

# South Sudan

## Integrated Disease Surveillance and Response (IDSR)

Epidemiological Update W12 2019 (Mar 18, 2019- Mar 24, 2019)



- The completeness for IDSR reporting at the county level was 56% in week 12 of 2019. The completeness for EWARS reporting from IDPs was 76%.

---

- In epidemiological week 12 of 2019, AWD (16), measles (13) and bloody diarrhea (8) were the three most frequently reported infectious diseases in the country.

---

- A new measles outbreak has been confirmed in Tonj North County in Warrap. All the five (5) blood samples that were received tested positive for measles IgM. Most of the cases are children < 5 years of age with mean ages of 4.2 years (SD=1.3 years) who reside in Akop Payam.

---

- A reactive measles vaccination campaigns have been scheduled to begin on 8<sup>th</sup> April 2019 in Melut and Aweil south counties. The emergency campaigns will be targeting 15,502 and 22 071 children aged 6 months to 5 years in Melut and Aweil South respectively.

---

- The reactive yellow fever vaccination campaign targeting 19,578 individuals aged 9 months to 65 years in Sakure payam, Nzara County has been concluded. The reactive vaccination campaign started on 25<sup>th</sup> March 2019 and 19,981 (102.06%) individuals were vaccinated as at the end of the exercise. No serious or life AEFI cases were reported.

---

- No new suspected HEV case has been reported from Bentiu PoC in week 12, 2019. Cumulatively, 23 suspected HEV cases have been reported in Bentiu PoC since the beginning of 2019.

---

- A report of seven (7) unusual deaths from Kasengor/Jieh in Kapoeta East was received through the WHO office on 1<sup>st</sup> April 2019. The report was received through the county commissioner who reported that the main symptom reported by the victims was a headache. No additional information was available about the presentation of the illness. A team from MoH and WHO MMT is travelling to Jieh on 3<sup>rd</sup> April 2019 to verify and investigate the causes of the deaths.

---

- Considering 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 (W12 2019)

Hub	Reporting		Performance	
	Reporting # counties	# reports received # reports	Performance Completeness	Timeliness
Aweil	5	5	100%	100%
Bentiu	9	3	33%	22%
Bor	11	10	91%	91%
Juba	8	2	33%	33%
Kwajok	7	1	14%	14%
Malakal	13	7	54%	38%
Rumbek	8	2	25%	25%
Torit	8	5	63%	63%
Wau	3	0	0%	0%
Yambio	10	10	100%	100%
<b>South Sudan</b>	<b>80</b>	<b>45</b>	<b>56%</b>	<b>53%</b>

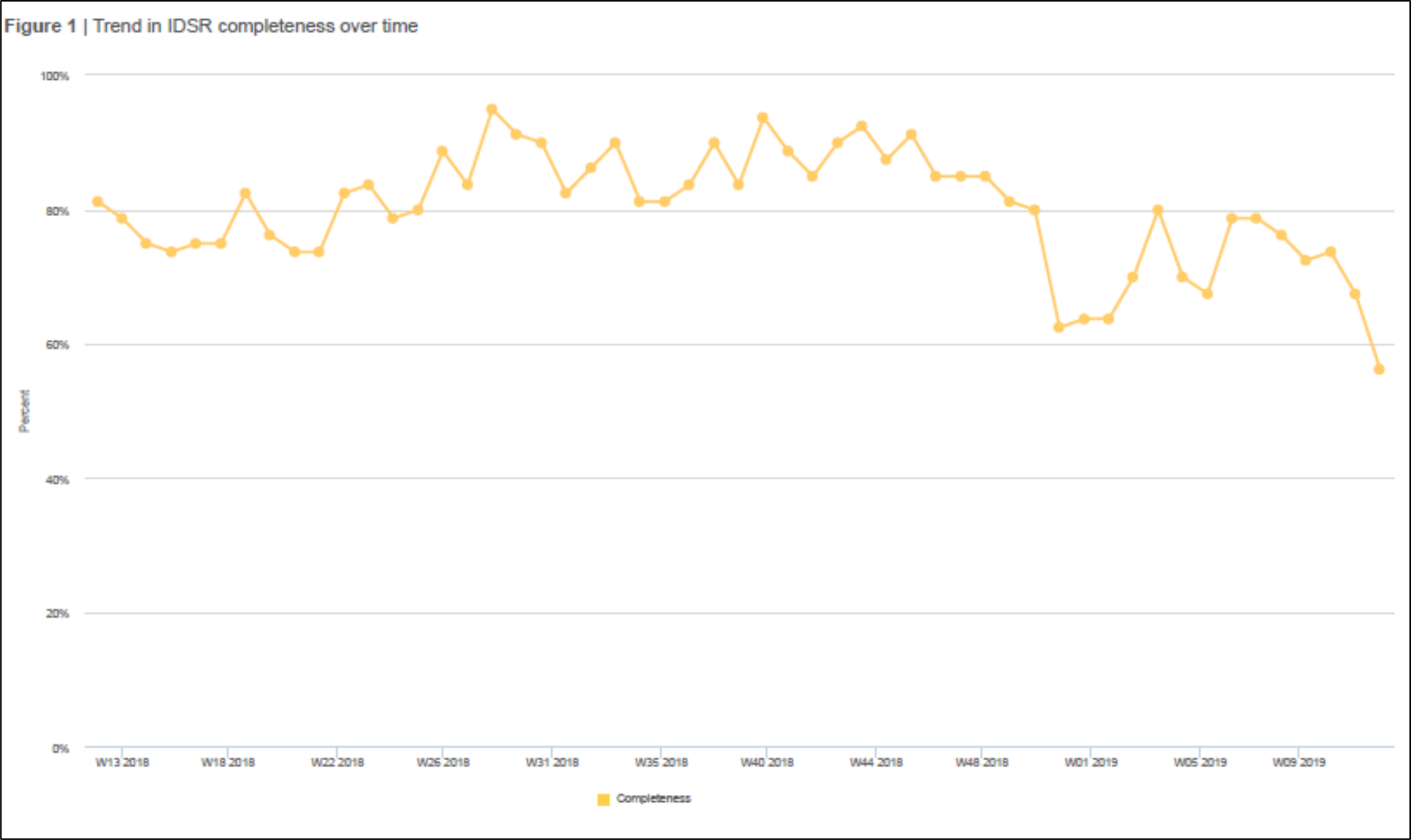
Table 2 | Summary of key IDSR surveillance indicators

W12	Cumulative (2019)	
80	-	Number of counties
56%	69%	Completeness
53%	57%	Timeliness

Table 3 | IDSR report submissions

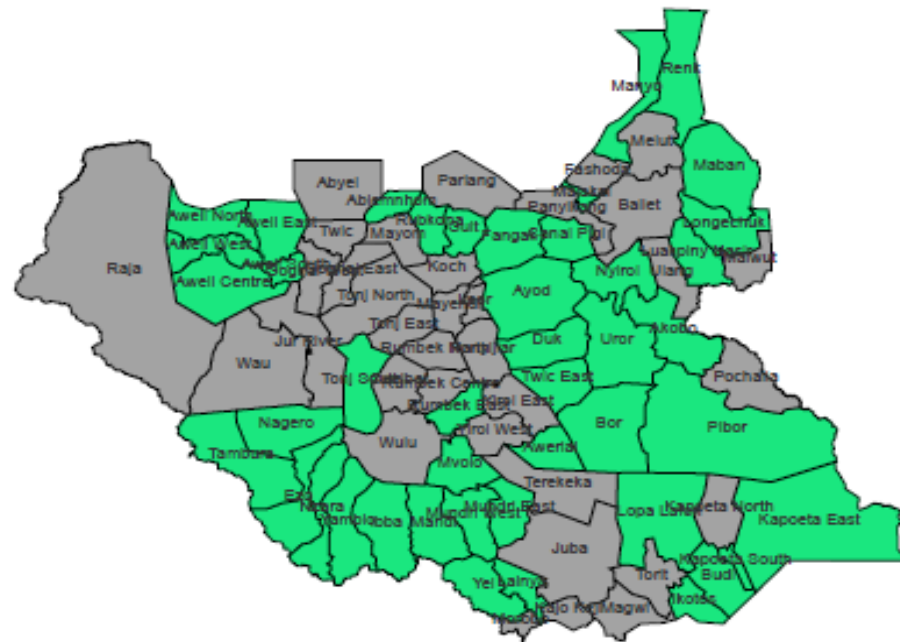
W12	Cumulative (2019)	
45	714	total submissions
7	0	submissions by mobile
38	0	submissions by web

- Completeness for IDSR reporting at the county level was 56% in week 12, 2019 and cumulatively at 69% for 2019.
- Timeliness for IDSR reporting at the county level was 53% in week 12 and cumulatively at 57% for 2019.
- The rolling out of the mobile phones for reporting to the health facilities is ongoing. This has affected the completeness of the surveillance system as the reports from the health facilities are captured separately.

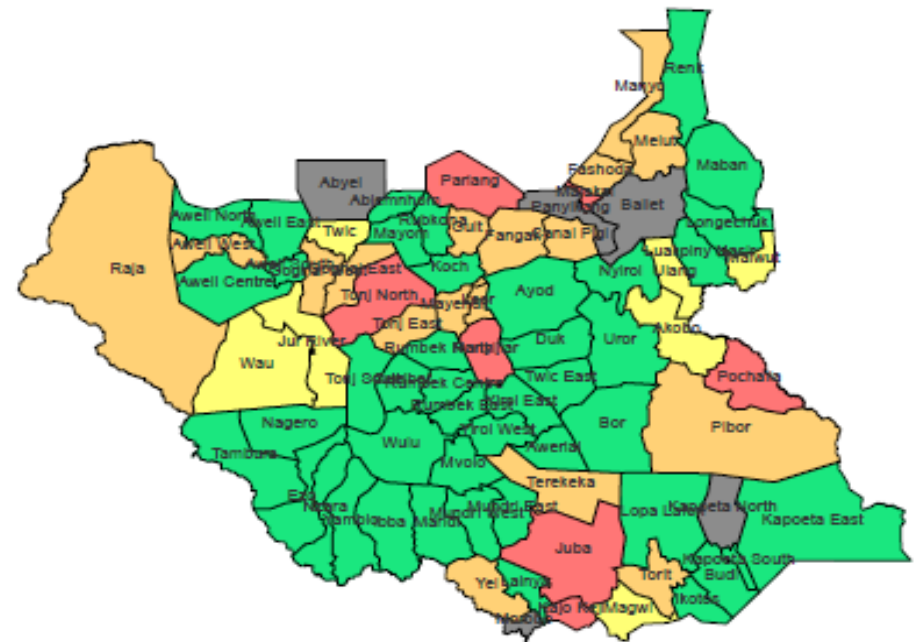


The graph shows completeness for the weekly IDSR reporting at the county level

Map 1a | Map of IDSR completeness by county (W12 2019)



Map 1b | Map of IDSR completeness by county (2019)



- Counties that submitted their IDSR reports in week 12, 2019 are shown in green in map 1a.
- Counties that did not submit their IDSR reports in week 12, 2019 are shown in grey in map 1a.

Table 4 | EWARS surveillance performance indicators by partner (W12 2019)

Partner	Performance		Reporting	
	# sites	# reports received	Completeness	Timeliness
CMD	3	3	100%	100%
GOAL	2	1	50%	50%
HLSS	1	1	100%	100%
IMA	7	7	100%	100%
IMC	5	5	100%	100%
IOM	10	9	90%	90%
IRC	1	1	100%	100%
Medair	2	2	100%	100%
MSF-E	2	1	50%	50%
MSF-H	3	1	33%	33%
SMC	7	4	57%	57%
UNIDO	1	1	100%	100%
UNKEA	2	2	100%	100%
World Relief	1	1	100%	100%
TRI-SS	2	0	0%	0%
LIVEWELL	1	0	0%	0%
<b>Total</b>	<b>54</b>	<b>41</b>	<b>76%</b>	<b>76%</b>

Table 5 | Summary of key EWARS surveillance indicators

W12	Cumulative (2019)	
54	-	Number of EWARS reporting sites
76%	73%	Completeness
76%	71%	Timeliness

Table 6 | EWARS report submissions

W12	Cumulative (2019)	
41	543	total submissions
1	22	submissions by mobile
40	521	submissions by web

- Both the completeness and timeliness for EWARS reporting stand at 76% for week 12, while the cumulative completeness and timeliness are 73% and 71% respectively for 2019

# EVENT-BASED SURVEILLANCE

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



Table 7 | Alert performance indicators by Hub

Hub	W12		Cumulative (2019)	
	# alerts	% verif.	# alerts	% verif.
Aweil	2	100%	21	90%
Bentiu	4	100%	48	98%
Bor	5	100%	25	84%
Juba	5	100%	87	64%
Kwajok	0	0%	8	63%
Malakal	5	80%	38	82%
Rumbek	13	54%	183	85%
Torit	7	0%	41	37%
Wau	11	36%	51	57%
Yambio	8	63%	61	72%
<b>South Sudan</b>	<b>60</b>	<b>60%</b>	<b>561</b>	<b>75%</b>

Table 8 Summary of key alert indicators

W12	Cumulative (2019)	
<b>60</b>	561	Total alerts raised
<b>60%</b>	75%	% verified
<b>0%</b>	0%	% auto-discarded
<b>10%</b>	7%	% risk assessed
<b>7%</b>	5%	% requiring a response

- Out of 60 alerts that were received in week 12, 60% were verified, 10% were risk assessed and 7% required a response.

Table 9 | Alert performance indicators by event

Event	W12		Cumulative (2019)	
	# alerts	% verif.	# alerts	% verif.
<b>Indicator-based surveillance</b>				
Malaria	6	67%	59	80%
AWD	16	75%	318	71%
Bloody Diarr.	8	38%	114	68%
Measles	13	54%	147	75%
Meningitis	0	0%	0	0%
Cholera	0	0%	18	67%
Yellow Fever	0	0%	7	86%
Guinea Worm	1	0%	20	75%
AFP	3	33%	75	81%
VHF	0	0%	5	80%
Neo. tetanus	1	0%	8	50%
<b>Event-based surveillance</b>				
EBS total	3	67%	17	76%

Table 10 | Event risk assessment

W12	Cumulative (2019)	
2	10	Low risk
19	19	Medium risk
0	7	High risk
2	3	Very high risk

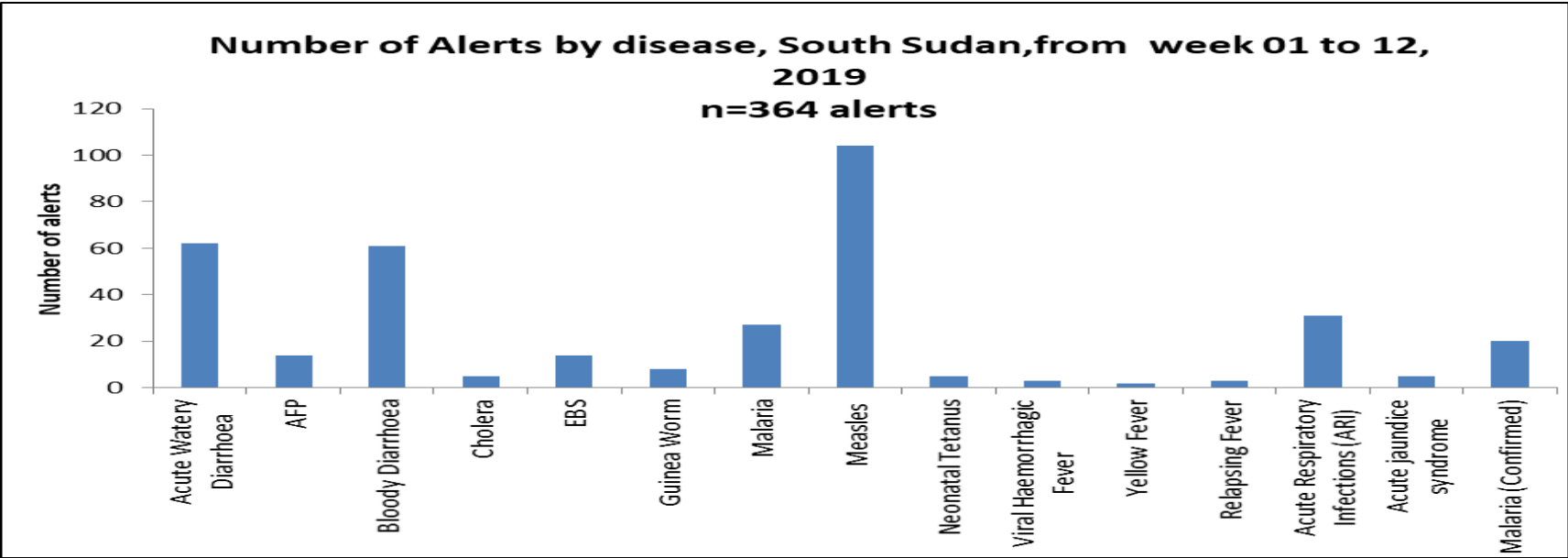
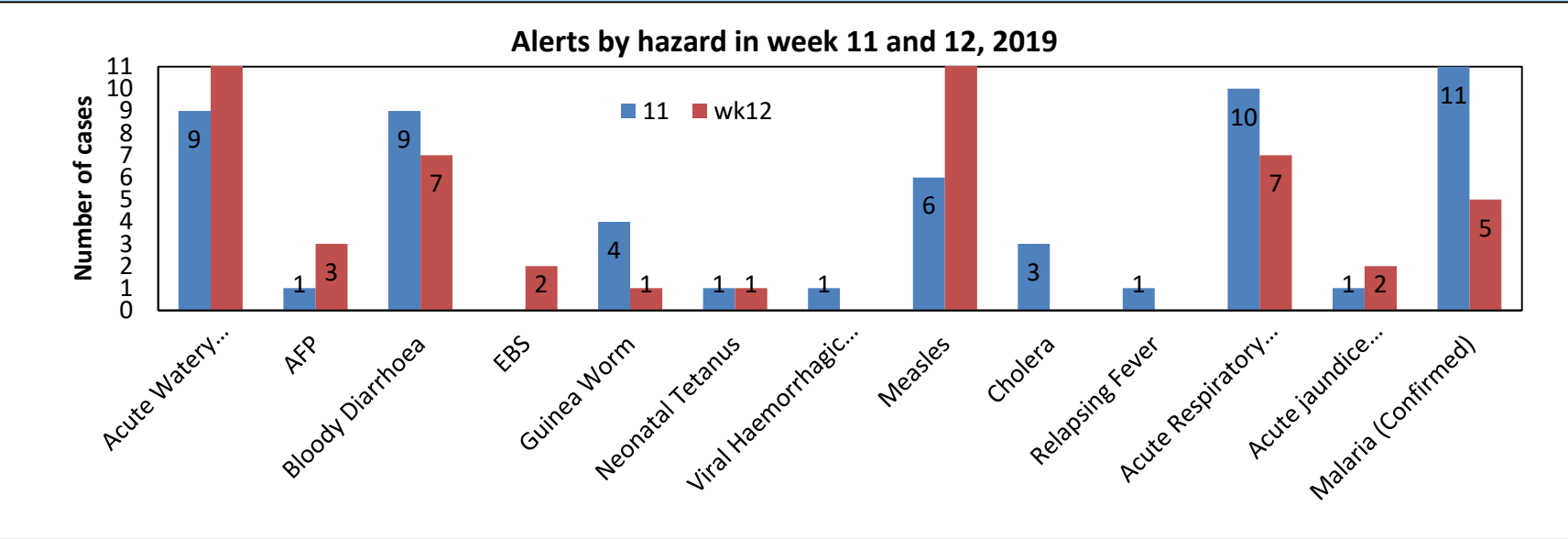
- In epi week 12 of 2019, AWD (16), measles (13) and bloody diarrhea (8) were the three most frequently reported infectious diseases.

## Alert by disease and county in W12 2019

Counties	AJS	ARI	Relapsing fever	Cholera	AWD	ABD	Guinea Worm	AFP	NNT	Malaria	VHF	Measles	Total
Rubkona	1												1
Juba		1										1	2
Rumbek Centre		4			2	1	1			4	1		13
Longechuk		1											1
Wulu		2								1			3
Lopa/Lafon		1			1	1				1			4
Yei		1											1
Mayom					1								1
Tambura			1		1	1				1			4
Ezo					1	1				1			3
Rumbek East					2					1			3
Wau					1		2					1	4
Aweil South								1				1	2
Aweil West									1				1
Rubkona						1						2	3
Malakal												1	1
Cueibet				2		1							3
Canal Pigi						1							1
Magwi						1							1
Ikotos						1							1
Awerial				1									1
Yirol West							1						1
Terekeka										2			2
<b>Total Grand</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>3</b>	<b>9</b>	<b>9</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>11</b>	<b>1</b>	<b>6</b>	<b>57</b>

### Unusual Deaths in Kapoeta East

- A report was received through WHO office of 7 deaths which happened in Kasengor/Jieh in Kapoeta East (80km to kapoeta town). The report was received through the county commissioner.
- The main symptom reported by the victims was headache. No additional information was available.
- No functional health Facilities in Jieh according to the report. The nearest facility is Mogoth PHCC.
- A team from MoH and WHO MMT is travelling to Jieh on 3<sup>rd</sup> April 2019 to verify and investigate the causes of the deaths



The Figures show comparison of alerts by hazards reported in week 11 and 12, and the cumulative number of alerts triggered in 2019 by hazard.

## Cumulative alerts by risk assessment stage in 2019

County	OUTCOME	RISK ASSESSED	VERIFICATION	Total Alerts
Acute Watery Diarrhoea	2	1	59	62
AFP			14	14
Bloody Diarrhoea	2	2	57	61
EBS	3		11	14
Guinea Worm			8	8
Neonatal Tetanus			5	5
Viral Haemorrhagic Fever			3	3
Yellow Fever			2	2
Measles	12	3	89	104
Cholera			5	5
Malaria			27	27
Relapsing Fever			3	3
Acute Respiratory Infections (ARI)	4		27	31
Acute jaundice syndrome	2		3	5
Malaria (Confirmed)			20	20
<b>Total Alerts</b>	<b>25</b>	<b>6</b>	<b>333</b>	<b>364</b>

- The table shows the cumulative alerts by risk assessment status in 2019
- Of the 364 alerts reported in 2019; 333 (91.5%) alerts were verified and five (1.4%) underwent risk assessment..






# OUTBREAKS IN 2019

Major suspected and confirmed outbreaks in  
South Sudan in 2019




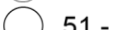
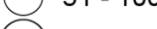
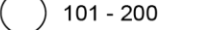


# Confirmed Outbreaks South Sudan – As at 4<sup>th</sup> April 2019

- The map show outbreaks confirmed in 2019
- The active outbreaks include: HEV in Bentiu PoC; Yellow Fever in Nzara; Measles in Abyei, Rubella in Malakal PoC, Bor South, Yiror East and Gogrial West; Measles in Juba; Measles in Pibor; Measles in Gogrial West; Rubella in NBG; Measles in Mayom, Aweil South, Melut and Tonj North

## Outbreak diseases

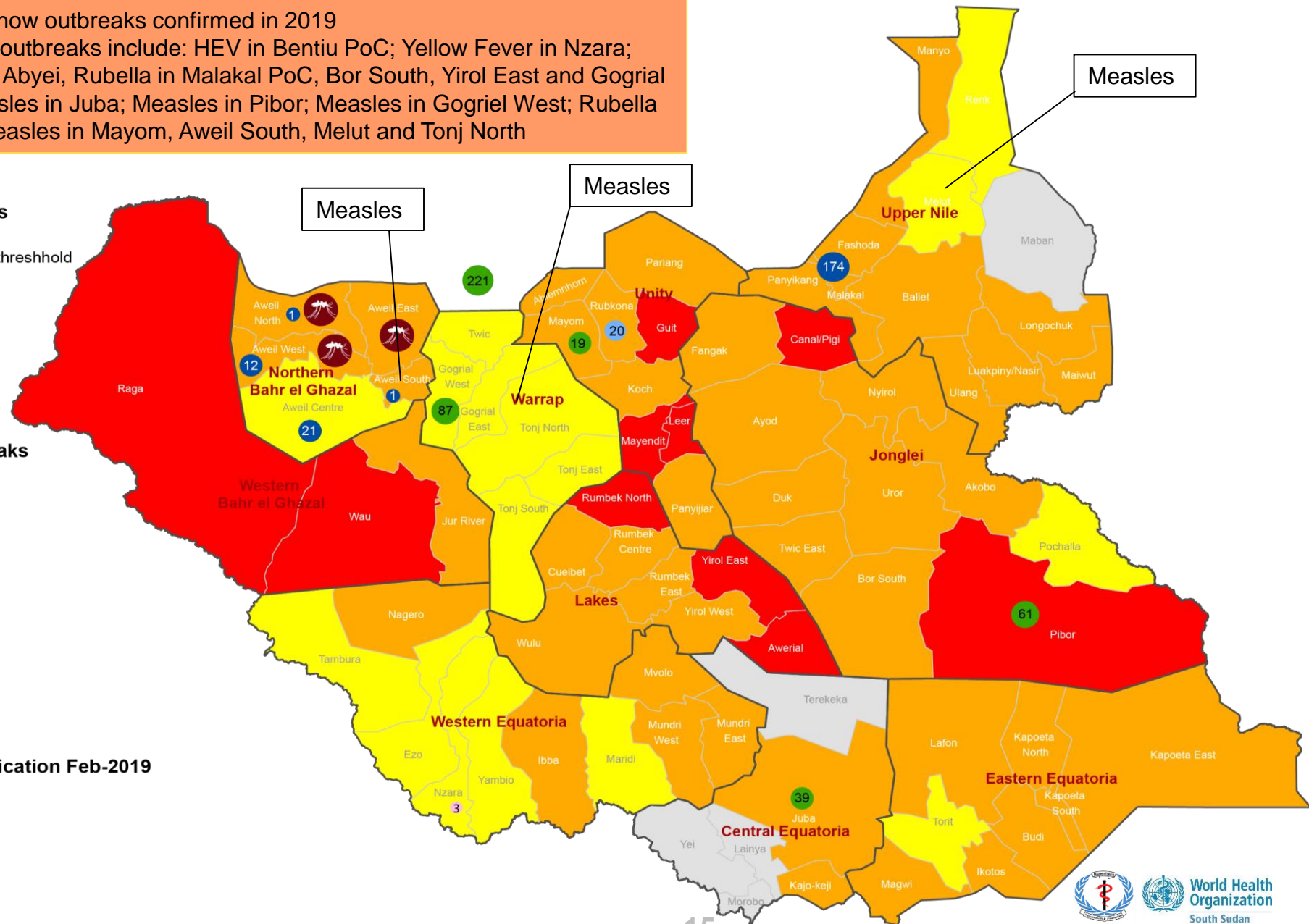
-  Malaria -above threshold
-  Measles
-  Rubella
-  Hepatitis E
-  Yellow Fever

## Number of outbreaks

-  1 - 5
-  6 - 10
-  11 - 50
-  51 - 100
-  101 - 200
-  201 - 300
-  301 - 400
-  401 - 500

## IPC Phase Classification Feb-2019

-  Emergency
-  Crisis
-  Stressed
-  No data



# Suspected Outbreaks South Sudan – As at 4<sup>th</sup> April 2019

- New alerts in the week
  - Suspected Measles outbreak in Yirol East, Bentiu PoC
  - Whooping Cough in Jur River County, Awerial, Juba
  - AWD and ABD in Old Fangak and Aweil North

## Week- 08 Suspected Outbreak diseases

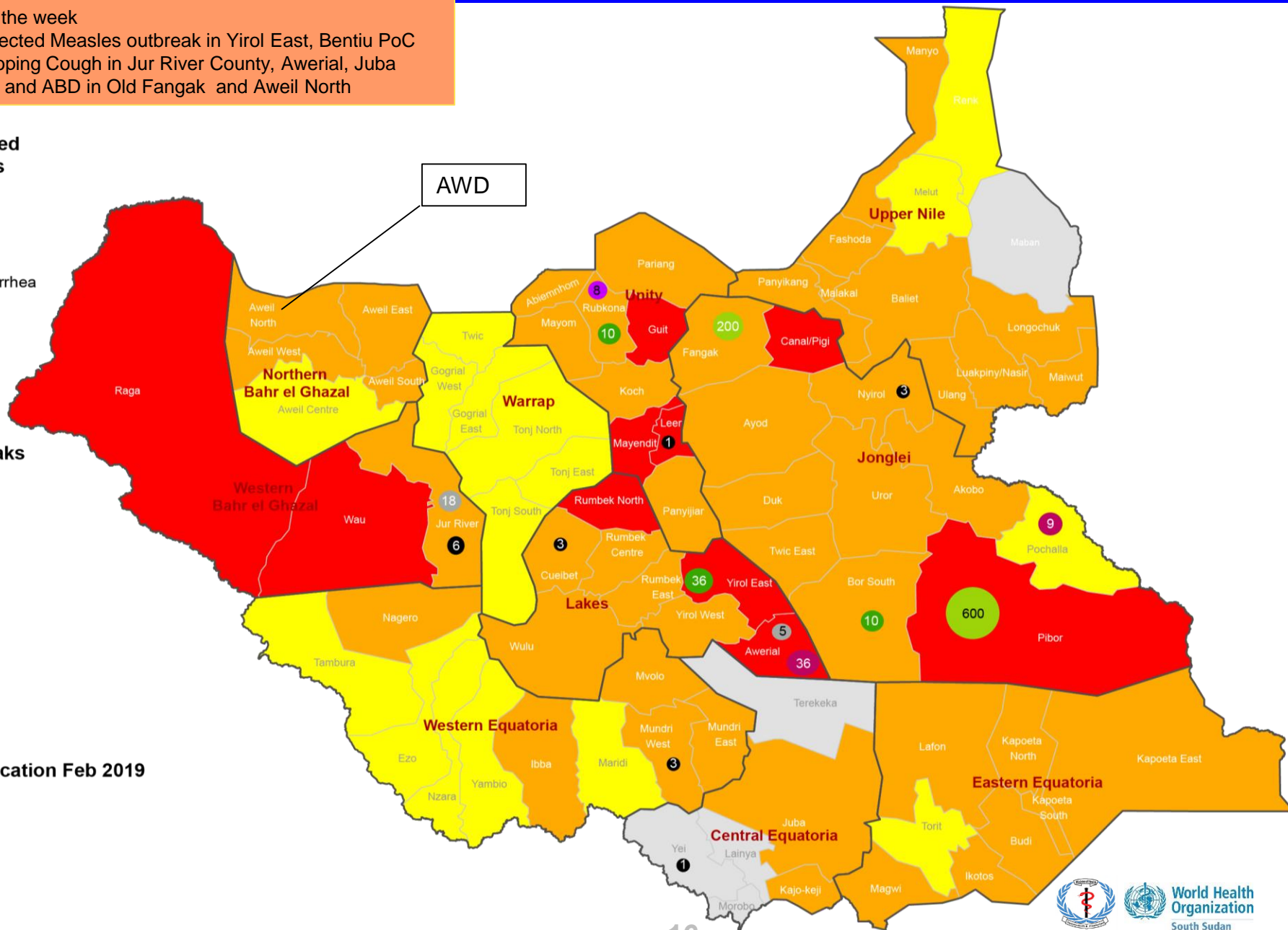
- Meningitis
- Measles
- Acute Watery Diarrhea
- Rabies probable
- Pertusis
- Chicken Pox

## Number of outbreaks

- 1 - 5
- 6 - 10
- 11 - 50
- 51 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- 401 - 500

## IPC Phase Classification Feb 2019

- Emergency
- Crisis
- Stressed
- No data





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	0	178 (0.08)	Yes	No	Yes	N/A
Yellow Fever	Nzara	23/11/2018	0	3 (0.001)	Yes	Yes	Yes	N/A
Hepatitis E	Bentiu PoC	03/01/2018		23 (0.011)	Yes	No	Yes	Yes
Measles	Abyei	12/02/2018	0	316 (0.40)	Yes	Yes	Yes	N/A
Measles	Juba	15/01/2019	0	48 (0.01)	Yes	Yes	Yes	N/A
Measles	Pibor	17/01/2019	9	136 (0.015)	Yes	Yes	Yes	N/A
Measles	Gogrial West		18	156 (0.025)	Yes	Yes	Yes	N/A
Rubella	Aweil Center/NBG		0	35 (0.028)	Yes	No	Yes	N/A
Measles	Mayom	17/01/209	0	19 (0.010)	Yes	Yes	Yes	N/A
Measles	Aweil South	15/03/2019	3	25 (0.012)	Yes	Yes	Yes	N/A
Measles	Melut	15/03/2019	0	9(0.008)	Yes	Yes	Yes	N/A
Rubella	Bor South		0	4 (0.001)	Yes	No	Yes	N/A
Rubella	Gogrial West		0	5 (0.001)	Yes	No	Yes	N/A
Rubella	Yirol East		0	3 (0.003)	Yes	No	Yes	N/A
Measles	Tonj North		5	5 (0.002)	Yes	Yes	Yes	N/A

### Ongoing outbreaks in week 12, 2019

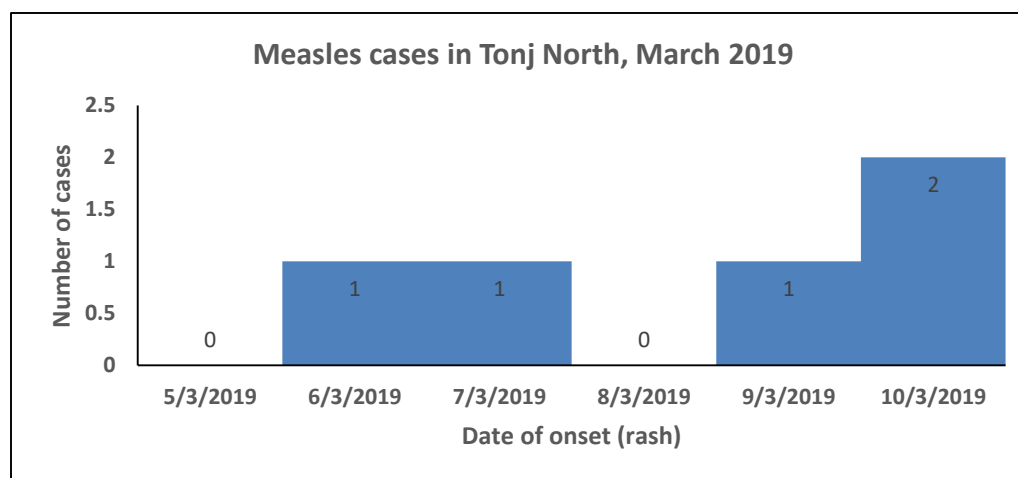
- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Rubella Malakal PoC</li> <li>2. Yellow Fever in Nzara county</li> <li>3. Hepatitis E Virus (Bentiu PoC);</li> <li>4. Measles in Abyei</li> <li>5. Measles in Juba</li> <li>6. Measles in Pibor</li> <li>7. Measles in Tonj North</li> </ol> | <ol style="list-style-type: none"> <li>7. Measles in Gogrial West</li> <li>8. Measles in Mayom</li> <li>9. Rubella in NBG</li> <li>10. Measles in Aweil South</li> <li>11. Measles in Melut</li> <li>12. Rubella in Bor South, Gogrial West and Yirol East</li> </ol> |
|---|---|

# ACTIVE OUTBREAKS AND PUBLIC HEALTH EVENTS

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

## Confirmed Measles outbreak – Tonj North

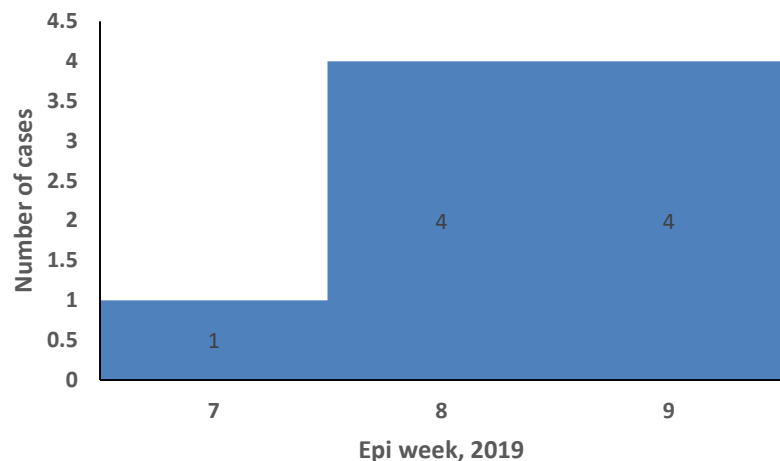
- A new measles outbreak has been confirmed in Tonj North County in Warrap
- A total of five (5) suspected measles cases were line listed
- All the five (5) samples that were received tested positive for measles IgM
- Most of the cases are children < 5 years of age with mean ages of 4.2 years (SD=1.3 years)
- All the cases are from Akop Payam.
  - Four (4) cases from Ariik Village
  - One (1) case from Paduoc Village



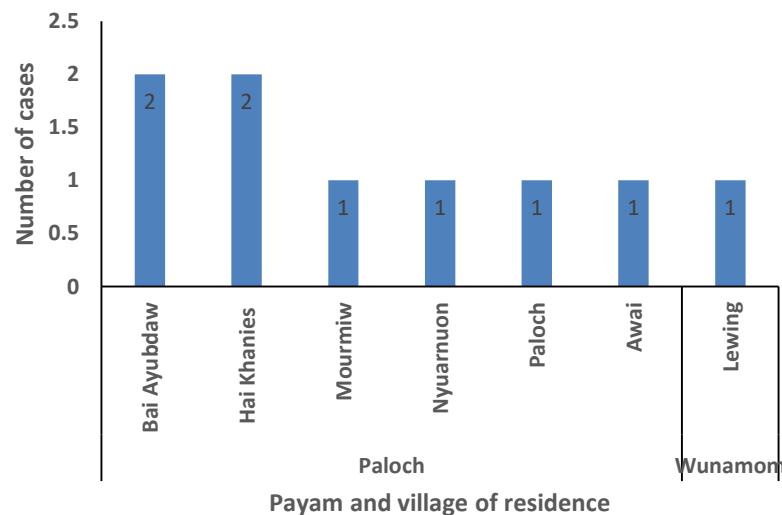
- Recommended response
  - SMOH and partners to convene an emergency meeting to develop a comprehensive response plan
  - Active case search both in the facilities and communities to identify the missed cases and to establish the magnitude and extent of the outbreak
  - Strengthen routine surveillance and immunization activities
  - Engage communities to increase awareness and health seeking behavior
  - Training of health workers on case management of measles cases (supportive management including vitamin A supplementation)

## Confirmed Measles outbreak – Melut

Measles cases in Melut, week 7-9, 2019



Measles cases in Melut, week 7-9, 2019



### Introduction

- A measles outbreak has been confirmed in Melut following laboratory confirmation of three (3) suspected samples in week 11. There are nine (9) suspected measles although active case search for more cases in the facilities and in the communities are ongoing.

### Descriptive Epidemiology for measles cases in Aweil South

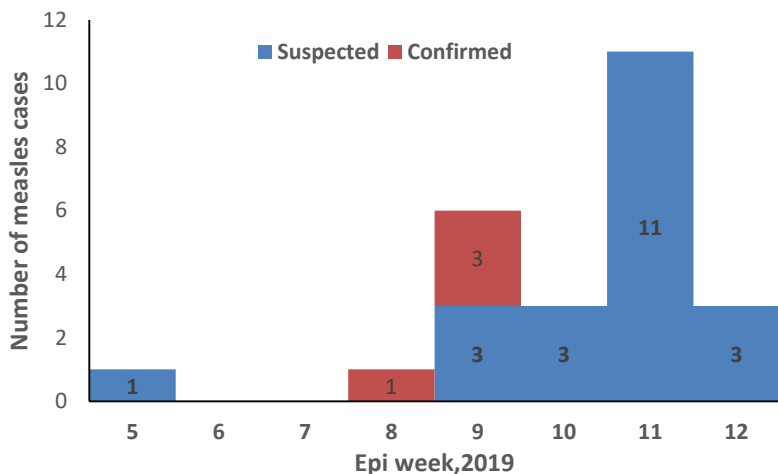
- The first cases among the line listed cases reported that their skin rash started in week 07, 2019.
- No deaths have been reported
- Out of the 9 cases, 8 (88.9%) are children < 5 years. The mean age for the cases is 1.5 years (SD=1.3)
- The majority of the cases are from Paloch Payam with 8 (88.9%) cases out of the 9 cases. Two payams affected out of the six payams.
- Six (66.7%) reported not receiving measles vaccination prior to their illness

### Recommended response

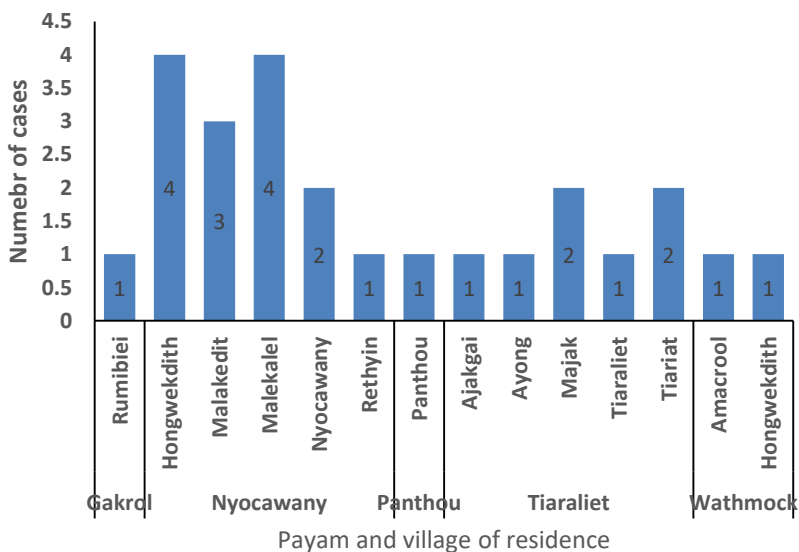
- A response plans which includes a micro-plan for a reactive vaccination campaign has been developed through engagement between SMOH and the partners
  - The emergency campaign will be targeting 15,502 children aged 6 months to 5 years.
  - The campaign expected to start on 8<sup>th</sup> April 2019
- Other recommended interventions include active case search by surveillance officers in the health facilities and communities, quality case management to improve outcome
- Intensification of the surveillance activities to ascertain the magnitude and geographical extent of the outbreak
- Scaling of the routine immunization activities and communication sensitization exercises
- The health facilities and partners in Malakal (2) and Renk (1) where laboratory confirmed cases have been reported are advised to enhance their surveillance as well as collecting more samples for testing.

## Confirmed Measles outbreak – Aweil South

Measles cases in Aweil South, week 5-12, 2019



Measles cases in Aweil South, 2019



Age groups	Female	Male	Total	Percentage, %	Cumulative %
<1		2	2	8	8
1-4	4	11	15	60	68
5-9	2	6	8	32	100
Total cases	6	19	25	100	

### Introduction

- An outbreak was confirmed in Aweil South after four samples collected from suspected measles cases tested positive for measles IgM antibodies in week 11
- Cumulative caseload of 25 cases have been line listed following an active case search which was done after the outbreak confirmation
- The index case has a history of travel to the neighboring Gogriell West County which has a confirmed ongoing measles outbreak
- Suspected measles cases are also being reported from Aweil North, Aweil East and Aweil West

### Descriptive Epidemiology for measles cases in Aweil South

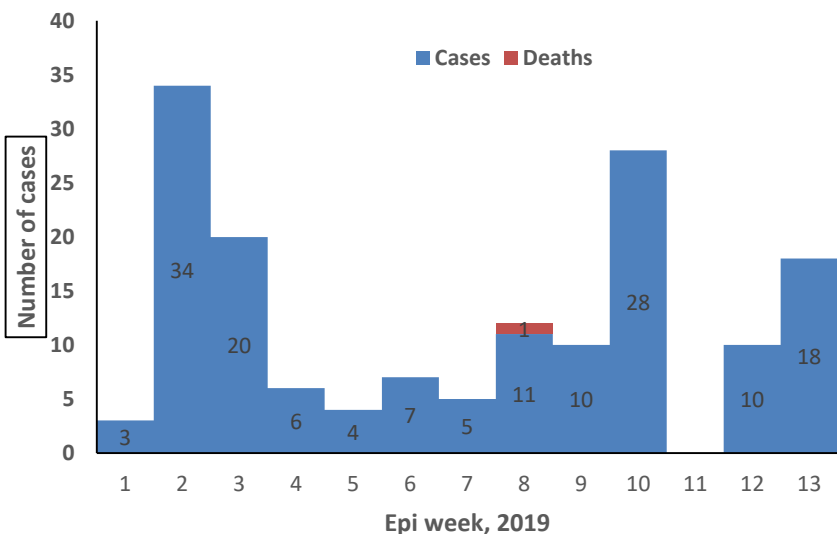
- The majority (68%) of cases are children <5 years
- Most of the cases are residing in Nyocawany Payam with 14 (56%) cases coming from five villages. Five payams affected by the outbreak.
- Fourteen (56%) of the cases have not received measles vaccination prior to their illness

### Recommended response

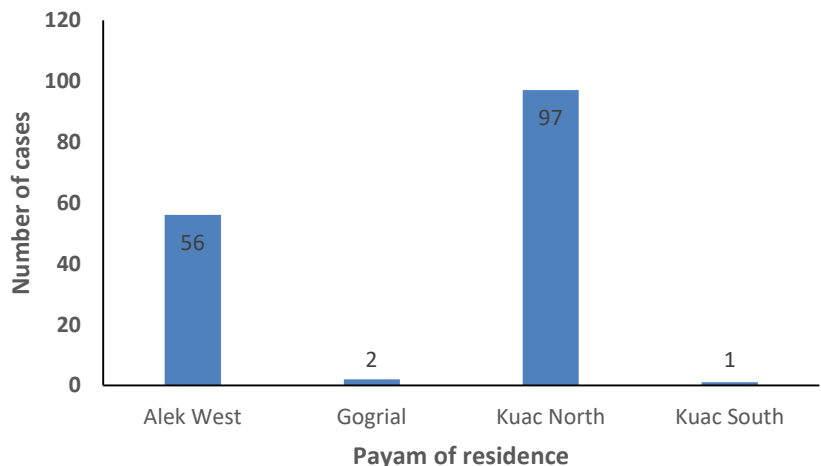
1. A micro-plan for a reactive vaccination campaign has been developed where 22 071 children aged 6 months to 5 years are to be vaccinated
  - A campaign targeting all the payams in the county is planned to start on 8<sup>th</sup> April 2019 with IOM as the lead the agency with support from other partners
2. Other recommended interventions include active case search by surveillance officers in the health facilities and communities, case management,
3. The health facilities and partners in Aweil East, Aweil West, Aweil North and Aweil Centre are advised to collect more samples from suspected and to increase awareness among health workers and communities to enhance identification of suspected cases.

## Confirmed Measles outbreak – Gogrial West

Measles cases in Gogrial West, week 01-13, 2019



Measles cases in Gogrial West by residence, 2019



Age groups	Female	Male	Total	Percentage, %	Cumulative %
<1	18	12	30	19.2	19.2
1-4	29	44	73	46.8	66.0
5-9	15	15	30	19.2	85.2
10-14	7	6	13	8.3	93.6
15+	5	5	10	6.4	100.0
<b>Total cases</b>	<b>74</b>	<b>82</b>	<b>156</b>	<b>100.0</b>	

### Descriptive Epidemiology

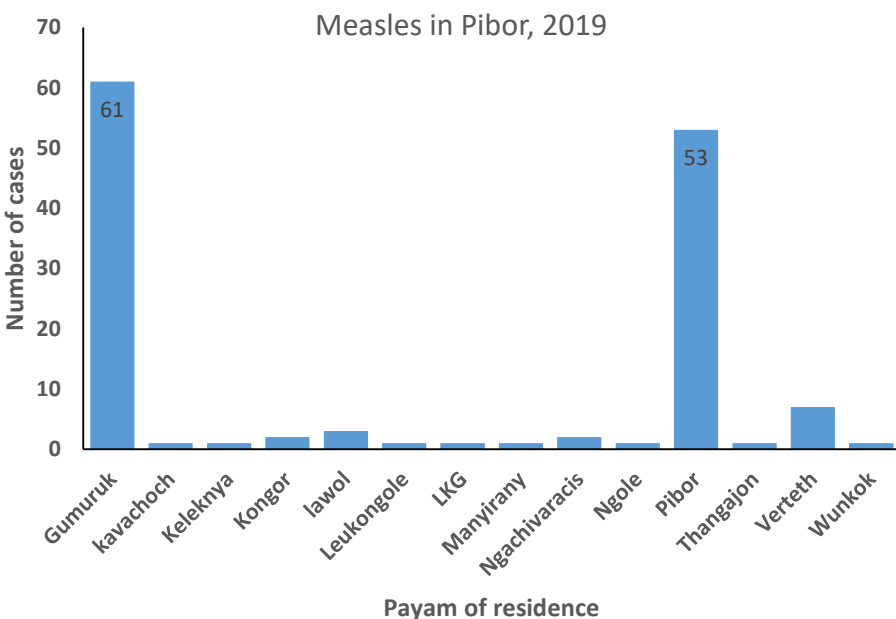
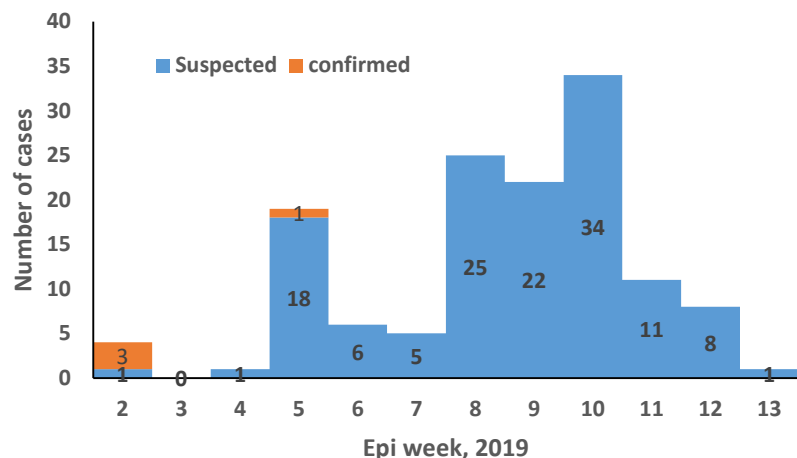
- As at end of week 13, there are 156 cases reported with one(1) death being reported in week 08, 2019.
  - Three (3) cases are laboratory-confirmed
- The payams with most cases are Alek West (56 cases) and Kuach North (97 cases) accounting for over 98% of all the cases in the county.
- Children < 5 years of age constituted 60% (103) of all the cases
- 128 (82.1%) cases out of 156 have never been vaccinated against in measles prior to the illness indicating poor routine vaccination coverage in the county.
- Six suspected measles cases reported from Gogrial East County: Two (2) cases have been confirmed positive for measles IgM antibodies.

### Recommended response

- A reactive vaccination campaign targeting 76024 children aged between 6-59 months is ongoing in all the 9 payams.
  - According to preliminary data representing 84% of all the data that was expected, 71,849 (94.5%) children have been vaccinated
  - The campaign expected to continue for the next few weeks to vaccinate children >5 to <15 years after additional vaccines to cover this age group were availed. This was part of the initial recommendation based on the epidemiology of the cases.

## Confirmed Measles outbreak – Pibor

Measles cases in Pibro, week 02-13, 2019



Age groups	Female	Male	Total	Percentage, %	Cumulative %
<1	13	7	20	14.7	14.7
1-4	20	47	67	49.3	64.0
5-9	21	15	36	26.5	90.4
10-14	2	3	5	3.7	94.1
15+	3	5	8	5.9	100.0
<b>Total cases</b>	<b>59</b>	<b>77</b>	<b>136</b>	<b>100.0</b>	

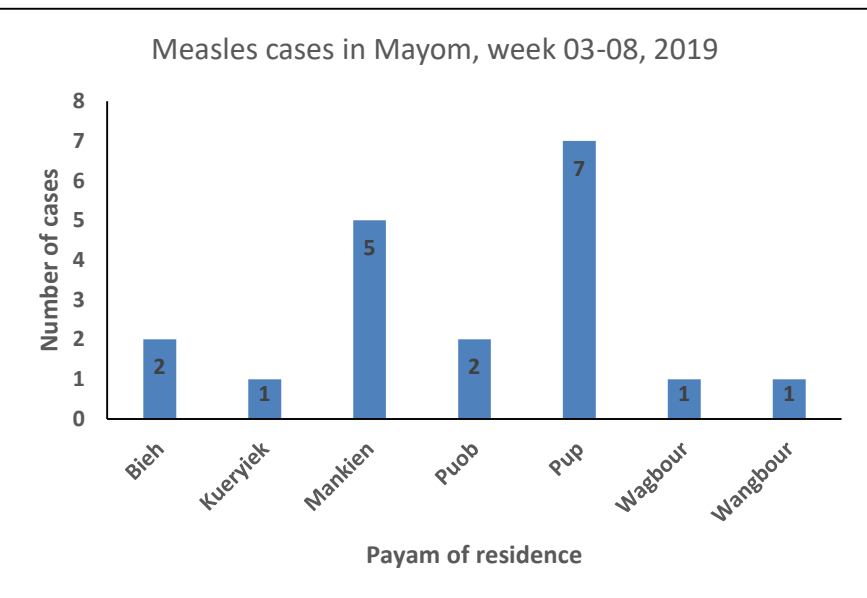
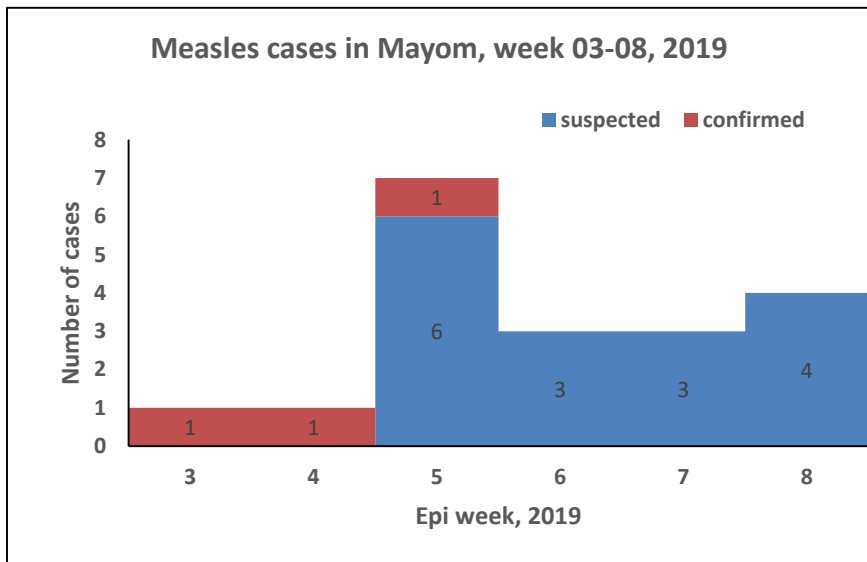
**Descriptive Epidemiology**

- Cumulatively a total of 136 measles cases have been reported as at end of week 13, 2019.
  - One (1) suspected case was reported in week 13, 2019
  - No deaths have been reported since the start of the outbreak
- Majority of the cases are from Gumuruk (61) and Pibor (53) contributing about 84% (114) of all the cases
- About 64% (87) of the cases are children <5 years
- More than half (58.1%) of the cases have either no history of prior vaccination against measles or don't know their vaccination status.
- Number of cases being reported at the health facilities are decreasing since the campaign

**Recommended response**

- A reactive vaccination campaign targeting 47,328 children aged 6 months to 15 years in all the payams started on 4th March 2019. A total of 13882 (30%) children vaccinated. About 4,000 additional children had been vaccinated by MSF-OCB before the campaign started.
- The challenges that had contributed to the low coverage include erroneous target population, inadequate social mobilization and communities' reluctance to bring their children for vaccination
- Partners advised to perform payam and village level analysis of the campaign coverage to identify areas with low vaccination coverage and prioritize them for either a mop-up campaign or scaling up of routine vaccination activities.

## Confirmed Measles outbreak – Mayom



Age groups	Female	Male	Total	Percentage, %	Cumulative %
<1	1	1	2	10.5	10.5
1-4	9	6	15	78.9	89.4
5-9	2	0	2	10.5	100.0
10-14	0	0	0	0.0	100.0
15+	0	0	0	0.0	
<b>Total cases</b>	<b>12</b>	<b>7</b>	<b>19</b>	<b>100.0</b>	

### Descriptive Epidemiology

- Nineteen (19) suspected measles cases were reported in Mayom between week 03, 2019 and week 08, 2019.
  - Three cases have been confirmed positive for Measles IgM antibodies
  - No deaths have been reported
- The payams with the most cases are Pup (7) and Mankien (5) Payam
- Majority (89.4%) of the cases are children < 5 years of age
- Only two (10.5%) cases reported ever receiving a vaccination against measles before their illnesses

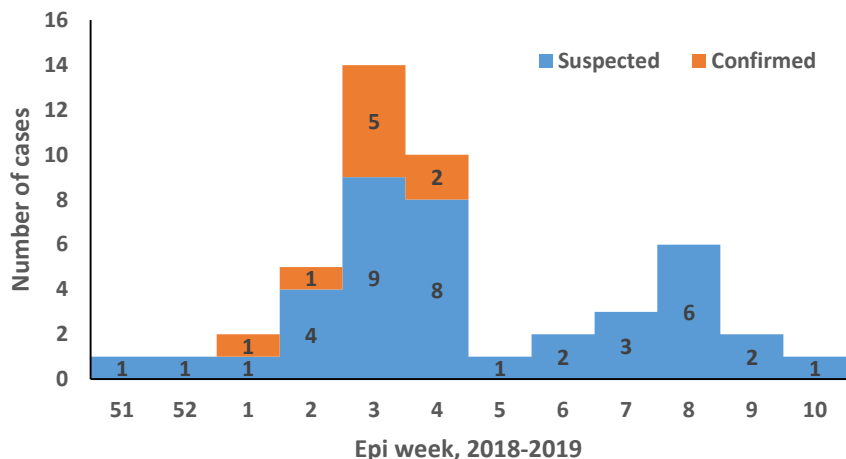
### Recommended response

1. A reactive vaccination campaign targeting 37, 193 children aged 6-59 months in 10 payams in Mayom started on 6<sup>th</sup> and ended on 12<sup>th</sup> March 2019
  1. 53434 (143.7%) children were vaccinated as at end of day 6. Data for some difficult to reach areas are not available yet
2. Other recommended interventions include active case search in the health facilities and communities, case management, routine surveillance and social mobilization

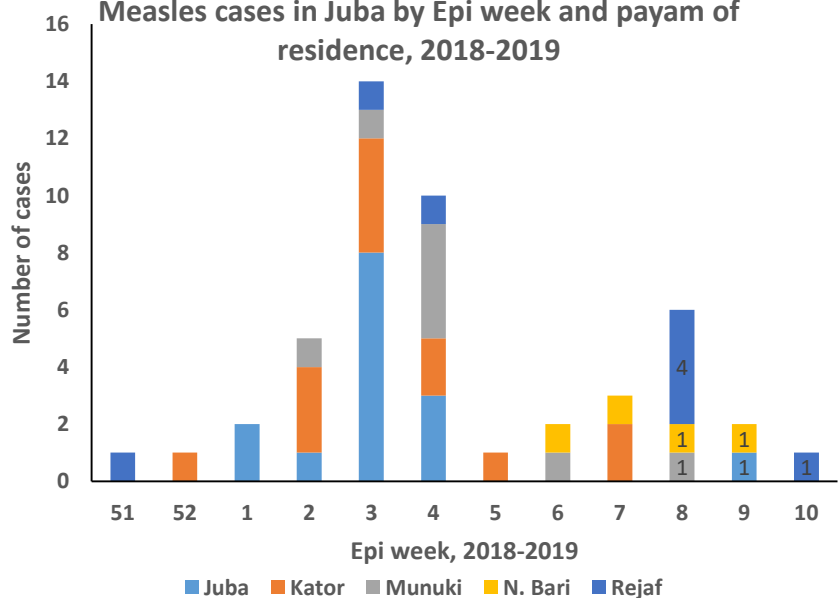


## Confirmed Measles outbreak – Juba

Measles cases in Juba, week 51, 2018-09, 2019



Measles cases in Juba by Epi week and payam of residence, 2018-2019



Age groups	Female	Male	Total	Percentage, %	Cumulative %
<1	3	14	17	35.4	35.4
1-4	8	17	25	52.1	87.5
5-9		3	3	6.3	93.7
10-14	1	1	2	4.2	97.9
15+		1	1	2.1	100.0
<b>Total cases</b>	<b>12</b>	<b>36</b>	<b>48</b>	<b>100.0</b>	

### Descriptive Epidemiology

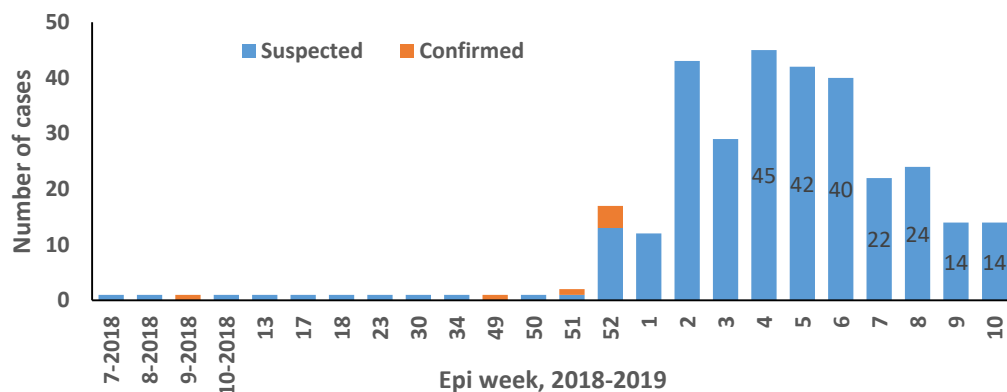
- A total of 48 suspected measles cases were reported from Juba as at end of week 10.
  - Most cases are from Juba 15 (31.3%) and Khator 13 (27.1%) payams
  - Ten (10) confirmed cases; 6 from Khator, 3 from Amarat and 1 from Rejaf
  - Three (CFR 6.3%) deaths reported; two (2) from Amarat and One (1) from Khator. All the deaths are among <5 children.
- A majority of the cases are children < 5 years, 42 (87.5%) while 36 (75%) are male

### Recommended response

- A reactive vaccination campaign covering three payams of Juba, Khator and Rejaf started on 11<sup>th</sup> February, 2019 and ended on 17<sup>th</sup> February, 2019 where 11712 (21%) children were vaccinated.
  - Active case search in health facilities and communities to ascertain presence of additional cases being seen in the facilities and communities to inform the next course of action is ongoing. No cluster of cases have been identified as of now.
- Increase community awareness through social mobilization both in the communities and at the health facilities
- Continue with surveillance and routine immunization

## Confirmed Measles outbreak – Abyei

Measles cases in Abyei, week 07, 2018-10, 2019



Age groups	Female	Male	Total	Percentage, Cumulative	
				%	%
<1	50	52	102	32.6	32.6
1-4	46	64	110	35.1	67.7
5-9	13	8	21	6.7	74.5
10-14	14	16	30	9.6	84.0
15+	21	29	50	16.0	100.0
Total cases	144	169	313	100.0	

### Background

- Measles has been present in the area throughout the year, with about one suspected seen per week

### Descriptive Epidemiology

- A total of 316 suspected cases reported between week 7, 2018 and week 09, 2019. Of all the cases, 306 (96.8%) were reported between week 49, 2018-10, 2019.
- Six (6) cases were confirmed between week 49-52, 2018, triggering declaration of an outbreak
- No deaths reported
- Among the cases with age and sex recorded, majority of the cases are children <5 years accounting for 67.7% (212). Males are more than females accounting for 53.5% (169). Sex and age variable was missing for three cases.
- Rumammer county had the most cases with 219 (69.3%)

### Recommended response

- A reactive vaccination was conducted between week 04 and 05, 2019 targeting four counties of Abyei, Rumammer, Alal and Mijak achieving an overall coverage of 88% (13335/15204).
  - A slow reduction in number of measles cases was observed from week 07, 2019 to week 10, 2019
- Strengthening of routine immunization activities that includes both static and outreach activities
- Continue with surveillance, health education and sensitization

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

## Epidemiological update

- Yellow Fever outbreak declared following PCR confirmation of a case on 19 Dec 2018
- WHO supported the MoH to conduct an outbreak investigation, and active case search both in the health facilities and in the community

## Entomological update

- 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.

## Laboratory update

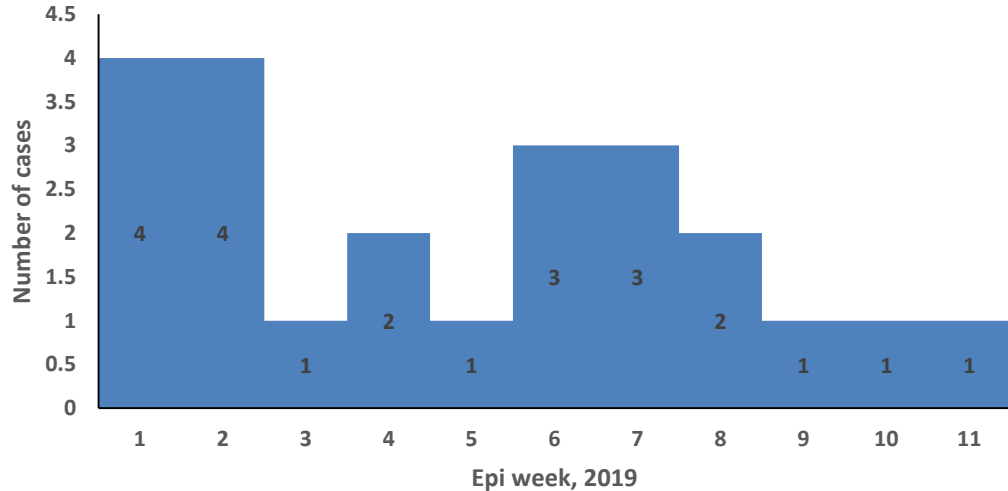
- One (1) PCR positive confirmed case and two (2) PRNT confirmed cases
  - All originate from Sakure payam in Nzara Payam, Gbudue state

## Reactive vaccination campaign

- WHO developed a reactive yellow fever vaccination campaign microplan targeting 19,578 individuals aged 9 months to 65 years in Sakure payam, Nzara county, Gbudue state.
- The vaccination microplan was submitted to the ICG on 19th February and approved on 21st Feb 2019
- A total of 21,416 doses of yellow fever vaccines were received.
- The reactive vaccination campaign started on 25<sup>th</sup> March 2019
- 19981 (102.06%) individuals were vaccinated
- Very few AEFI cases reported; three (3) minor cases, no serious AEFI cases

## Hepatitis E, Bentiu PoC

HEV cases in Bentiu PoC, week 01-11, 2019



### Bentiu PoC

- There has been persistent transmission of HEV in Bentiu PoC since early 2018
- Cumulatively, there are 23 suspected HEV cases that have been reported in Bentiu PoC since the beginning of 2019. One (1) new case was reported in week 11.
- There were 159 HEV cases reported in 2018
- None of the cases were admitted
- All the recent cases have recovered
- Slightly more than half (52.2%) of the cases are males
- Age groups 1-4 years had the most cases with 7 cases (30.4%).
- Out of the 11 females cases that were reported, three (3) cases are aged 15-44 years
  - At risk of adverse outcomes when infected in the 3<sup>rd</sup> trimester of pregnancy
- Use of unsafe drinking water likely to be source of infection
- Social mobilization to raise awareness on modes of transmission, symptoms and where to seek for care
- Case identification and follow up in the communities and WASH interventions are recommended.

Age groups	Female, n	Male, n	Total, n	Percent, %	Cumulative %
<1 year	0	0	0	0.0	0
1-4 years	3	4	7	30.4	30.4
5-9 years	2	0	2	8.7	39.1
10-14 years	3	3	6	26.1	65.2
15-44 years	3	3	6	26.1	91.3
45+years	0	2	2	8.7	100.0
<b>Total cases</b>	<b>11</b>	<b>12</b>	<b>23</b>	<b>100.0</b>	

## Malaria trends

### Current malaria trends

Malaria was the leading cause of morbidity and mortality accounting for 49.7% of all morbidities and 61.7% of all mortalities in week 12, 2019. The trend analyses showed at least 2 counties in two state hubs having malaria trends that are significantly higher than the expected levels. Counties with malaria trends that exceeded the threshold (third quartile of trends for the period 2013-2017) include:

1. **Kwajok hub (Tonj South)**
2. **Juba hub (Juba)**

### 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

## Ebola alerts investigated in 2018

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
30Oct	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	-ve	Investigated 15 Dec
25 Dec	1	0	Yambio Town		ND	-ve	-ve	Investigated 25 Dec

- In 2018, at least 16 alerts met the case definition and therefore underwent verification and follow up investigation by the rapid response teams.
- During 2018, at least 13 alerts that met the case definition were investigated and had samples obtained for laboratory testing will testing negative for Ebola virus disease and other hemorrhagic fevers safe for one alert in Sakure, Nzara county that was confirmed yellow fever positive.

## Ebola alerts investigated in 2019

Date	Cases	Deaths	Payam	County	eRDT	eGeneXpert	ePCR	Comments
27 Jan 19	1	0	Nimule		ND	-ve	-ve	Investigated on 27 Jan 2019
30 Jan 19	1	0	Nimule		ND	-ve	-ve	Investigated on 30 <sup>th</sup> Jan 2019
09 Feb 19	1	0	Juba		Nd	-ve	-ve	Investigated on 09 <sup>th</sup> Feb 2019
21 <sup>st</sup> Feb 19	1	1	Yambio		Nd	-ve	-ve	Investigated on 21 <sup>st</sup> Feb 19
25 <sup>rd</sup> Feb 19	1	0	Yambio		Nd	-ve	-ve	Investigated on 25 <sup>th</sup> Feb 19
26 <sup>th</sup> Feb 19	1	0	Yambio		Nd	-ve	-ve	Investigated on 26 <sup>th</sup> Feb 19
14 <sup>th</sup> Mar 19	1	0	Tambura		Nd	-ve	-ve	Investigated on 14 <sup>th</sup> Mar 19
22 <sup>nd</sup> Mar 19	1	0	Juba		Nd	-ve	-ve	Investigated on 22 <sup>nd</sup> Mar 19
26 <sup>th</sup> Mar 19	1	0	Ezo		Nd	-ve	Pending	Investigated on 26 <sup>th</sup> Mar 19

- Blood samples have been obtained from nine (9) Ebolavirus alerts; eight (8) samples tested negative for Ebolavirus and other viral hemorrhagic fevers including RVF, Marburg; Yellow Fever; and CCHF while results for the latest suspected EVD case is pending.

# 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 27<sup>th</sup> Mar 2019

## Current situation

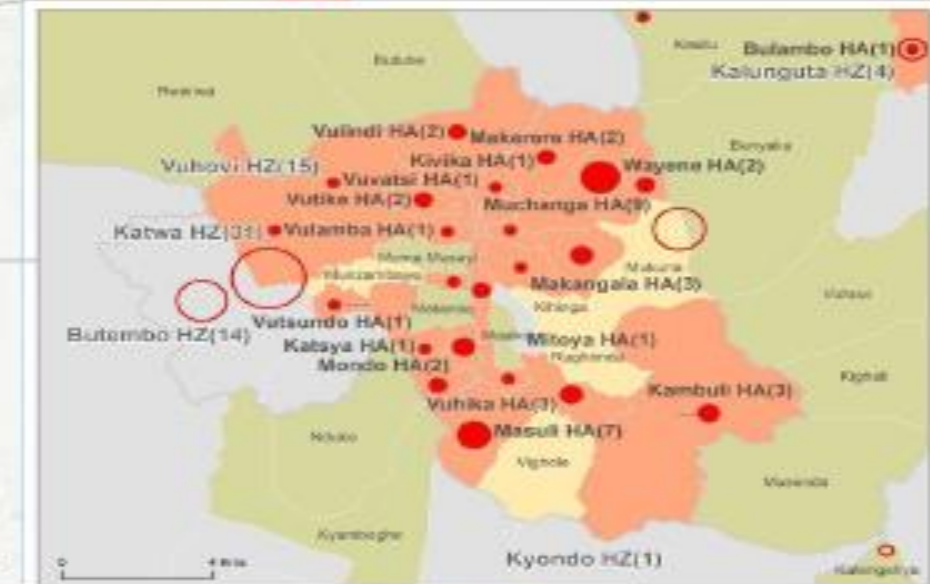
- Currently in 34<sup>th</sup> week of the outbreak
- **1044** Cases [978 confirmed & 66 probable]
- **652** Deaths [586 confirmed & 66 probable]
- **78** Health workers [27 dead]

## Response update

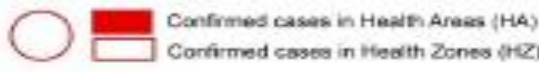
- **5024** contacts under surveillance [79-89% followed up]; 91 283 vaccinated

## Affected health zones

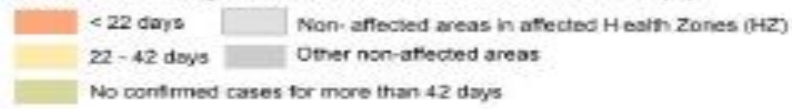
- **2** provinces [North Kivu & Ituri]
- **19** health zones [14 North Kivu & 5 Ituri]
- **115** cases in last 21 days; Katwa (31), Masereka (19), Mandima (17), Vuhovi (15), Butembo (14), Kalunguta (4), Beni (4), Kayna (3), Lubero (3), Oicha (2), Bunia (1), Biena (1), and Kyondo (1).



**Confirmed cases for the last 21 days**  
 Numbers in brackets represent confirmed cases for the last 21 days  
 HZ stands for Health Zones; HA stands for Health Areas



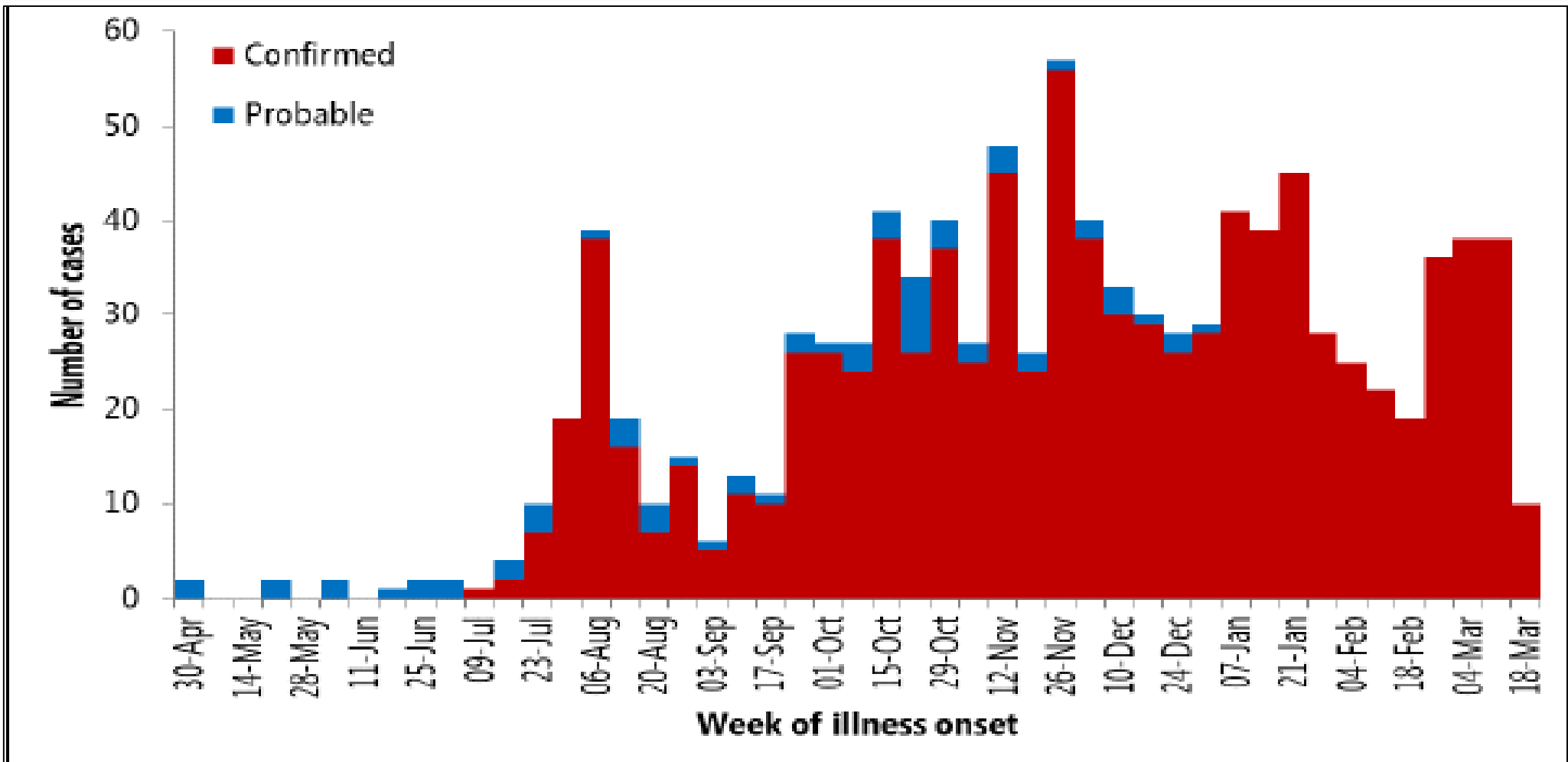
**Number of days since the last confirmed case(s)**



Data as of the 24th of March 2019.  
 By Health Emergencies Program the  
 Geneva, WHO/CDC  
 Copyright: WHO 2019.

This publication and its contents are the property of the World Health Organization and are intended for personal use only. It is not to be distributed, reproduced, or stored in a retrieval system without the prior written permission of the World Health Organization. For more information, please contact the publisher.

# EVD trends & case distribution in DR Congo



- Trends in case incidences reflect an outbreak that is continuing and active.

# 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>

Name of PoE	Passengers Screening Information			EVD Alerts		
	# screened	# Isolated	# under Voluntary Home Quarantine	# reported	# validated	# suspects
Kor Kaya PoE	1,814	0	0	0	0	0
Bangangal	0	0	0	0	0	0
Basutangbi	0	0	0	0	0	0
Bazi Border	1,634	0	0	0	0	0
Dukudu-Olo	0	0	0	0	0	0
Ezo	0	0	0	0	0	0
Gangura Border	0	0	0	0	0	0
James Dico	0	0	0	0	0	0
Juba International Airport	4,972	0	0	0	0	0
Kaya	2,461	0	0	0	0	0
Kaya Border	0	0	0	0	0	0
Khortjo	2,199	0	0	0	0	0
Makpandu	0	0	0	0	0	0
Maridi Airstrip	17	0	0	0	0	0
Nimule Airstrip	0	0	0	0	0	0
Nimule Border	0	0	0	0	0	0
Okaba	1,254	0	0	0	0	0
Panjala Docking River	0	0	0	0	0	0
Pure	2,769	0	0	0	0	0
Sakure Border	0	0	0	0	0	0
Salla Musala	1,617	0	0	0	0	0
Sangua 1	0	0	0	0	0	0
Tikori	77	0	0	0	0	0
Wau Airport	44	0	0	0	0	0
Yambio Airport	0	0	0	0	0	0
Yei Airport	12	0	0	0	0	0
Yei RRC	10	0	0	0	0	0
South Sudan	18,880	0	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 12, 18,880 individuals were screened at various screening points in the country.

# MAJOR SUSPECTED AND CONFIRMED OUTBREAKS & EVENTS REPORTED IN 2019

Listing of the major suspected and confirmed  
outbreaks and public health events reported in  
2018-2019

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.
12/10/2018	measles	82 (3)	Rumbek East		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 . 82 cases including 9 confirmed cases and 3 death (CFR 3.6%) reported . Cases reported from six payams with most originating from Aduel; Atiaba, and Mathian kok. Majority of the cases, 55 (67%), were children < 5 years of age A total of 9 samples tested positive for measles IgM on 22 November 2018
24/12/2018	Dog bites	8	Bentiu	Bentiu PoC	A cluster of cases of dog bites has been reported in Bentiu PoC. Eight (8) cases have been seen at health facilities between 24 <sup>th</sup> Dec 2018 and 28 <sup>th</sup> Dec 2018. Majority (75%) of the cases are children aged 5-12 years. None of the cases are symptomatic and no deaths were reported. Most of the dogs implicated are stray dogs who attacked unprovoked. Four (4) of the dogs were reported as being acting suspiciously and died within 15 days of the attacks. Of all the 8 cases reported, 5 (63%) received passive immunization with immunoglobulins, 2 (25%) received rabies vaccine and 6 (75%) received tetanus toxoid



## Outbreaks in 2019

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
06/01/2019	Malaria alerts	counties with trends significantly higher than expected	6		Counties with malaria trends that exceed the threshold (third quartile of trends for the period 2013-2017) include: Aweil hub (Aweil East, Aweil West and Aweil North)
27/10/2018	Rubella	155	Malakall PoC		A total of 155 suspected rubella cases have been reported since week 43. No deaths reported. 41 cases are laboratory confirmed
31/12/2019	HEV	169	Bentiu PoC		At least 169 suspect cases of Hepatitis E (HEV) have been reported in Bentiu PoC in 2018. Of all the cases, 18 suspect cases were confirmed using PCR. The eight (8) cases were reported between week 50-52 tested positive on RDT testing. One (1) mortality (CFR 0.65%) in 2018. Result are pending.
06/01/2019	Acute Watery Diarrhea	467	Malakal PoC & Malakal Town		An increase in AWD cases in Malakal PoC and Malakal Town reported from week 51, 2018. Overall, 467 AWD cases to date. In Malakal PoC, a total of 333 cases (70 in week 51, 224 in week 52 and 39 in week 01). In Malakal Town, 134 cases (49 in week 52 and 85 in week 01). Assossa, Jalaba and Malakal Payams had the most number of cases. No mortalities reported.
06/01/2019	Measles	202	Abyei		Measles has been present in the area throughout the year, with about one suspected seen per week. A total of 45 suspected cases reported between week 7, 2018 and week 02,2019. The number of cases increased from week 50, 2018. Of all the cases, 35 (76%) were reported between week 51, 2018-02, 2019. Five (5) confirmed cases between week 51-52, 2018. No deaths reported
27/01/2019	EVD	1	Nimule		An alert was reported on 27 <sup>th</sup> Jan, 2019. The cases, 30year old male, was investigated, sample collected which tested negative on GneneXpert and PCR testing.
27/01/2019	Measles	3	Juba	Kator and Amarat	Twenty-one (21) cases reported as from week 01, 2019. Five cases confirmed positive for Measles IgM antibodies. Two deaths have been reported.

Date of report	Disease suspected	Number cases (deaths)	County	Payam	Status of investigations
21/01/2019	Chicken Pox	0	Awerial	Puluk	38 suspected cases of chicken pox all coming from Mingkaman in Puluk Payam.
30/01/2019	EVD	1	Nimule		An alert was reported on 30 <sup>th</sup> Jan, 2019. The cases, 30year old patient, was investigated, sample collected which tested negative on GgeneXpert and PCR testing.
17/01/2019	Measles	1	Gogriel West		97 suspected, three positive for IgM
31/01/2019	Measles	0	Aweil Center		About 12 suspected Measles cases have been reported from Aweil Center as at 31 <sup>st</sup> January, 2019. Eight cases tested positive for rubella. There are now 35 cass.
	Measles	0	Yirol East	Shambe	25 suspected Measles cases have been reported in Shambe in Yirol East. They have not been investigated or sample collected because of insecurity in the area
17/01/2019	Measles	0	Pibor	Gumuruk	Five suspected cases out of which three tested positive for Measles IgM antibodies
17/01/2019	Measles	0	Mayom		Five suspected cases out of which three tested positive for Measles IgM antibodies
15/03/2019	Measles	0	Aweil South		Twelve (12) suspected cases reported in the county, following which 4 samples tested positive for measles
15/03/2019	Measles	0	Melut		Three samples tested positive for measles out of six samples tested

**This bulletin is produced by the Ministry of Health with  
Technical support from WHO**

**For more help and support,  
please contact:**

Dr. Pinyi Nyimol Mawien  
Director General Preventive Health Services  
Ministry of Health  
Republic of South Sudan  
Telephone: +211916285676

Dr. Mathew Tut Moses  
Director Emergency Preparedness and Response (EPR)  
Ministry of Health  
Republic of South Sudan  
Telephone: +211922202028

## Notes

WHO and the Ministry of Health gratefully acknowledge the surveillance officers [at state, county, and health facility levels], health cluster and health pooled fund (HPF) partners who have reported the data used in this bulletin. We would also like to thank ECHO and USAID for providing financial support.

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.

More information can be found at <http://ewars-project.org>

