		Cumulative (2018)	
	# alerts	% verif.	# alerts	% verif.
<b>Indicator-based surveillance</b>				
Malaria	2	50%	156	72%
AWD	3	33%	223	70%
Bloody Diarr.	6	17%	190	61%
Measles	4	50%	157	81%
Meningitis	0	0%	0	0%
Cholera	0	0%	6	100%
Yellow Fever	0	0%	5	80%
Guinea Worm	0	0%	26	88%
AFP	0	0%	54	86%
VHF	0	0%	4	100%
Neo. tetanus	0	0%	5	60%
<b>Event-based surveillance</b>				
EBS total	0	0%	36	72%

Table 10 | Event risk assessment

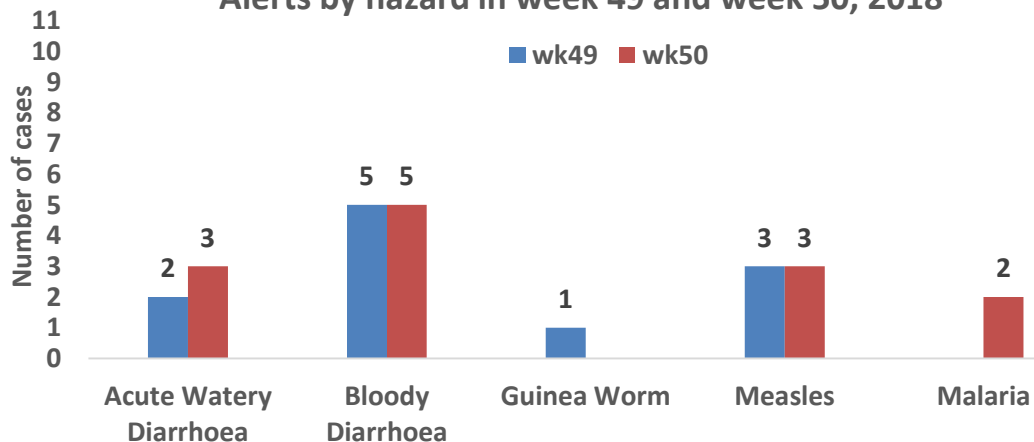
W50	Cumulative (2018)	
0	8	Low risk
2	2	Medium risk
0	3	High risk
0	1	Very high risk

In week 50, bloody diarrhea (6) and measles (4) were the most frequently reported infectious diseases. No alert was reported through event-based surveillance.

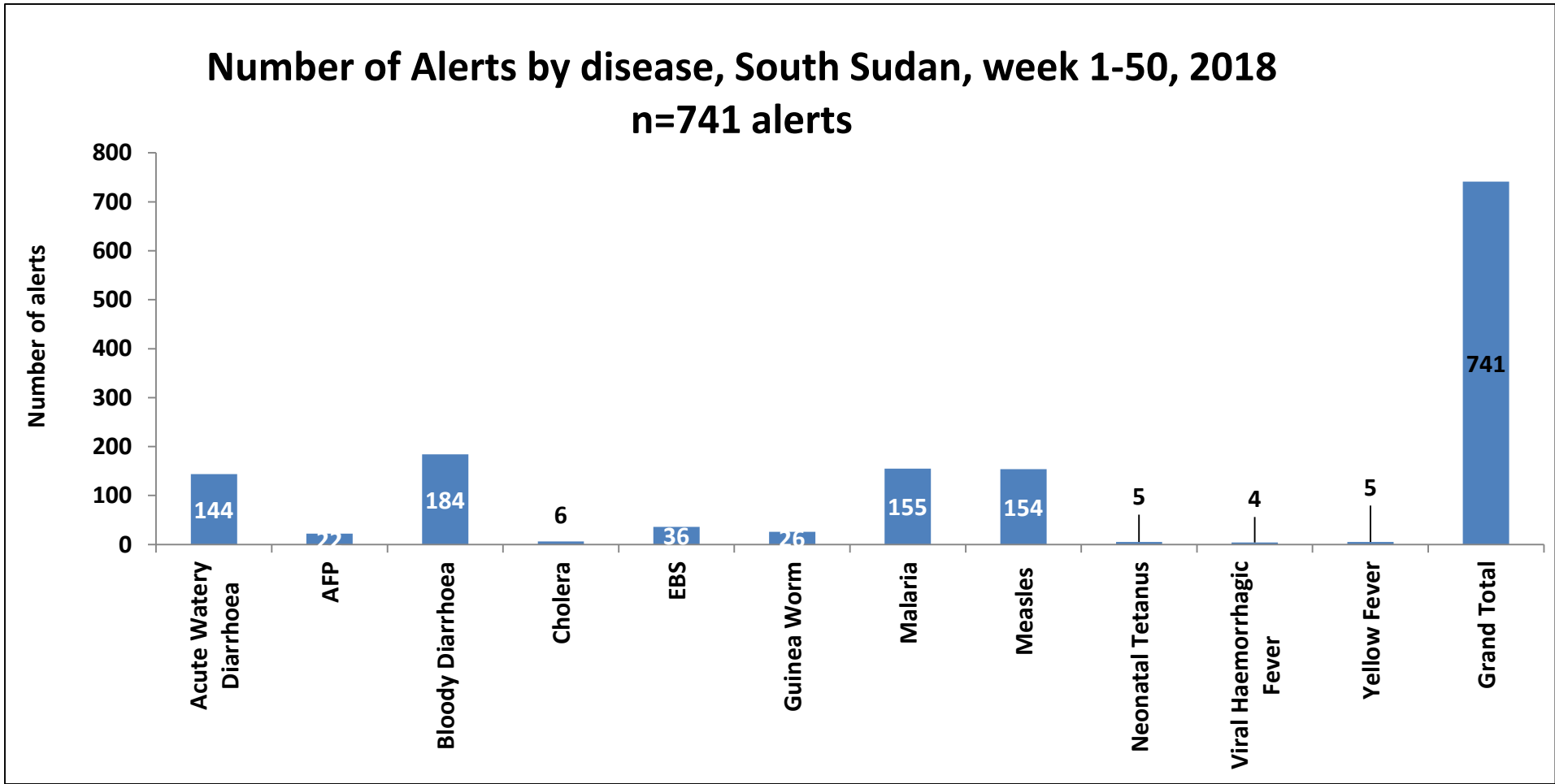
## Alert by disease and county in W50 2018

County	Acute Watery Diarrhoea	Bloody Diarrhoea	Measles	Malaria	Total Alerts
Abyei			1		1
Aweil Centre		1			1
Duk		1			1
Ezo	1	1		1	3
Fashoda		1			1
Juba			1		1
SMC Malou	1				1
SMC Arek Mobile Clinic				1	1
UNIDO Leer TPA Clinic	1				1
MSF-H Bentiu PoC Hospital			1		1
IOM Wau PoC Clinic		1			1
<b>Total Alerts</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>13</b>

Alerts by hazard in week 49 and week 50, 2018



- During week 50, a total of 13 alerts were reported through EWARS
- During the week; Bloody diarrhoea, measles and AWD were the most frequently reported alerts (see table and figure)
- One confirmed measles case in Renk. Five additional samples tested negative for measles IgM.
- 1 confirmed measles case in Agok
- **Acute watery diarrhoea cluster, Pibor PHCC:** On 12 December 2018, Pibor PHCC reported 11 acute watery diarrhoea cases. The cases originated from eight different villages. The age range was 6 months to 11 years with a median age of 1.5 years. They were all admitted with severe dehydration and treated with no deaths. Preliminary investigation was conducted by WHO MMT and three samples collected tested negative for cholera. Record review revealed an upsurge in cases of AWD among children under 1 years of age in the health facilities in the area. Additional samples are being tested for Rotavirus. Poor sanitation and unsafe drinking water identified as possible causes of the diarrhoea. WASH partners have been advised to respond to the gap in WASH services.



The Figure shows the cumulative number of alerts triggered in 2018 by hazard.

## Cumulative alerts by risk assessment stage in 2018

County	OUTCOME	RISK ASSESSED	RISK CHARACTERISED	VERIFICATION	Total Alerts
Acute Watery Diarrhoea	1	1		142	144
AFP		1		21	22
Bloody Diarrhoea	1	1		182	184
EBS	1	2		33	36
Guinea Worm	1	1		24	26
Neonatal Tetanus	2			3	5
Viral Haemorrhagic Fever				4	4
Yellow Fever				5	5
Measles	4	8	1	141	154
Cholera				6	6
Malaria	4	3	3	145	155
<b>Total Alerts</b>	<b>14</b>	<b>17</b>	<b>4</b>	<b>706</b>	<b>741</b>

- The Figures show the cumulative alerts by risk assessment state in 2018
- Of the 741 alerts reported in 2018; a total of 706 alerts were verified; 17 alerts underwent risk assessment; and 14 alerts have documented outcomes.

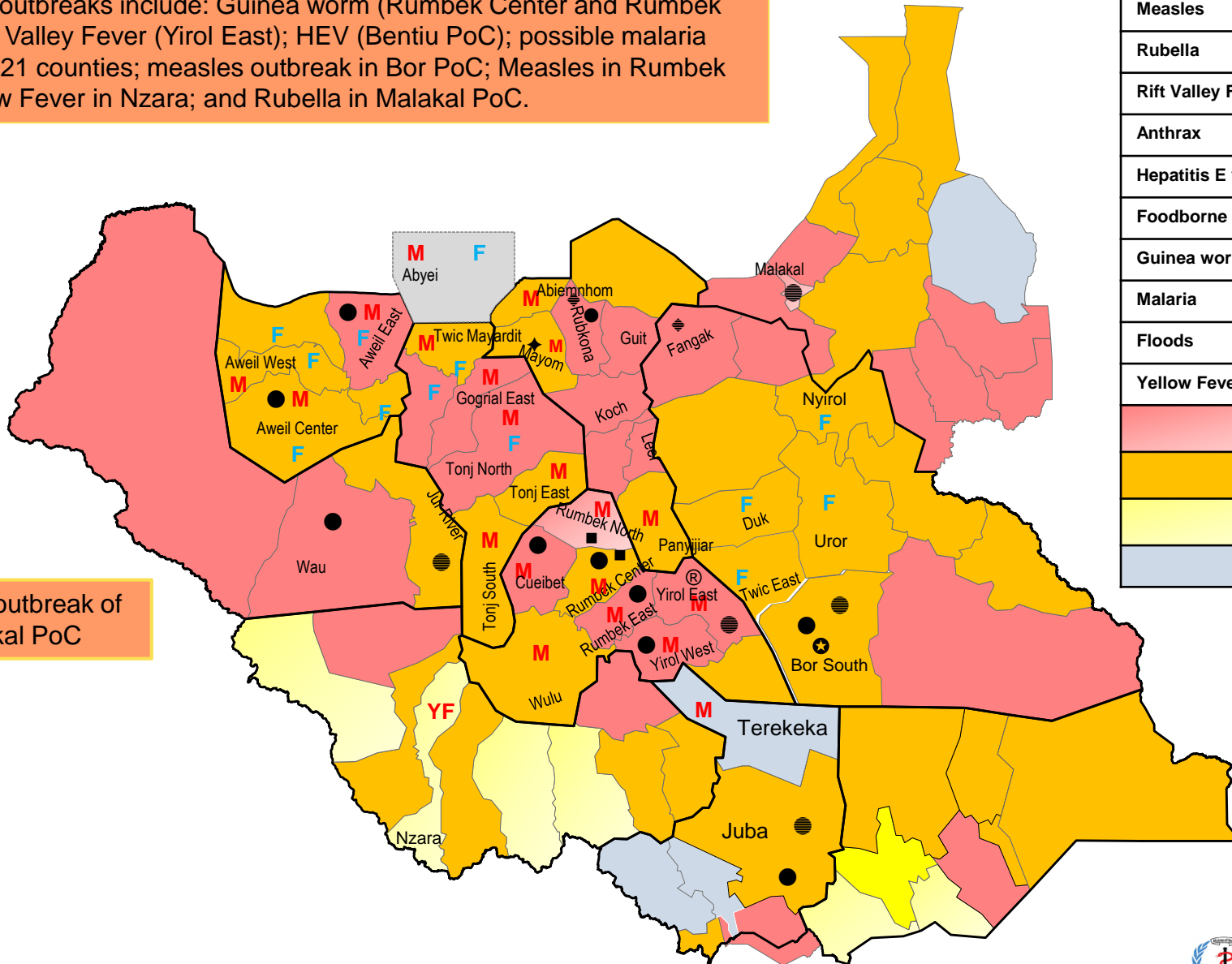
# OUTBREAKS IN 2018

Major suspect and confirmed outbreaks in  
South Sudan in 2018

# Confirmed Outbreaks South Sudan – December 2018

- The map show outbreaks confirmed in 2018
- The active outbreaks include: Guinea worm (Rumbek Center and Rumbek North); Rift Valley Fever (Yirol East); HEV (Bentiu PoC); possible malaria upsurge in 21 counties; measles outbreak in Bor PoC; Measles in Rumbek East; Yellow Fever in Nzara; and Rubella in Malakal PoC.

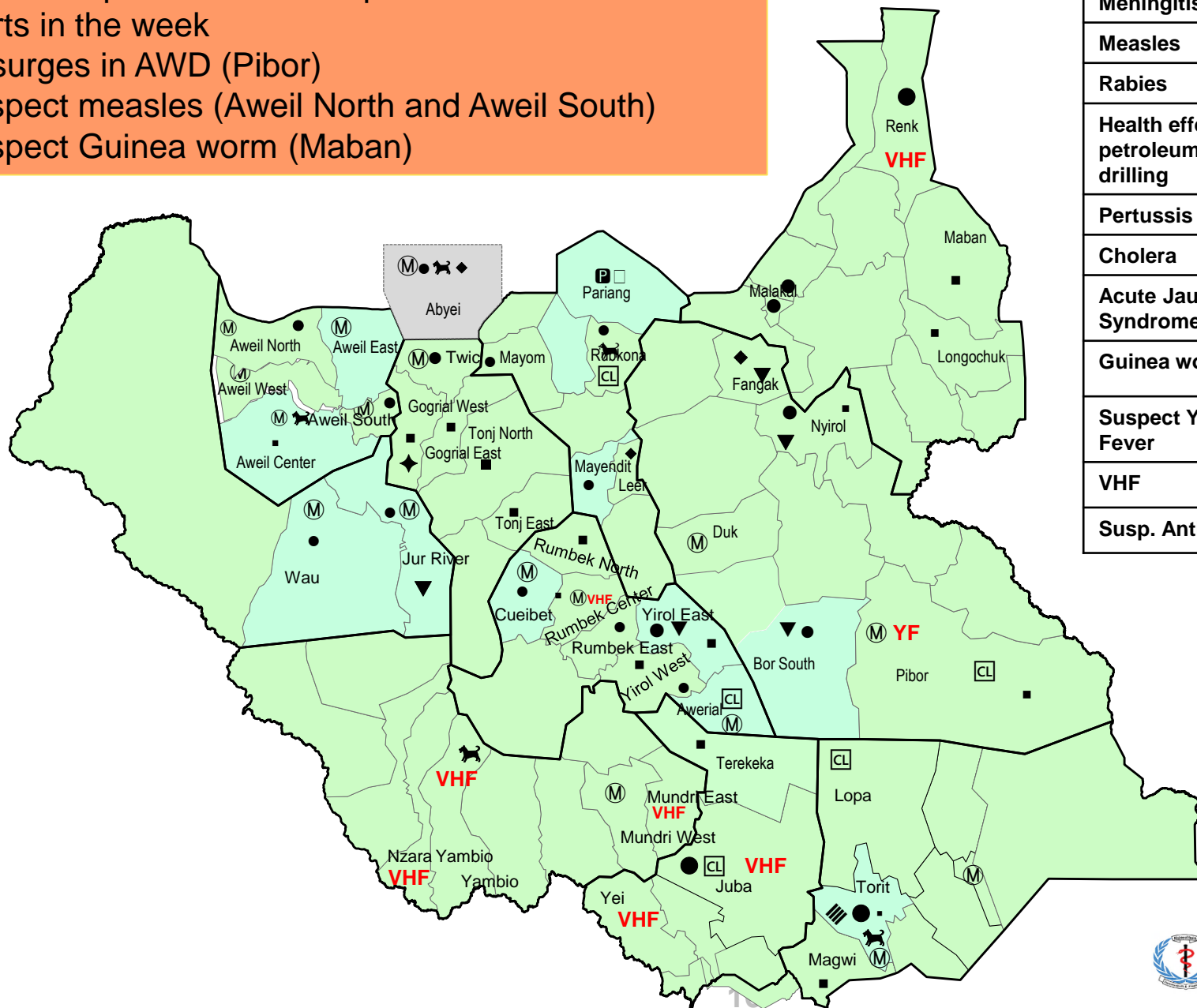
Measles	●
Rubella	●
Rift Valley Fever	®
Anthrax	◆
Hepatitis E virus	◆
Foodborne disease	⊕
Guinea worm	▪
Malaria	M
Floods	F
Yellow Fever	YF
	IPC - Emergency phase
	IPC- Crisis phase
	IPC - Stressed phase
	No data



New confirmed outbreak of Rubella in Malakal PoC

# Suspect Outbreaks South Sudan – 16 December 2018

- Map shows suspect outbreaks reported in 2018
- New alerts in the week
  - Upsurges in AWD (Pibor)
  - Suspect measles (Aweil North and Aweil South)
  - Suspect Guinea worm (Maban)



Meningitis	Ⓜ
Measles	●
Rabies	🐕
Health effects of petroleum drilling	Ⓜ □
Pertussis	▼
Cholera	□
Acute Jaundice Syndrome	◆
Guinea worm	■
Suspect Yellow Fever	YF
VHF	VHF
Susp. Anthrax	◆



Aetiological agent	Location (county)	Date first reported	New cases since last bulletin	Cumulative cases to date (attack rate %)	Interventions			
					Case management	Vaccination	Health promotion	WASH
<b>Ongoing epidemics</b>								
Rubella	Malakal PoC	25/10/2018	12	23 (0.09)	Yes	No	Yes	N/A
Yellow Fever	Nzara	23/11/2018	0	1 (0.001)	Yes	No	Yes	N/A
Measles	Rumbek East	09/10/2018	3	62 (0.002)	Yes	No	Yes	N/A
Measles	Bor PoC	20/10/2018	0	3 (0.15)	Yes	No	Yes	N/A
Guinea worm	Rumbek Center & Rumbek North	27/05/2018	0	3 (0.001)	Yes	N/A	Yes	Yes
RVF	Yirol East	28/12/2017	0	58 (0.054)	Yes	N/A	Yes	N/A
Hepatitis E	Bentiu PoC	03/01/2018	1	145 (0.123)	Yes	No	Yes	Yes
Possible malaria upsurge	12 counties	01/07/2018			Yes	N/A	Yes	N/A

### **Ongoing outbreaks in week 50, 2018**

1. Rubella Malakal PoC
2. Yellow Fever in Nzara county
3. Measles in Rumbek East county
4. Measles in Bor PoC
5. Guinea worm (Rumbek Center and Rumbek North);
6. Rift Valley Fever (Yirol East);
7. Hepatitis E Virus (Bentiu PoC);
8. Possible malaria upsurge in 12 counties

## Response | Summary of major outbreaks controlled in 2018

Aetiologic agent	Location (county)	Date first reported	New cases since last bulletin	Cumulative cases to date (attack rate %)	Interventions			
					Case management	Vaccination	Health promotion	WASH
<b>Controlled epidemics</b>								
Measles	Juba (Al Mahad IDPs)	11/09/2018	0	26 (0.33)	Yes	Yes	Yes	N/A
Measles	Bentiu PoC	10/06/2018	0	23 (0.02)	Yes	Yes	Yes	N/A
Rubella	Bor South	20/08/2018	0	03 (0.001)	Yes	No	Yes	N/A
Measles	Yirol West	07/08/2018	0	11 (0.007)	Yes	Yes	Yes	N/A
Rubella	Yirol East	26/06/2018	0	18 (0.017)	Yes	Yes	Yes	N/A
Rubella	Jubek	28/05/2018	0	10 (0.0017)	Yes	No	Yes	N/A
Rabies probable	Bentiu PoC	06/12/2017	0	270 (0.231)	Yes	Yes	Yes	N/A
Measles	Rumbek Center	13/05/2018	0	40 (0.017)	Yes	Yes	Yes	N/A
Measles	Wau PoC AA	04/04/2018	0	1 (0.0025)	Yes	No	Yes	N/A
Hepatitis E	Old Fangak	15/02/2018	0	01 (0.001)	Yes	No	Yes	Yes
Rubella	Jur River	14/02/2018	0	76 (0.039)	Yes	No	Yes	N/A
Rubella	Juba	26/02/2018	0	22 (0.0037)	Yes	No	Yes	N/A
Rubella	Mayom	22/02/2018	0	08 (0.004)	Yes	No	Yes	N/A
Measles	Aweil Center	6/Jan/2018	0	22 (0.021)	Yes	Yes	Yes	N/A
Measles	Cueibet	14/10/2017	0	20 (0.012)	Yes	Yes	Yes	N/A
Measles	Aweil East	05/02/2018	0	31 (0.006)	Yes	Yes	Yes	N/A
Foodborne	Bor South	18/02/2018	0	434 (29)	Yes	Yes	Yes	Yes
Cut. Anthrax	Mayom	27/01/2018	0	2 (0.001)	Yes	No	Yes	N/A
Meningitis	Torit	17/01/2018	0	173 (0.107)	Yes	No	Yes	N/A

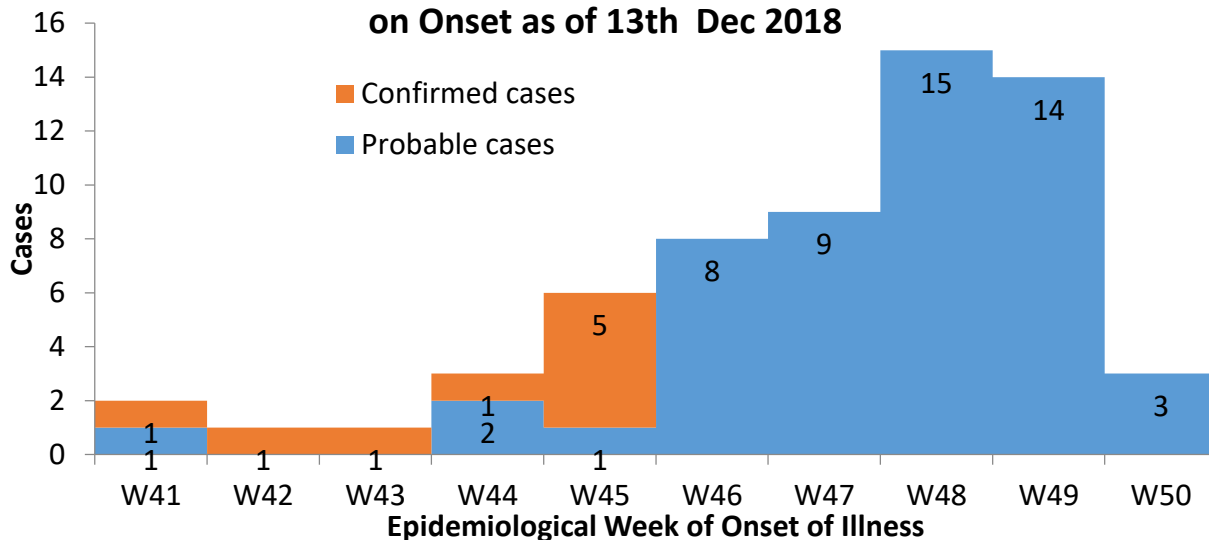
During 2018, at least 25 outbreaks have been reported out of which 19 outbreaks have been controlled.

# ACTIVE OUTBREAKS AND PUBLIC HEALTH EVENTS

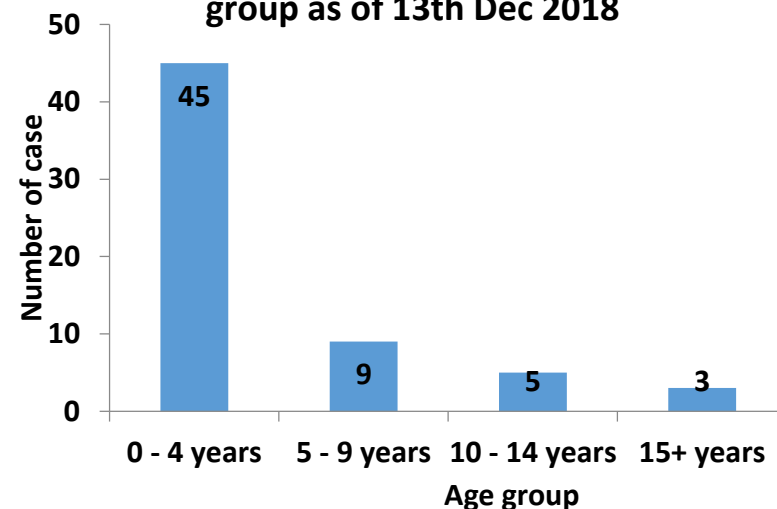
Brief epidemiological description and public health response for active outbreaks and public health events

# Confirmed measles outbreak – Rumbek East

Confirmed and Probable Measles Cases by Week of Illness on Onset as of 13th Dec 2018



Distribution of Measles Cases by Age group as of 13th Dec 2018



## Background

- Suspect measles cases reported from Mabor Duang village, Aduel payam in Rumbek East where the initial suspect case was a 38 year female whose illness started on 12 October 2018 in week 41.
- The affected village is served by Mabor Duang PHCC

## Descriptive Epidemiology

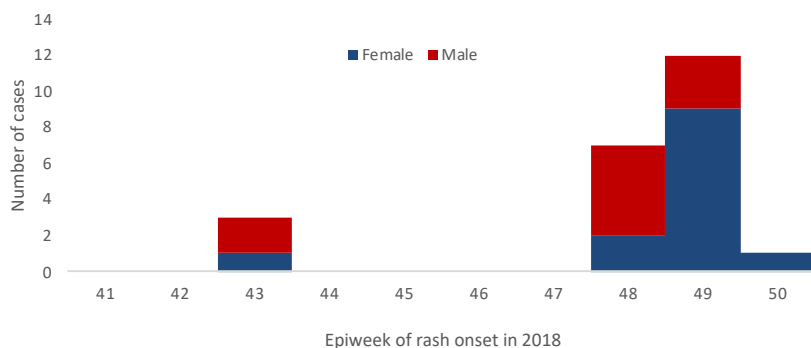
- Since 20 Oct 2018; at least 62 cases including 3 death (CFR 4.8%) have been reported.
- Cases reported from six payams with most originating from Aduel; Atiaba, and Mathian kok.
- Majority of the cases, 45 (72.6%), were children < 5 years of age
- A total of 9 samples tested positive for measles IgM on 22 November 2018

## Recommended response

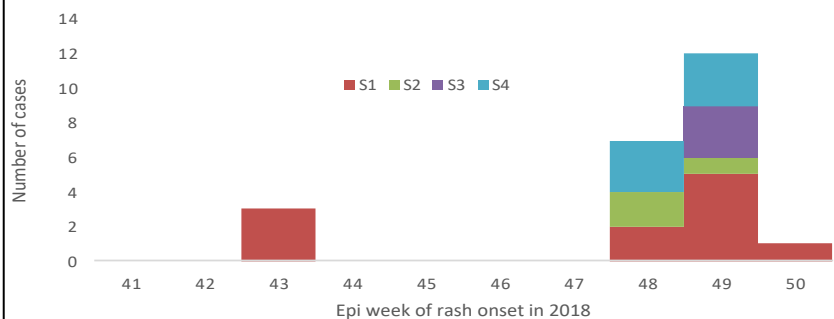
1. Reactive campaign to be conducted early January 2019. The campaign targets to vaccinate 51,653 children 6-59 months from 8 payams in Rumbek East; one payam in Wulu; and three payams in Yirol West.
2. Surveillance through active case search and line listing and community sensitisation on routine immunization

## Confirmed Rubella outbreak – Malakal PoC

Rubella Cases by gender in Malakal PoC, week 43-50, 2018



Rubella cases by sector in Malakal PoC, week 43-50, 2018



Age	Female	Male	Total cases
1-4yrs	6(26.1)	5(21.7)	11(47.8)
5-9yrs	7(30.4)	5(21.7)	12(52.2)
10-14yrs	0(0)	0(0)	0(0)
15+yrs	0(0)	0(0)	0(0)
<b>Total cases</b>	<b>13 (56.5)</b>	<b>10(43.5%)</b>	<b>23(100)</b>

### Background

- Suspect measles cases reported from Sector 1; Block 1 of Malakal PoC starting 27 Oct 2018. The initial three samples were IgM negative for measles and rubella.

### Descriptive Epidemiology

- Since 27 Oct 2018; a total of 23 cases (no deaths) have been reported.
- 13 (56.2%) are female with most cases 7 (30.4%) reported in females 5-9 years.
- There no care reported in females 10-14 years and 15+yrs of age.
- The outbreak started in sector 1 which also remains the most affected sector
- A total of 15 samples tested measles IgM negative but tested rubella IgM positive.

### Recommended response

- Continue line listing and analyzing the epidemiology to describe the high-risk groups
  - Women of reproductive age group, 15-49 years
- Provide supportive symptomatic care to new cases
- Sensitize the communities to enhance routine immunization.

## Confirmed Yellow Fever Case, Sakure, Nzara county

- On 23th Nov 2018, a suspect Ebola alert (Mr. T. A. 25 years old farmer) was reported in Sakure, Nzara county, Gbudue state;
- His illness started on 18/Nov/ 2018 two days after traveling to Bangadi, DR Congo. He presented with fever, body weakness, and vomiting of blood. He returned to South Sudan on 23/11/2018 and was retained at Sakure border screening post.
- The rapid response team investigated and collected samples from the case on 24/11/2018. The preliminary GeneXpert test results were negative for Ebola Zaire and follow up PCR testing was negative for all Ebola species, Marburg, Rift Valley Fever, Crimean Congo Haemorrhagic Fever, and Sosuga viruses.
- Further testing of the sample at UVRI using Taqman Array Card platform and YF-specific PCR assay confirmed that the sample was **PCR positive for Yellow Fever Virus**.
- Response actions to date entail:
  - Epidemiological and entomological investigations (by MoH, WHO Juba, & AFRO) completed on 14 Dec 2018
  - 35 samples collected from asymptomatic contacts and previously jaundiced cases in Yambio, Nzara, and Sakure have been shipped to Uganda Virus Research Institute for testing.
  - Enhanced surveillance for suspect Yellow Fever cases countrywide including retesting of previous VHF samples for Yellow Fever
  - The Yellow Fever risk assessment has been drafted and will be populated as new information becomes available to facilitate eventual event grading and initiation of recommended public health interventions

# Yellow Fever Update: Sakure Payam, Nzara county, Gbudue state

## Epidemiological update

- As of 19 Dec 2018, only one (1) PCR confirmed Yellow Fever case in the country
- Out of 35 samples collected by investigation team during active case search and contact tracing, two (2) samples tested presumptively yellow fever IgM positive

## Entomological update

- Overall, the entomological assessments in Sakure, Nzara, and Yambio towns showed no evidence of *Aedes species* mosquitoes and the stegomyia entomological outbreak indices for the three towns were all below the WHO epidemic thresholds. This is attributed to the current dry season and hence the greatly reduced breeding and mosquito populations at this time of the year.

## Laboratory update

- Out of the 36 samples tested;
  - One (1) sample was PCR confirmed for yellow fever virus.
  - Two (2) samples were presumptively yellow fever IgM positive (PRNT underway)
  - Conclusive testing underway for the remaining 33 samples (presumptively negative or inconclusive on preliminary serological testing).
- The yellow fever PCR positive case and the two presumptive yellow fever IgM positive cases all originate from Sakure payam in Nzara Payam, Gbudue state

## Recommendations

- Surveillance and laboratory investigation of new suspect cases
- Conclusive testing of presumptive yellow fever IgM positive cases awaited
- The decision on conducting a rapid risk assessment will be based on additional information

## Ebola alerts investigated from May 2018 to date

Date	Cases	Deaths	Payam	County	eRDT	eGeneXpert	ePCR	Comments
28May	1	0	Makpandu	Yambio	ND	ND	-ve	Reported in refugee camp
8Sep	1	1	Bakiwiri	Yambio	ND	ND	-ve	Did not meet case definition
26Sep	1	1	N/Bari	Juba	ND	ND	-ve	Community death
3Oct	1	1	Yei town	Yei	ND	ND	ND	Never traced (?false alert)
12Oct	1	0	Rumbek	Rumbek Center	ND	-ve	-ve	Recent travel from DR Congo
14Oct	1	0	Gumbo	Juba	ND	-ve	-ve	Did not meet case definition
18Oct	1	1	Mundri East	Mundri East		ND	-ve	Reported by Lui hospital
21Oct	1	1	Yambio	Yambio	ND	ND	-ve	Recovered & discharged
29Oct	2	0	Nimule	Pageri	ND	ND	ND	Alerts discarded
11Nov	1	1	Loka	Lainya	ND	-ve	-ve	Investigated 11 Nov
23 Nov	1	0	Sakure	Nzara	ND	-ve	-ve	Confirmed for Yellow Fever
29 Nov	1	1	Yambio	Yambio	ND	-ve	-ve	Investigated on 29 Nov
03 Dec	1	0	Renk South	Renk	ND	-ve	-ve	Investigated 4 Dec
15 Dec	1	0	Rejaf	Rejaf	ND	-ve	Pending	Investigated 15 Dec

- The latest EVD suspect case has been confirmed negative on PCR testing in UVRI, Entebbe, Uganda
  - The suspected Ebola case was reported from Juba Military hospital on 15 Dec 18. The rapid response team investigated the case on 15 Dec 2018. The sample obtained tested negative for Ebola Zaire following GeneXpert testing in Juba on 15 Dec 18.
- A total of 18 Ebola alerts have been investigated since May 2018
- Samples obtained from 12 Ebolavirus alerts; 11 samples tested negative for Ebolavirus and 1 sample tested positive for Yellow Fever on PCR.



## Suspect Ebola case, Rejaf, Jebek, 15 December 2018

On 15<sup>th</sup> December 2018, Juba M. Hospital reported to the Ministry of Health an EVD alert.

### Case description

- The case involved a 55 year male that presented on 15 Dec 2018 with two-day history of fever, headache, diarrhoea, abdominal pains, intense fatigue, dyspnea, chest pain, cough, and unexplained bleeding from the gums, nose, and vomitus (characteristically coffee-grounds).
- He reported no contact with someone with bleeding or severe illness; no history of travel to DR Congo.
- As part of the rapid response team investigations on 15/12/2018; samples were collected and shipped to the National Public Health Laboratory the same day.
- Preliminary GeneXpert testing on 15/12/2018 was negative for Ebola Zaire.
- The sample will be shipped for PCR at UVRI, Entebbe, Uganda on 17 Dec 2018.

### Next steps

- The suspect case is isolated in Juba M. Hospital since VHF confirmatory testing is pending
- Rapid response team deployed to conduct case investigations, sample collection, and preliminary GeneXpert testing
- Ship sample for confirmatory PCR testing
- Strengthen case investigation and laboratory capacities for alert management

## Malaria trends

### Current malaria trends

Malaria was the leading cause of morbidity and mortality accounting for 59.4% of all cases in week 50, 2018. The trend analyses showed 12 counties in 5 state hubs currently have malaria trends that are significantly higher than expected. Counties with malaria trends that exceed the threshold (third quartile of trends for the period 2013-2017) include:

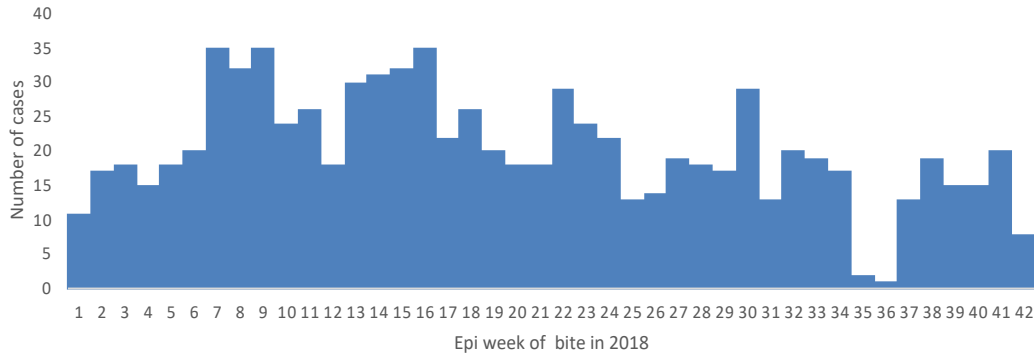
1. **Aweil Hub** (Aweil East, Aweil West, Aweil North)
2. **Rumbek Hub** (Cueibet)
3. **Kuajok Hub** (Twic, Gogrial East, Gogrial West, Tonj East, Tonj South and Abyi)
4. **Juba Hub** (Juba)
5. **Wau Hub** (Jur River)

### Proposed public health actions

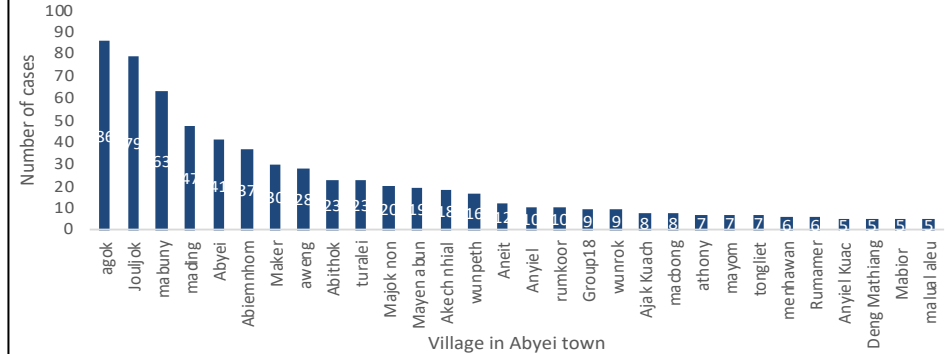
1. Convene malaria taskforce or malaria technical working group meeting to ensure that operational readiness for malaria prevention, diagnosis, and treatment are optimized.
2. Field missions to conduct technical verification of the trends in the affected counties
3. Assessment of current stock levels of malaria diagnostics (RDTs), medicines (ACTs), and LLINs in the affected counties.
4. Stocking up on malaria prevention (LLINs), diagnostics (RDTs), medicines (ACTs), and enhancing behavioral change communication for malaria prevention, prompt investigation and initiation of treatment

## Animal bites - suspect rabies, Agok hospital, Abyei Town

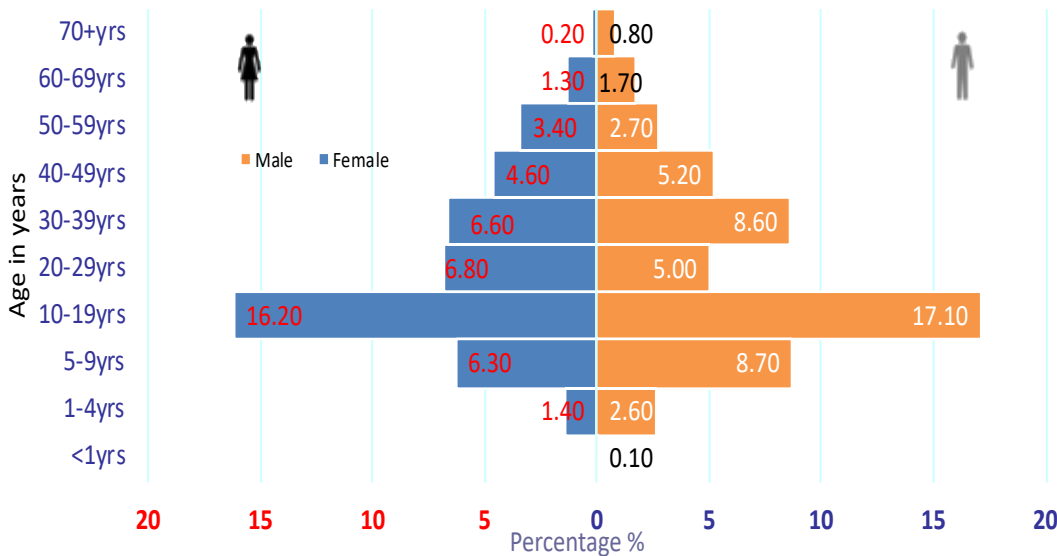
Dog bite cases treated in Agok hospital, Abyei town, week 1-42, 2018



Animal bite cases by village in Abyei town, week 1-42, 2018



Suspect rabies case distribution by age and sex, Agok, week 1-42, 2018



- An increase in dog bite (suspect rabies) cases continues to be reported from Agok hospital in Abyei.
- An exponential increase in suspect rabies cases has been reported in 2018 when compared to the previous years with a total of 848 cases reported in 2018 (week 1-42);
- Most bites reported in persons aged 10-19 years and there are no significant risk difference by sex (gender)
- Current response entails surveillance - case detection and line listing & post exposure prophylaxis with rabies vaccine.
- As part of the rabies day (28/9/2018) celebrations, Abyei is one of the five states selected by the South Sudan Veterinary Association (SSVA) to conduct rabies vaccination in dogs (the campaign is currently underway in Abyei)
- Meeting organized in PHEOC on 24/10/2018 to review rabies situation and current response

# Suspect Hepatitis E virus – Agok, Abyei

## Background

- MSF Agok hospital has reported suspect hepatitis E cases from Agok, Abyei town.
- Abyei has in the recent weeks been affected by floods following torrential rains. This should have exacerbated contamination of water sources in the affected areas

## Descriptive Epidemiology

- At least seven (7) suspect Hepatitis E virus cases and two (2) deaths (CFR 29%) deaths have been line listed since 10 July 2018.
- A total of six cases have been tested positive for HEV by RDT but definitive PCR testing is pending. However, the recent death was HEV RDT negative.
- The symptoms include fever, jaundice, vomiting, epigastric pains, head ache, and at least two cases have had unexplained bleeding.
- All the affected to are males with a median age of 24 years
- All the affected are from Abyei town

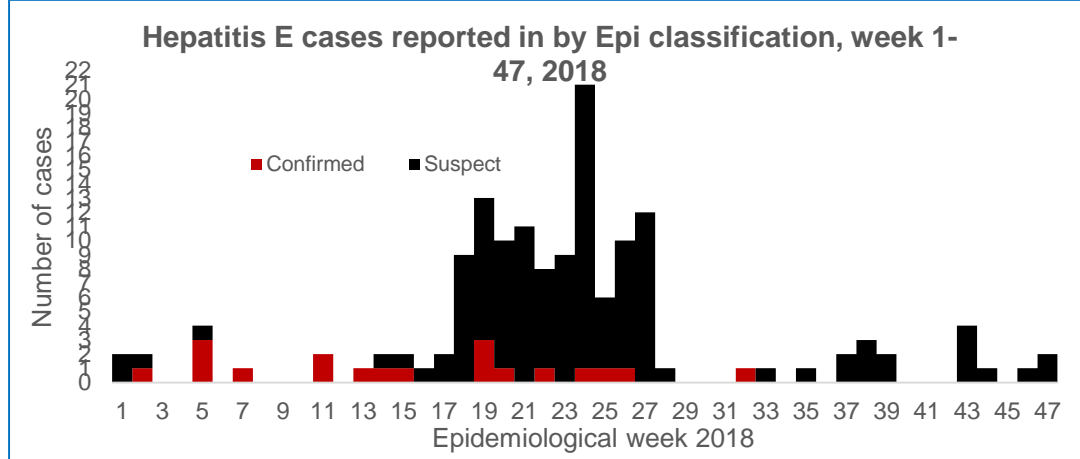
## Recommended response

1. Supportive case management and line listing underway in MSF Agok hospital
2. Integrated health WASH response planned to map possible sources of contamination and to improve access to safe water and sanitation in the affected locations

## Other Public Health issues in Abyei

- Abyei is also currently challenged by the following public health issues
- **Malaria** – current malaria trends higher than expected (above the third quartile)
- **Suspect rabies** – Abyei has reported 848 animal bites (suspect rabies) in 2018

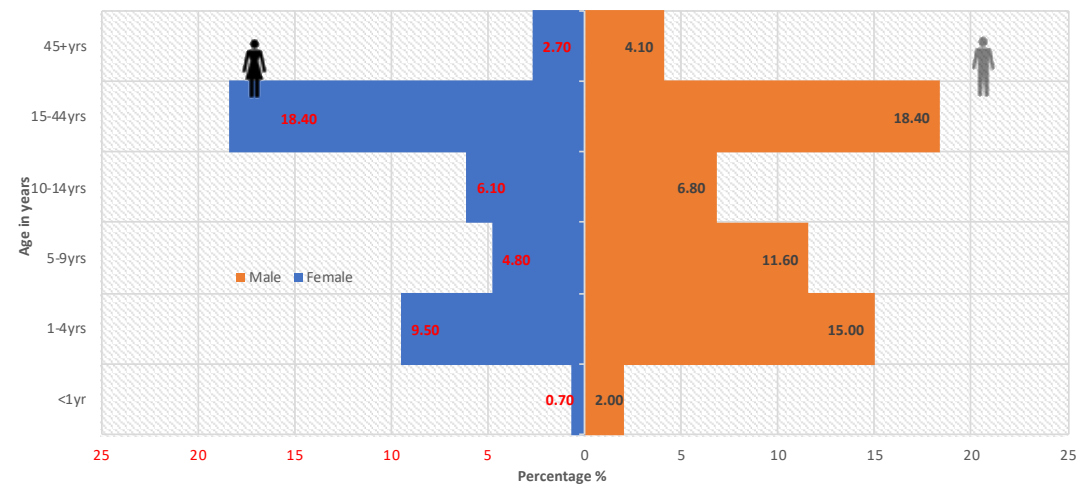
## Hepatitis E, Bentiu PoC



## Bentiu PoC

- At least 147 suspect cases of Hepatitis E (HEV) including one death (CFR 0.70%) have been reported in 2018. Of the 147 suspect cases, a total of 18 cases have been PCR confirmed as HEV in Bentiu PoC
- Only 11 HEV cases have been admitted.
- Most (37.1%) of the cases are 15-44 years of age; and 59% being male. Among the females, most cases have been reported in those aged 15-44 yrs (who are at risk of adverse outcomes if infected in the 3<sup>rd</sup> trimester of pregnancy).
- Use of stagnant water for domestic or recreation purposes likely to be source of infection - communities are being educated on the risk and draining the water is being discussed
- Unicef has disseminated key HEV messages - on radio [Kondial FM & Bentiu FM] and through community sensitizations.
- Case identification and follow up is and WASH interventions are ongoing.

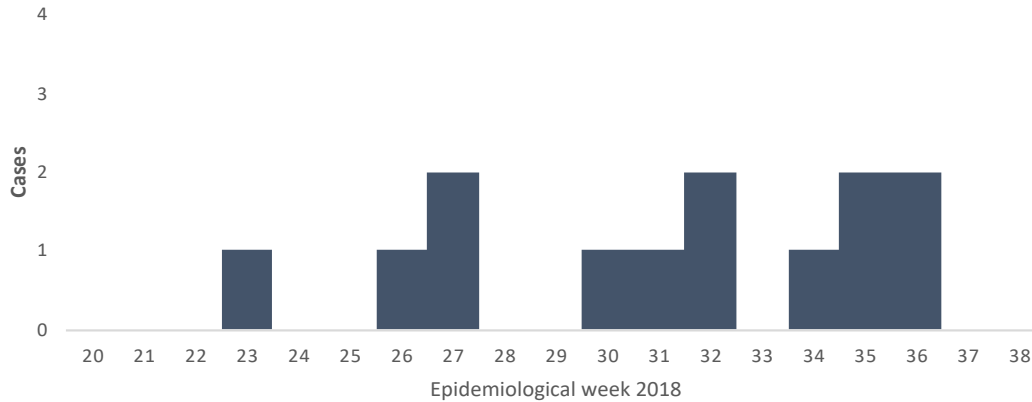
HEV case distribution by age & sex, Bentiu PoC Jan-Dec 2018



No new HEV cases reported in week 49

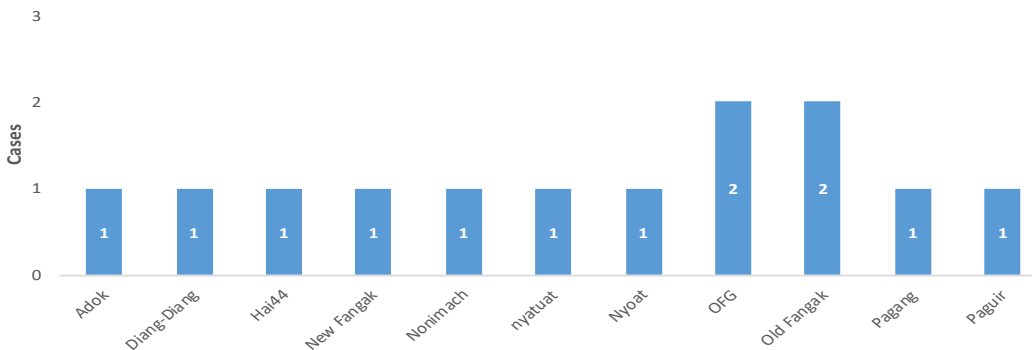
# Hepatitis E Old Fangak

HEV suspect cases Fangak week 23-36, 2018



Age	Female	Male	Total cases	Percentage	Cum.%
10-19yrs	2	2	4	31%	31%
20-29yrs	1	6	7	54%	85%
30-39yrs		2	2	15%	100%
<b>Total cases</b>	<b>3</b>	<b>10</b>	<b>13</b>	<b>100%</b>	

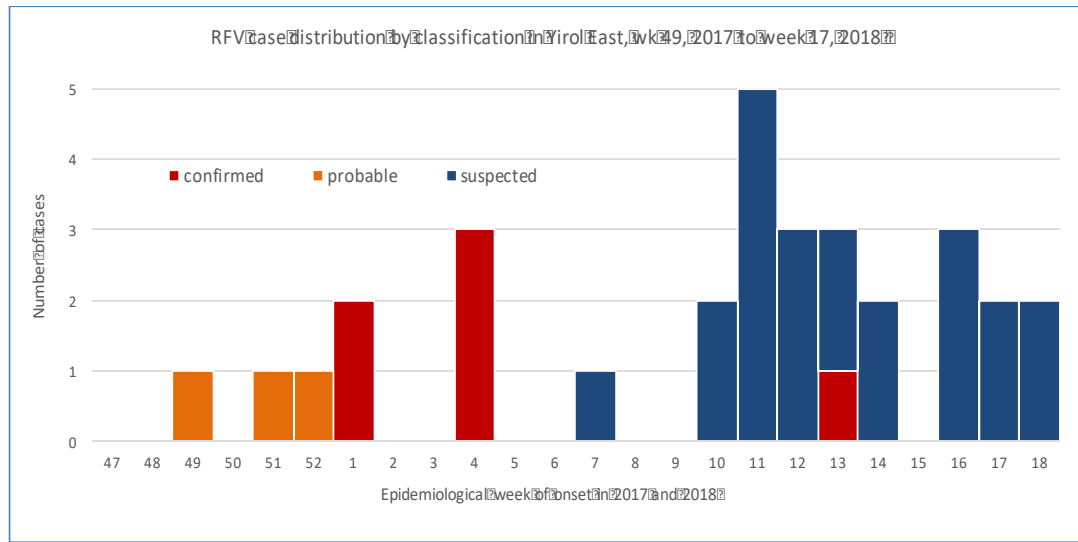
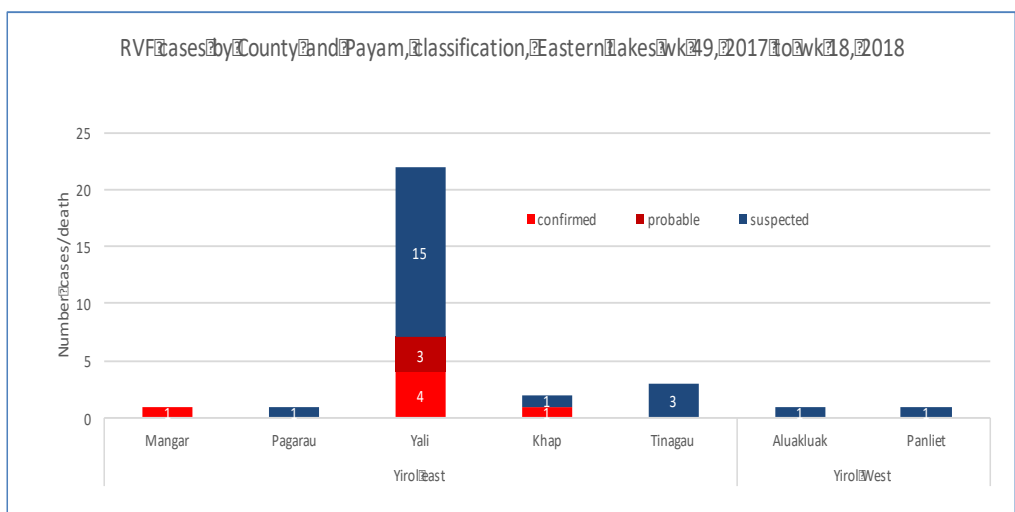
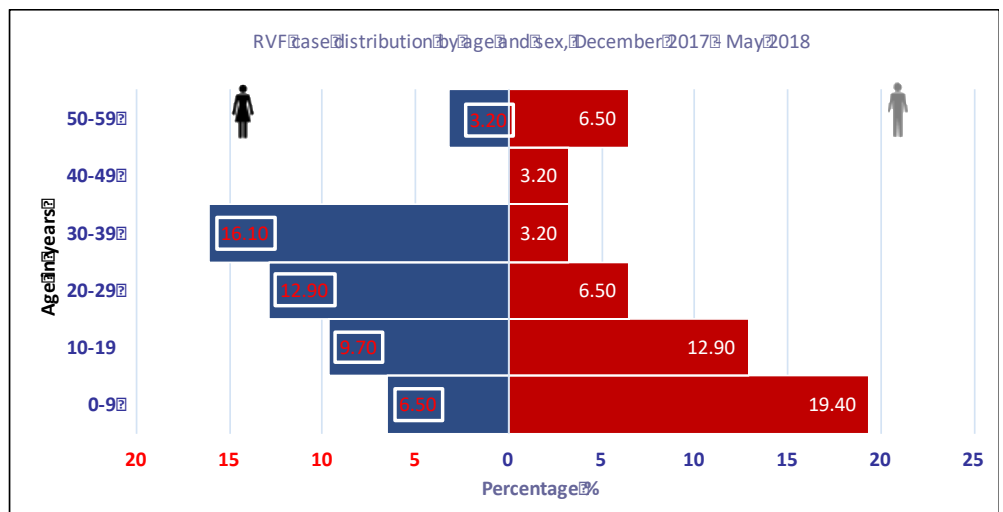
Suspect HEV cases by location in Fangak county, week 23-36, 2018



## Old Fangak

- One suspect HEV death reported in week 43 of 2018.
- At least 14 suspect HEV cases including one confirmed HEV case (one suspect HEV death) have been investigated in Old Fangak.
- At least 13 cases were HEV RDT positive.
- Over half (54%) of the cases are 20-29 years of age.
- The cases appear to be occurring sporadically and are using River water (largely from Phow river).
- Community awareness and hygiene promotion are ongoing.

# Ongoing epidemics - Epidemic description - RVF Eastern Lakes state



Sno.	Description	Number
1	Suspect cases	58
2	Total deaths	4
3	Confirmed cases	6
4	Probable cases	3
5	Cases pending testing	01
6	Non-cases	48
7	Cases on admission	01
8	Total human samples collected	39
9	Total animal samples collected	28
10	Positive animal cases	9

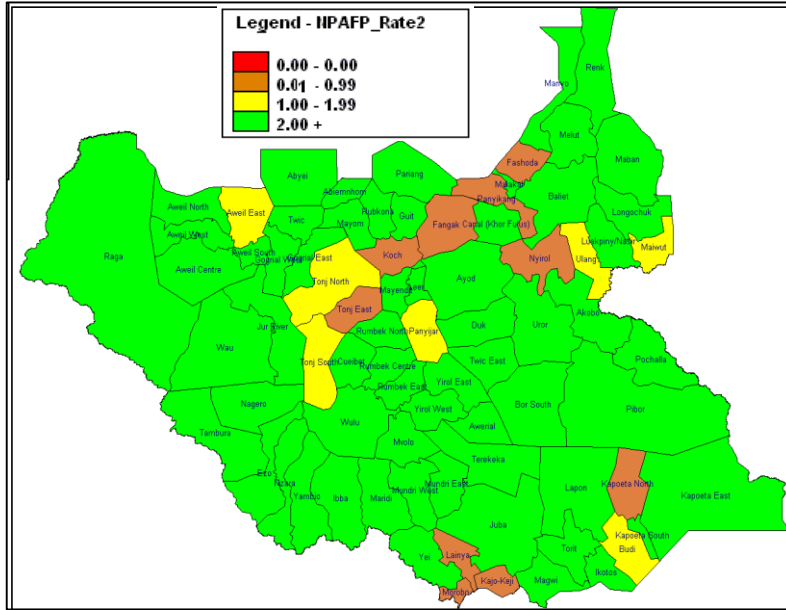
- No new suspect RVF case reported from Yiol East in week 49.
- In the period 7 December 2017 to 16 Dec 2018, a total of 58 suspect RVF cases were reported in Eastern Lakes.
- These were reclassified based on investigations and laboratory results, such that as of 16<sup>h</sup> Dec 2018, there were a total of six (6) RVF confirmed cases, three (3) probable, and 01 suspect RVF cases (either no samples collected or samples collected and test results are pending).
- Forty eight (48) cases were discarded as non-cases following negative laboratory results for RVF and other common causes of viral haemorrhagic fever.
- A total of nine animal samples have been confirmed serologically (3IgM and 6IgG).
- Current response entails surveillance, laboratory testing, supportive care for suspect cases, and community sensitization on hygienic animal handling

# OTHER PUBLIC HEALTH THREATS

Brief epidemiological description and public health preparedness and response to select public health threats



# Acute Flaccid Paralysis - suspect Polio



In the weeks 41-45, 2018, a total of 32 new AFP cases was reported from Central Equatoria; Eastern Equatoria; Jonglei; Lakes; Unity; Upper Nile; Warrap; Western Bahr el Ghazal; Western Equatoria hubs. This brings the cumulative total for 2018 to 349 AFP cases.

The annualized non-Polio AFP (NPAFP) rate (cases per 100,000 population children 0-14 years) in 2018 is 4.9 per 100,000 population of children 0-14 years (target  $\geq 2$  per 100,000 children 0-14 years).

Stool adequacy was 87% in 2018, a rate that is higher than the target of  $\geq 80\%$

Environmental surveillance ongoing since May 2017; with 23 samples testing positive for non-polio enterovirus (NPEV) in 2017 and Thirty Six (36) NPEV positive sample in 2018.

**Source:** South Sudan Weekly AFP Bulletin



2017-2018\* SUMMARY by States (Using NID figures for population estimates)

State Hubs	Population <15 years	Cumulative AFP Cases	Non-Polio Cases	Cases of the Week	Polio cases		Pending			NPAFP Rate	Stool Adequacy			Lab indicators (Pending lab cases excluded)			
					Polio Compatible	VDPV	Pending Lab/CLT	Pending Lab/ITD	Pending ERC		Specimens (#)	Adequate Specimens	Stool adequacy	NPEV		Sabin like	
														Number	Percent	Number	Percent
CENTRAL EQUATORIA HUB	737148	24	17	2	0	0	7	0	0	3.76	23	20	87%	1	4%	0	0%
EASTERN EQUATORIA HUB	674008	34	32	2	0	0	1	0	1	5.83	34	33	97%	4	12%	2	11%
JONGLEI HUB	982693	36	34	4	0	0	1	0	1	4.23	35	30	86%	5	14%	1	8%
LAKES HUB	791864	49	49	3	0	0	0	0	0	7.15	49	49	100%	5	10%	0	0%
NORTHERN BAHR EL GHAZAL HUB	987309	31	31	0	0	0	0	0	0	3.63	31	29	94%	5	16%	3	15%
UNITY HUB	864151	36	28	11	0	0	1	0	7	4.81	36	28	78%	4	11%	1	7%
UPPER NILE HUB	895541	40	33	4	0	0	1	0	6	5.16	40	24	60%	5	13%	3	14%
WARRAP HUB	1456973	49	48	2	0	0	0	0	1	3.89	49	45	92%	7	14%	0	0%
WESTERN BAHR EL GHAZAL HUB	316372	18	16	2	0	0	1	0	1	6.57	18	12	67%	1	6%	0	0%
WESTERN EQUATORIA HUB	516397	32	29	2	0	0	3	0	0	7.16	32	31	97%	4	13%	2	11%
<b>SOUTH SUDAN</b>	<b>8222455</b>	<b>349</b>	<b>317</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>17</b>	<b>4.90</b>	<b>347</b>	<b>301</b>	<b>87%</b>	<b>41</b>	<b>12%</b>	<b>12</b>	<b>7%</b>

2018\*

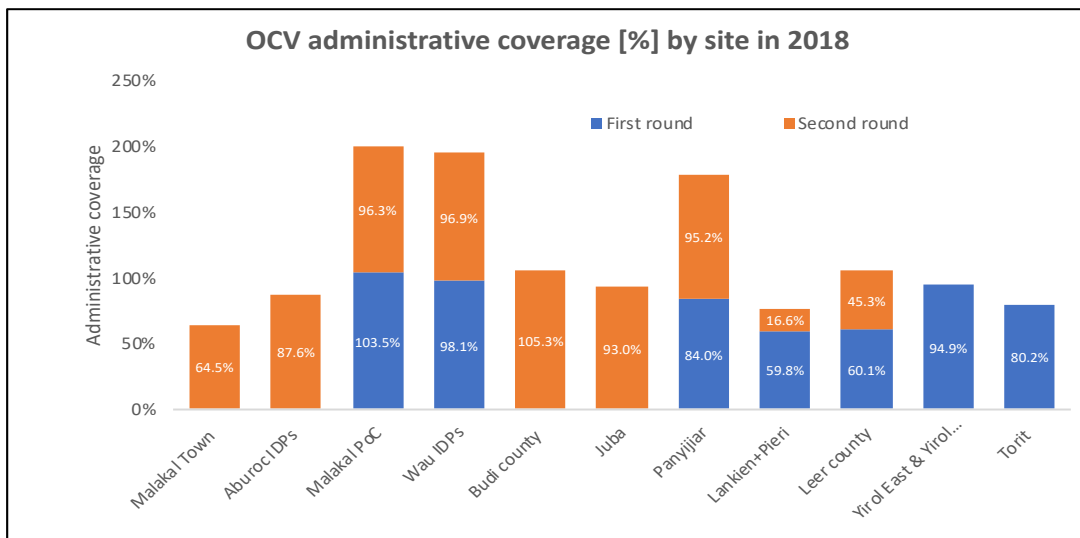
## Cholera preparedness and preventive activities - Oral cholera vaccine campaigns - 2018

Site	Total population	Target population	1st round doses	2nd round doses	Total doses	1st Round dates	2nd Round dates	Partners
Aburoc	11,640	11,291		11,550	11,550	20-22May2017	Jan 17- 20 2018	MoH, WHO, Unicef, MSF-E
Malakal Town	20,000	19,200		22,200	22,200	18-24Mar2017	Jan 5 - 9 2018	MoH, WHO, Unicef, MSF-E
Juba	214,887			206,292	206,292	9Sep - 24Nov 2017	Apr 24-28 2018	MoH, WHO, Unicef, MSF-F & Spain
Malakal PoC	24,424	23,691	34,291	34,291	68,582	19-23March 2018	Apr 17-21 2018	MoH, WHO, Unicef, IOM
Wau IDPs	40,499	39,284	56,860	56,860	113,720	19-23March 2018	Apr 17-21 2018	MoH, WHO, Unicef, IOM
Torit	180,169	174,764	174,764	174,764	349,528	9th - 14th Aug 2018	28Jul- 6Aug 2018	MoH, WHO, Unicef, SCI, CARE
Yirol East & West	170,189	165,083	165,083	165,083	330,167	20-29 July 2018	pending	MoH, WHO, Unicef, LiveWell, IOM
Lankien	38,000	36,860	36,860	36,860	73,720	28May -13Jun2018	suspended	MoH, WHO, Unicef, MSF-H
Panyijiar	75,000	72,750	75,000	75,000	150,000	16-22May2018	20-24 Jul2018	MoH, WHO, Unicef, IRC
Leer	50,000	48,500	48,500	48,500	97,000	13-15th Jun 2018 (Leer town) & 13th-18th Jul 2018 (Leer County)	24-29Aug (Leer Town); 8-13Aug (Leer County)	MoH, WHO, Unicef, MedAir
<b>Totals</b>	<b>824,808</b>	<b>800,064</b>	<b>591,358</b>	<b>831,400</b>	<b>1,422,759</b>			

- Cholera prevention and response activities are already underway to mitigate the risk of cholera outbreaks in cholera transmission hotspots
- These efforts are critical now as the rain season is starting for the states in the Southern parts of the country.
- The use of oral cholera vaccines alongside WASH and other interventions is critical to these efforts
- Preventive vaccine campaigns (with oral cholera vaccines) for the first half of 2018 are listed in the table
- The National Cholera Control Plan is being finalized by a consultant secured with support from the GTFCC
- Validation of the National Cholera control plan is planned for August 2018
- A consignment of 96,285 doses of oral cholera vaccine from the ICG arrived in the country on 4Jul 2018 for the pre-emptive campaign in Leer county
- Another 352,660 doses of oral cholera vaccine from the GTFCC arrived in the country on 18 July 2018 for the campaigns in Panyijiar and Yirol

- **Oral cholera vaccine campaigns completed in 2018 include:**
  - Malakal Town (2<sup>nd</sup> round)
  - Aburoc IDPs (2<sup>nd</sup> round)
  - Malakal PoC (1<sup>st</sup> & 2<sup>nd</sup> round)
  - Wau PoC+IDPs (1<sup>st</sup> & 2<sup>nd</sup> round)
  - Juba Town (1<sup>st</sup> & 2<sup>nd</sup> round)
  - Panyijiar (1<sup>st</sup> & 2<sup>nd</sup> round)
  - Leer county (1<sup>st</sup> & 2<sup>nd</sup> round)
  - Yirol East and Yirol West (1<sup>st</sup> round)
- **Upcoming campaigns for 2018**
  - Torit (2<sup>nd</sup> round)
  - Yirol East and Yirol West (2<sup>nd</sup> round)

## Oral cholera vaccine campaigns administrative coverage - 2018



2018 OCV campaigns		First round		Second round	
Site	Target	Coverage	Coverage %	Coverage	Coverage %
1 Malakal Town	19,200			12,393	64.5%
2 Aburoc IDPs	9,683			8,484	87.6%
3 Malakal PoC	23,447	24,277	103.5%	22,588	96.3%
4 Wau IDPs	37,048	36,337	98.1%	35,887	96.9%
5 Budi county	89,377			94,128	105.3%
6 Juba	216,852			201,737	93.0%
7 Panyijjar	75,000	63,000	84.0%	71,378	95.2%
8 Lankien+Pieri	38,000	22,712	59.8%	6,294	16.6%
9 Leer county	48,125	28,930	60.1%	21,819	45.3%
10 Yirol East & Yirol West	165,081	156,682	94.9%		
11 Torit	158,297	126,895	80.2%		
<b>Total</b>	<b>544,998</b>	<b>458,833</b>	<b>84.2%</b>	<b>474,708</b>	<b>85.3%</b>

### The following OCV campaigns have been completed in 2018:

1. Malakal Town (2<sup>nd</sup> round)
2. Aburoc IDPs (2<sup>nd</sup> round)
3. Budi county (2<sup>nd</sup> round)
4. Malakal PoC (1<sup>st</sup> & 2<sup>nd</sup> round)
5. Wau PoC+IDPs (1<sup>st</sup> & 2<sup>nd</sup> round)
6. Juba (2<sup>nd</sup> round)
7. Panyijjar (1<sup>st</sup> & 2<sup>nd</sup> round)
8. Leer county (1<sup>st</sup> & 2<sup>nd</sup> round)
9. Lankien (1<sup>st</sup> round)
10. Pieri (1<sup>st</sup> & 2<sup>nd</sup> round)
11. Yirol East & Yirol West (1<sup>st</sup> round)
12. Torit county (1<sup>st</sup> round)

# EBOLA VIRUS DISEASE[EVD] PREPAREDNESS IN SOUTH SUDAN

Brief on the Ebola situation in DR Congo and updates on EVD preparedness in South Sudan

# Ebola update DRC 19 Dec 2018

## Current situation

- Currently in 20<sup>th</sup> week of the outbreak
- **560** Cases [512 confirmed & 48 probable]
- **336** Deaths [288 confirmed & 48 probable]
- **55** Health workers [54 confirmed; 19 dead]

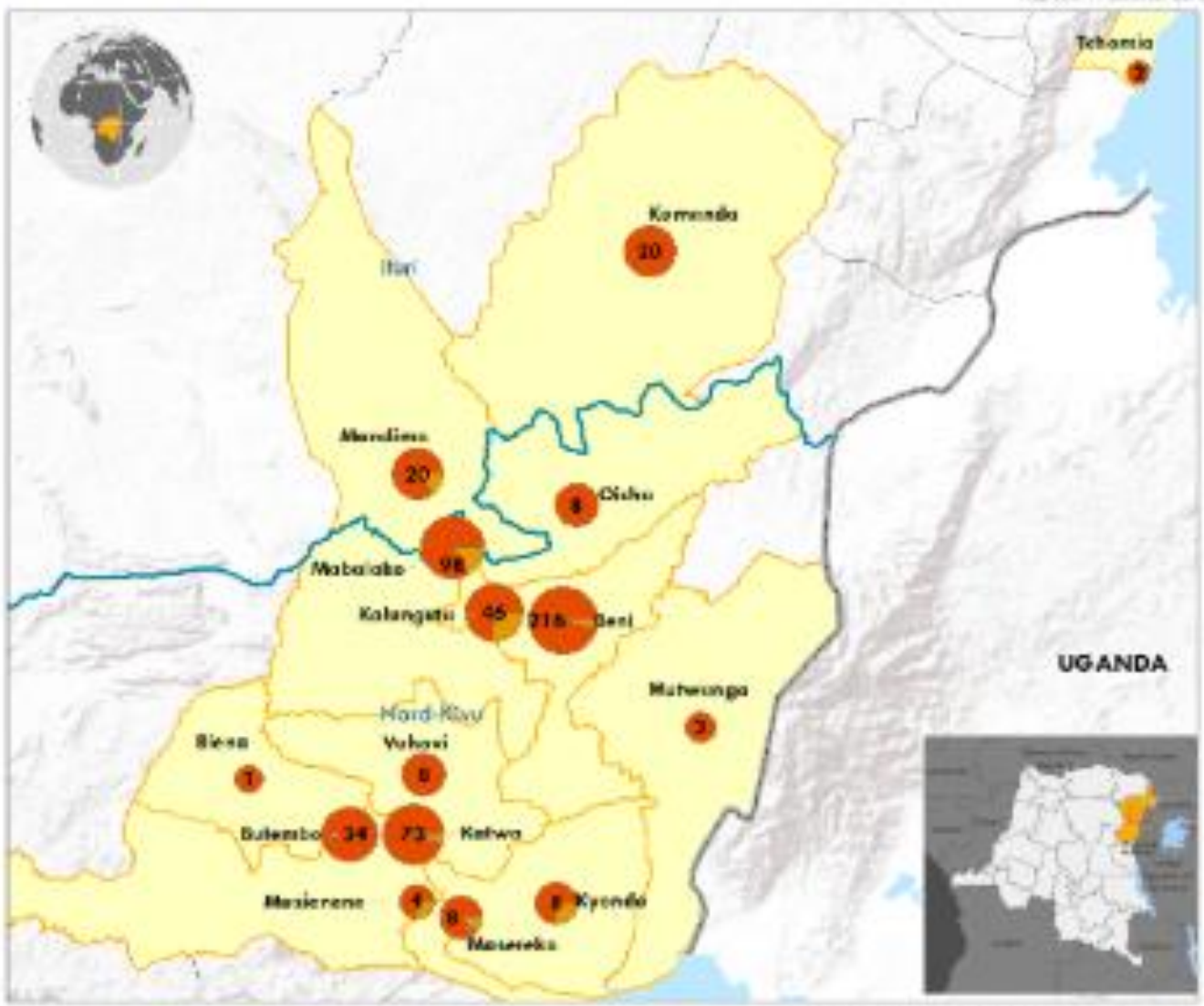
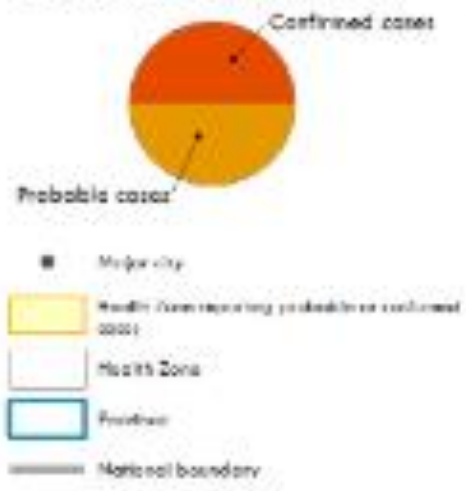
## Response update

- **6430** contacts under surveillance [**90-93%** followed up]; **48,119** vaccinated
- **193** cases discharged from ETCs

## Affected health zones

- **2** provinces [North Kivu & Ituri]
- **14** health zones [11 North Kivu & 3 in Ituri]
- Cases in last 3 weeks: Katwa (31), Beni (18), Komanda (17), Butembo (14), Mabalako (14)

**Boundaries and Locations Subject to Confirmation**



Data Source: World Health Organization  
 In: Ministry of Health, Democratic Republic of the Congo, Coordination  
 and Planning, WHO Health Emergencies Programme  
 Report ID: WHO/HEC/181

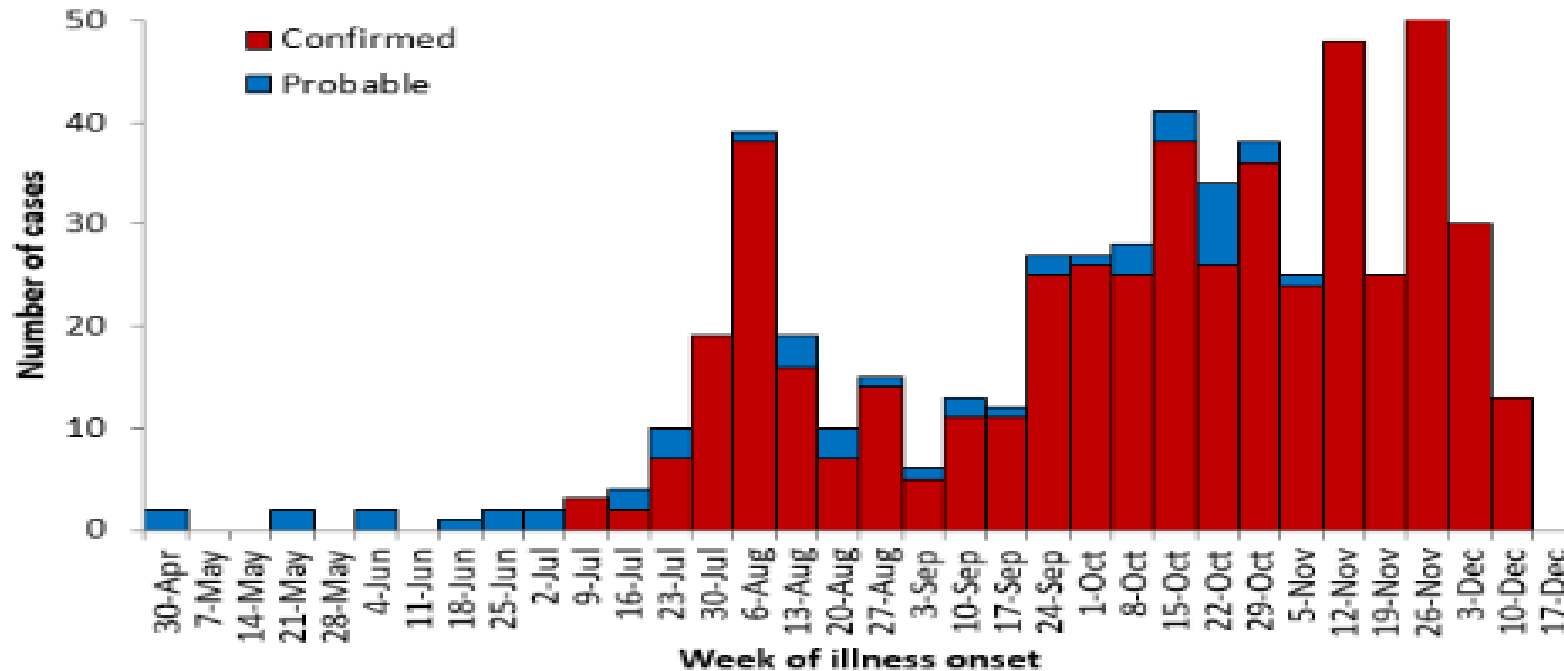


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Source: WHO Ebola situation report



# EVD trends & case distribution in DR Congo



- Epicurve depicts an ongoing **persistent transmission**
- **Multiple peaks** have been recorded since the outbreak was declared

# EVD risk assessment

- Very high-risk of regional spread to priority 1 countries like South Sudan
- On 17 Oct 2018; Emergency committee determined that **EVD outbreak in DRC does not constitute** a Public Health Emergency of International Concern (PHEIC)
- Priority 1 countries like South Sudan urged to:
  - Accelerate **preparedness & surveillance**
  - Strengthen **risk communications**
  - **Vaccinating frontline HCWs** in areas bordering DRC



### **EVD preparedness activities undertaken in South Sudan**

- South Sudan, as a priority one (1) country for Ebola virus disease outbreak (EVD) preparedness continues to make progress to enhance capacities for EVD case detection, investigation, response, and prevention.
- The national Ebola taskforce continues to meet twice weekly and is coordinating the implementation of the EVD contingency plan. The Ebola taskforce working groups are currently updating and implementing the EVD contingency plan to enhance readiness capacities for EVD response.
- Detailed preparedness update can be accessed <https://www.afro.who.int/publications/weekly-update-ebola-virus-disease-evd-preparedness-south-sudan>

Year: 2018

Week number: W50

From: 2018-12-10

To: 2018-12-16

Name of PoE	Passengers Screening Information			EVD Alerts		
	# screened	# Isolated	# under Voluntary Home Quarantine	# reported	# validated	# suspects
Bazi Border	0	0	0	0	0	0
Gangura Border	56	0	0	0	0	0
Juba International Airport	3,584	3,584	0	0	0	0
Kaya	3,302	0	0	0	0	0
Kaya Border	0	0	0	0	0	0
Khorjo	4,962	0	0	0	0	0
Mardi Airstrip	0	0	0	0	0	0
Nimule Border	0	0	0	0	0	0
Okaba	1,377	0	0	0	0	0
Panjala Docking River	0	0	0	0	0	0
Pure	1,523	0	0	0	0	0
Sakure Border	18	0	0	0	0	0
Tikori	27	0	0	0	0	0
Wau Airport	25	0	0	0	0	0
Yambio Airport	0	0	0	0	0	0
Yei Airport	20	0	0	0	0	0
Yei RRC	24	0	0	0	0	0
South Sudan	14,818	3,684	0	0	0	0

The electronic EWARS platform captures points of entry screening data and enables summarizing number of travelers screened on weekly basis. In week 50, 14 918 individuals were screened at various screening points in the country.

# MAJOR SUSPECT OUTBREAKS & EVENTS REPORTED IN 2018

Listing of the major suspect outbreaks and  
public health events reported in 2018

Response | Suspect outbreaks in 2018

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
13Mar18	meningitis	16 (00)	Duk	Ayueldit	On 12 Mar 2018; a 3 year old male from Buongjok area, Ayueldit payam was admitted to Padiet PHCC. The health partner SMC requested for guidance on managing the case and the WHO Bor team shared the meningitis case management guidelines. Surveillance was stepped up but no additional cases were identified.
17Feb18	meningitis	173 (31)	Torit	Iyire and Imurok	After rumors of strange illness in Iyire, several RRT verification and response missions have been undertaken since 20Feb18. Torit county surpassed in the alert and epidemic thresholds in week 7 and week 9 respectively. There was no conclusive laboratory confirmation due to sample contamination . Overall coordination, case surveillance, line listing, and investigation are ongoing. Transmission declined after week 9 with the weekly attack rate falling below the alert and epidemic threshold in weeks 11-18, 2018. Plans underway to conduct meningitis training for the NRRT and laboratory team at NPHL & in the state hubs
10Mar18	meningitis	3 (0)	Cueibet		Since 10 Mar 2018, at least three suspect meningitis cases have been reported by CUAMM in Cueibet hospital. However, no samples were collected.
02Feb2018	meningitis	52 (06)	Aweil South (14cases) Aweil East (18 cases) Aweil West (11 cases) Aweil North (4 cases)	Aweil hub	Since 2Feb2018, at least 52 suspect cases (6 deaths) have been reported in Aweil hub. Six samples positive for <i>Streptococcus pneumoniae</i> following rapid pastorex testing or showed gram positive diplococci on gram stain. None of the affected counties exceeded the alert threshold for meningitis.
06Jan18	meningitis	03 (00)	Abyei and Twic	Rumkor and Pan-nyok	The two suspect cases were treated in Agok hospital on 4 Jan and 29 Jan respectively with initial diagnoses of severe malaria but final diagnosis was bacterial meningitis. Rapid pastorex testing sample for the 2 <sup>nd</sup> & 3 <sup>rd</sup> suspect case from Twic and Abyei counties respectively were positive for <i>Streptococcus pneumoniae</i> .
14Feb18	meningitis	21(03)	Wau (Jur River)	Udici, Roc Roc Dong	Since 14 Feb; 20 suspect meningitis cases have been reported from Wau (11 cases - 2deaths) and Jur River (9 cases - 1 death) counties. A suspect case involving a 45 year old male from Jur River was admitted in Comboni hospital on 28 Feb 18. PCR testing was positive for <i>Streptococcus pneumoniae</i> . Another suspect case tested positive for NmA by rapid pastorex at NPHL on 27/4/18.

Response | Suspect outbreaks in 2018

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
16Mar2018	Measles	08(01)	Mayom	Riak & Lol Maroal	Suspect measles cases reported from Riak payam in Nyebola village since 9 Mar 2018. Four samples were obtained by MSF-CH for testing. Three of the four samples tested were positive for rubella IgM.
16Feb18	Health effects of petroleum drilling	Unspecified	Pariang	Pariang	A newswire indicates the Mayor of Pariang in Ruweng State has appealed to the Ministry of Health to establish some health conditions affecting people in the oil producing area. <a href="http://bit.ly/2EIndTP">bit.ly/2EIndTP</a> #SouthSudan. Initial verification details to follow
31Mar2018	Suspect meningitis /malaria	12(08)	Gogrial West	Kuach South	On 28 <sup>th</sup> Mar 2018; the Director Gogrial West reported community deaths in Kuach South that were verified by the RRT on 29 Mar 2018. The clinical and lab tests on suspect cases were consistent with malaria and the cases responded to treatment with ACTs. All the deaths were 10 years and above and 50% of the deaths were 20 years and above. Given the dramatic nature of symptoms, the other differential diagnosis to keep an eye on is epidemic meningitis. No new cases reported in weeks 14 and 15.
12/Apr/18	pertussis	18(00)	Fangak	Bei	Suspect pertussis cases have been reported by Mandeang PHCU and Kuephone PHCU in Fangak county. At least 11 suspect cases have been reported from Bei payam and another 7 suspect cases from Jiath. The response instituted by the partner CMA - entails treatment of cases and prophylaxis to close contacts and enhancing routine immunization for the infants.
22/05/18	cholera	2	Lopa	Imehejek	Two suspect cholera cases reported from Imehejek, Lopa from 22May18; the index ate cold food at a local market; direct RDT positive for cholera; all two samples negative for cholera after culturing in NPHL.
21/05/2018	measles	40	Rumbek Center	Teyau	Eight suspect measles cases reported from Teyau, Rumbek Centre - MMT dispatched for the investigation. Specimens obtained. Outbreak confirmed & reactive vaccination done.
23/05/18	measles	2	Mayom	Tam & Wangbur	Two suspect measles cases reported from Mayom (Tam & Wangbur payams) samples sent to Juba by MSF-CH
16/05/18	measles	1	Torit	Nyong	One suspect measles case reported from Nyong payam in Torit. Specimen collected

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
30/05/2018	Acute jaundice	01(00)	Torit	Torit town	On 30 May 2018, a 2year and eight month child was admitted to Torit Hospital with fever, yellow eyes, and vomiting, Specimen obtained for testing and sent to Juba. First test results in week 26; showed the sample was negative for HEV by PCR. Further tests were IgM negative for YF, ZIKV, CHIK, WNV and DEN.
28/05/2018	Measles	2 (00)	Awerial		Two suspect measles cases reported and investigated in Awerial county. Samples have been collected and shipped to Juba for laboratory testing.
26/06/2018	Measles	14	Yirol East		Fourteen suspect measles cases have been reported and investigated in Adior payam. Samples have been collected for testing.
26/06/2018	Measles	1	Yirol West		One suspect measles cases was reported in week 26.
10/06/2018	Measles	18	Bentiu PoC		18 suspect measles cases were reported in Bentiu PoC from 10 June 2018. Samples have been obtained for laboratory testing
28/06/2018	Measles	6	Jur River		New suspect Measles cases reported from (Thilij) village in Wau Bai payam in Jur River county, an investigation team dispatched on 28 <sup>th</sup> June and they investigated & collected 6 blood samples
02/07/2018	Measles	6(0)	Twic		Five suspected measles cases have been reported in Twic County. They were investigated and samples were collected pending transportation to Juba. Line-listing and investigation reports had been prepared.
13/07/2018	cholera	Deaths	Awerial	Magok	On 13 <sup>th</sup> July; suspect cholera deaths were reported from Magok, Awerial county. Initial verification by MoH/WHO has not revealed suspect cholera deaths in the area. Further verification by the CHD revealed on additional information to confirm the alert.
25/07/2018	Acute Jaundice	3 (02)	Leer TPA	Leer Town	Three AJS (suspect HEV) deaths reported in Leer TPA are being investigated. Surveillance has been strengthened to detect and investigate subsequent cases; and WASH has been stepped up.
20/07/2018	measles	1	Aweil Center		A suspect measles case reported from Aweil Center county and investigated (sample collected for testing).

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
10/08/2018	Suspect measles & pertussis	unspecified	Nyirol	Waat	On 10 Aug 2018, CMA reported a cluster of suspect measles and pertussis cases in Waat payam, Nyirol county. The area has not been reached with immunization (routine or supplementary) in the last one year. Emergency supportive response is underway and there are preparations to line list and collect samples from suspect cases.
8/08/2018	Suspect cholera	1	Juba	Juba	Suspect cholera case reported in EB clinic and referred to Juba Teaching hospital. Test results awaited.
8/08/2018	Animal bites (suspect rabies)	12	Yambio	Yambio town	Animal bites (suspect rabies) involving 12 cases including 2 children were reported in Yambio town and were attributed to stray dogs. A multisectoral meeting convened in Yambio and from the national level - human & animal rabies vaccines are being shipped to support the response. IEC materials are being adapted to support rabies risk communication.
8/08/2018	Suspect Guinea worm	2	Aweil	Aweil town	Two suspected Guinea worm cases were reported and investigated in Aweil State hospital. There was no hanging worm found the patients are being monitored
24/08/2018	Suspect Guinea worm	1	Nyirol	Lankien	One suspect Guinea worm case reported in Lankien. The SSGWEP has been initiated to initiate detailed investigations into the suspect case
05/08/2018	Suspect HEV cases	8	Fangak	Fangak	From Fangak, one suspect HEV was reported in week 33. Since week31, a total of 7 HEV RDT positive cases have been reported from Fangak. All the cases have occurred in adults (one in a postpartum female). The cases appear to be occurring sporadically and are using River water (largely from Phow river). Community awareness and hygiene promotion are ongoing. Samples sent to Uganda for PCR testing.
17/08/2018	Suspect Yellow Fever	1 (01)	Pibor	Pibor Town	A 23 year old male presented to Pibor PHCC on 12/08/2018 with history of fever, yellowing of eyes, agitation, convulsions, vomiting, coma, and bleeding from 06/Aug/2018. Patient died and autopsy sample tested PCR negative for YF, DENV3 and DENV4. Further histochemical testing underway.
08/Sept/18	Suspect VHF	1	Yambio	Bakiwiri	One EVD alert reported and investigated by the rapid response team during the week in Bakiwiri Boma, Yambio county. The presentation was not consistent with EVD case definition and there was no epidemiological linkage to EVD case or the outbreak in DR Congo. Sample tested PCR negative for Ebola, Marburg, CCHF, RVF, and Sosuga.

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
10/09/2018	Suspect cutaneous anthrax	6	Gogrial West	Kuach North	During week 37, a suspect case of subcutaneous anthrax was detected in Kuajok hospital. The case originated from Wun-acier village, Monjiooc Boma in Gogrial West County. Follow up investigations revealed five additional cases, with lesions suggestive of subcutaneous anthrax. There were no human deaths linked to this case cluster. Outbreaks of similar cases were reported in the neighboring villages in 2011, 2013, and 2015, suggesting that the disease is endemic in the villages and county as a whole.
10/09/2018	Malaria alerts	counties with trends significantly higher than expected	15		Counties with malaria trends that exceed the threshold (third quartile of trends for the period 2013-2017) include: Aweil hub (Aweil Center); Rumbek hub (Rumbek Center, Rumbek East, Rumbek North, Wulu, Yirol East, Yirol West); Kuajok hub (Abyei, Gogrial East, Tonj East, Tonj South, and Twic Mayardit); Bentiu hub (Mayom); and Juba hub (Terekeka).
20/08/2018	Suspect rabies	30	Torit	Nyong, Himo donge	Animal bite (suspect rabies) have been on the increase in Torit county with 30 cases (no deaths) reported since 20 Aug 2018. The cases are distributed evenly by gender. Nearly 70% of the cases were reported in children aged 0-19 years. Nyong and Himo donge are the most affected payams.
04/08/2018	Suspect measles	11 (0)	Yirol West	Yirol Town; Abang	Since 4 Aug 2018; at least 11 suspect measles cases have been reported in Yirol hospital (originating from Yirol Town and Abang). Six samples have been collected for laboratory testing.
26/09/2018	Suspect Ebola	1 (01)	Juba	Northern Bari	On 26/09/2018; the PHEOC received a call of a suspect Ebola death involving a 25 year old businessman and Ethiopian by Nationality ; the illness of the case started on 24/08/2018 with fever, headache, and cough. He received treatment from a private clinic the same day and improved. Hence on 26/09/2018; he went to work but his condition changed suddenly; he started vomiting blood; collapsed and died as he was being rushed to the nearby clinic. The samples reached Uganda Virus Research Institute (UVRI) on 27 <sup>th</sup> September 2018 and the results released by the laboratory on 28 <sup>th</sup> September 2018 showed that the samples were negative for Ebola, Marburg, CCHF, RVF and Sosuga viruses by PCR.



Response | Suspect outbreaks in 2018

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
17/09/2018	Suspect rabies	10	Rubkona	Bentiu town	Suspect rabies have been reported in Bentiu town; MSF is supporting the management of cases but there is no rabies vaccine in stock to facilitate post-exposure prophylaxis
17/09/2018	Suspect measles	3	Wau; Jur River	Wau South; Jur River	Three suspect measles cases [one case in Agok village, Wau South Payam; and 2 suspect cases in Marial Ajieth village, Jur River were investigated during the week and samples sent to Juba for testing. Laboratory results for 10 samples (from Jur River; Wau; & Raja) were released on 10/10/2018; all tested measles and rubella IgM negative.
17/09/2018	Suspect pertussis	7	Jur River; Wau	Kuajiena; Udici; Wau South & Wau North	From week 37, 2018, a cluster of seven suspect pertussis cases were reported from Chono PHCU and Mapel PHCC (Chono; Magala; & Gango villages). Additional cases were identified in Wau North and Wau South payam. An investigation was undertaken on 28 Sept 2018; confirmed clinical presentation was consistent with pertussis. No form of vaccination has been undertaken in the population in the last three years since the area has been under opposition control. Regular primary health care and routine vaccination outreaches were recommended for the affected areas.
03/10/2018	Suspect Ebola virus disease	1 (01)	Yei	Yei town	A suspect Ebola deaths was reported to the PHEOC on 3 Oct 2018; the rapid response team deployed to investigate the death on 4 Oct 2018; but were unable to locate the home or grave of the suspect death. Follow up investigations involving the community leaders have not yielded any additional information.
12/10/2018	Suspect Ebola virus disease	1	Rumbek Center	Rumbek Town	On 12 October 2018, an Ebola alert was reported from UNMIS Rumbek involving UNMISS staff that presented on the 10/10/2018 with fever and headache but without any wet symptoms. He tested positive for malaria but CBC and platelet counts were normal. He is currently on treatment for malaria and is confined to his home. The rapid response team has been constituted to investigate and collect samples for Ebola testing. Sample PCR negative for Ebola, Marburg, RVF, CCHF, and Sosuga viruses.
18/10/2018	Suspect Ebola virus disease	1 (01)	Mundri East	Mundri East	A suspect VHF case reported in Lui hospital on 12/10/2018. Symptoms included fever, abdominal pains, nose bleeding, hematemesis and comma. Died on 14/10/2018. No epidemiological link to similar cases. Sample collected and arrangements are underway to ship the sample to Juba. Sample tested PCR negative for Ebola, Marburg, RVF, CCHF, Sosuga.

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
07/01/2018	Suspect rabies	848	Abyei	Abyei	An increase in suspect rabies cases is reported in Abyei town where at least 848 animal bites have been reported (week 1-42, 2018). The most affected are children 10-19 years. Dog vaccination is currently underway by the South Sudan Veterinary Association.
10/07/2018	Suspect HEV	7 (02)	Abyei	Abyei	Suspect HEV cases have been reported in Abyei town with 7 cases including 6 HEV RDT positive cases and two deaths have been reported. An integrated Health-WASH assessment and response is planned.
21/10/2018	Ebola virus alert	1	Yambio	Yambio	The Ebola alert was reported from Yambio hospital on 21 Oct 2018. The case improved on treatment and has since been discharged on 25 Oct 2018. Sample PCR negative for Ebola, Marburg, RVF, CCHF, and Sosuga viruses.
26/10/2018	Suspect measles	3	Malakal	Malakal PoC	From 26th to 27th October 2018; three new suspect measles cases were reported in Malakal PoC. Samples collected for testing in Juba.
25/10/2018	Suspect Guinea worm	2	Gogrial West & Tonj North	Alabek & Kuac North	In week 42, two suspect Guinea worm cases were reported from Pankot village, Langkap Boma at Alabek Payam in Tonj North County; and Thurachol village, Ajiep Boma, Kuac North Payam in Gogrial West County. Sample PCR negative for Ebola, Marburg, RVF, CCHF, and Sosuga viruses.
29/10/2018	Ebola alert	2	Pageri	Nimule	Two Ebola alerts involving a 6 year old boy and a 9 year old boy that presented with malaria like symptoms and nose bleeding without any history of contact with a bleeding or severely ill case or travel to an Ebola area. The alerts were discarded as they did not meet the case definition.
09/11/2018	Measles	62 (3)	Rumbek East		At least 15 measles cases including one death were reported in Rumbek East; an investigation team is being dispatched from Rumbek on 12/11/2018 to verify and investigate the reports. A total of 9 samples tested measles IgM positive on 22 Nov 2018. Reactive campaign planned.
11/11/2018	Suspect Ebola	1 (1)	Lainya	Loka	A suspect Ebola death reported in Yei Civil hospital on 11/11/2018. The illness started on 6/11/2018 with fever; headache, diarrhoea; and then on 9/11/2018; he developed nose bleeding and hematemesis before he died on 11/11/2018. Sample collected same day and SDB planned. Sample to be transported to Juba on 12/11/2018. Sample PCR negative for Ebola, Marburg, RVF, CCHF, and Sosuga viruses.

## Response | Suspect outbreaks in 2018

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
20/10/2018	Measles	3	Bor South	Bor PoC	At least three suspect measles cases reported from Bor PoC since 20/10/2018. All tested measles IgM positive following tests done in Juba. Reactive measles campaign planned.
24/11/2018	Yellow Fever	1	Nzara	Sakure	A suspect Ebola case was reported from Sakure on 23/11/2018 and investigated by the rapid response team on 24/11/2018. Preliminary testing in Juba on 24/11/2018 were negative for Ebola Zaire following GeneXpert testing. Further testing of the sample was PCR negative for all Ebola species; Marburg; Rift Valley Fever, Crimean Congo Hemorrhagic Fever, and Sosuga viruses. The sample eventually tested PCR positive for Yellow Fever.
29/11/2018	Suspect Ebola	1 (01)	Yambio	Yambio	The case involved a 45 year old male who was brought dead to Yambio State Hospital mortuary where evidence of bleeding from the ears, nose, and mouth was identified. The deceased is a DR Congo (DRC) national that has been residing in Yambio with no history of travel to DRC in seven years. Preliminary GeneXpert testing was negative for Ebola Zaire and the sample has been shipped for confirmatory testing UVRI, Entebbe, Uganda.
03/12/2018	Suspect Ebola	1	Renk	Renk South	On 3 Dec 2018 as suspect Ebola case was reported in Abayok PHCC. The case was a 29 year old pregnant female that presented with fever, severe headache, generalized body weakness and vomiting of blood. There was no positive epidemiological link with hemorrhagic cases. Preliminary GeneXpert sample testing was negative for Ebola Zaire. Conclusive VHF test results showed the sample was PCR negative for Ebola; Marburg; RVF; YF; and CCHF.
04/12/2-18	Suspect measles	1	Renk	Renk South	A suspect measles case involving a 24 month old child reported in Abayok PHCC. The date of rash onset was Dec 1, 2018. The mother indicated the child received measles vaccination. The sample was delivered in the NPHL for testing on 4/12/2018 and test results are awaited.
04/12/2018	Rubella	23	Malakal	Malakal PoC	Suspect measles cases reported in Malakal PoC during the week ending 9 Dec 2018. This is the second cluster of alerts after the samples from the initial cluster of three cases tested measles IgM negative. Final test results confirmed Rubella as the cause of the this outbreak.

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
03/12/2018	measles	6 (0)	Renk	Renk	At least six suspect measles cases have been reported from Renk with one sample testing measles IgM positive. Five samples are pending testing.
12/12/2018	Suspect cholera	11 (0)	Pibor	Pibor	On 12 December 2018, Pibor PHCC reported 11 acute watery diarrhoea cases. The cases originated from eight villages with Manyirany and Kondako being the most affected. The age range was 6 months to 11 years with a median age of 1.5 years. They were all admitted with severe dehydration and treated with no deaths. River water was reported as the main water source. Three samples were collected. The mobile medical team deployed to Pibor on 16 Dec 2018 identified no additional cases.
15/12/2018	Suspect EVD	1	Rejaf	Rejaf	A 55 year old male presented to Juba M Hospital with 2-day history of fever, headache, intense body weakness, diarrhoea, abdominal pains and unexplained bleeding from the gums, nose, and in vomitus. Preliminary GeneXpert testing was negative for Ebola Zaire. Confirmatory PCR testing is pending.

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The data has been collected with support from the EWARS project. This is an initiative to strengthen early warning, alert and response in emergencies. It includes an online, desktop and mobile application that can be rapidly configured and deployed in the field. It is designed with frontline users in mind, and built to work in difficult and remote operating environments. This bulletin has been automatically published from the EWARS application.

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