

South Sudan

Integrated Disease Surveillance and Response (IDSR)

Epidemiological Update W14 2019 (Apr 01, 2019- Apr 07, 2019)



- The completeness for IDSR reporting at the county level was 55% in week 14 of 2019. The completeness for EWARS reporting from IDPs was 75%.
- A measles outbreak has been confirmed in Juba PoC following laboratory confirmation of two suspected measles cases. There are five suspected cases from the PoC as at the end of week 15. A reactive vaccination campaign will be conducted by the International Medical Corps (IMC).
- Planning and mobilization for support for the implementation of emergency reactive campaigns in Tonj North, Aweil West/ Aweil Center, Gogrial East, and Juba counties are ongoing. Health Cluster and WHO are working with identified partners to support the affected counties.
- Reactive vaccination campaigns have been concluded in Aweil South and Gogrial Wes counties where 24, 261 (116%) and over 143,000 children respectively have been vaccinated. A similar emergency reactive vaccination campaign is currently being finalized in Melut County.
- Cumulatively, there are 34 Hepatitis E Virus cases reported in Bentiu PoC since the beginning of 2019. There were four (4) suspected cases in week 14, 2019.
- Four (4) patients presenting with yellowish discoloration of sclera and urine, and fever were reported from Pibor PHCC on 28th March 2019 (1 one) and on 4th April 2019 (3 cases). A patient with similar manifestation was seen at MSF PHCC in Pibor and tested positive for Hepatitis E virus. Health facilities are advised to collect samples from subsequent cases and fill the case-based investigation forms to accompany the samples for laboratory confirmation.
- 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 (W14 2019)

| Hub | Reporting | | Performance | |
|--------------------|------------|---------------------------------|--------------|------------|
| Hub | # counties | # reports received # reports | Completeness | Timeliness |
| Aweil | 5 | 5 | 100% | 100% |
| Bentiu | 9 | 3 | 33% | 22% |
| Bor | 11 | 9 | 82% | 82% |
| Juba | 6 | 2 | 33% | 17% |
| Kwajok | 7 | 1 | 14% | 14% |
| Malakal | 13 | 8 | 62% | 38% |
| Rumbek | 8 | 2 | 25% | 25% |
| Torit | 8 | 3 | 38% | 38% |
| Wau | 3 | 1 | 33% | 0% |
| Yambio | 10 | 10 | 100% | 100% |
| South Sudan | 80 | 44 | 55% | 48% |

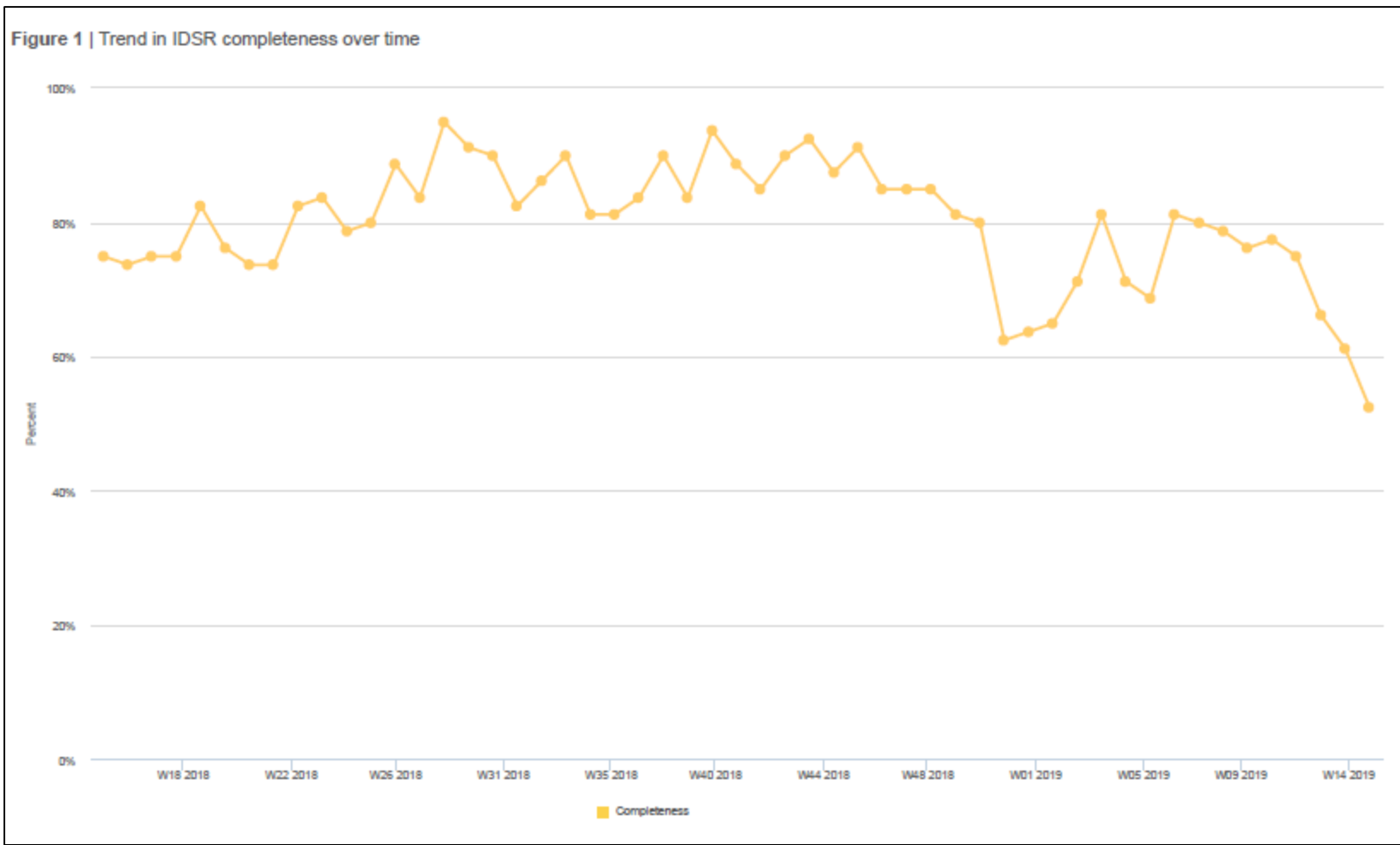
Table 2 | Summary of key IDSR surveillance indicators

| W14 | Cumulative (2019) | |
|------------|-------------------|--------------------|
| W14 | Cumulative (2019) | |
| 80 | - | Number of counties |
| 55% | 70% | Completeness |
| 48% | 57% | Timeliness |

Table 3 | IDSR report submissions

| W14 | Cumulative (2019) | |
|-----------|-------------------|-----------------------|
| 44 | 843 | total submissions |
| 6 | 0 | submissions by mobile |
| 38 | 0 | submissions by web |

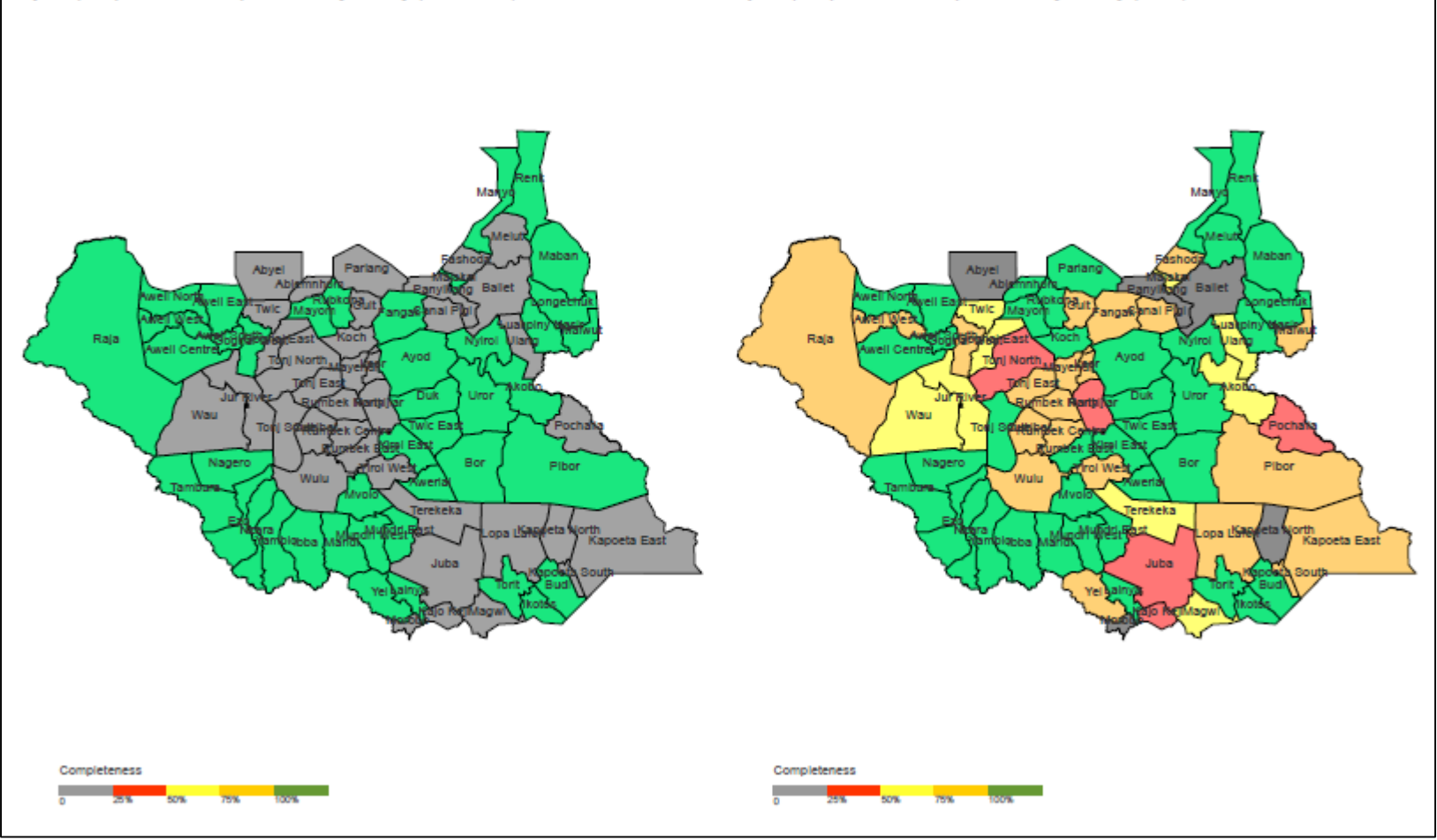
- Completeness for IDSR reporting at the county level was 55% in week 14, 2019 and cumulatively at 70% for 2019.
- Timeliness for IDSR reporting at the county level was 48% in week 14 and cumulatively at 57% for 2019.
- The rolling out of the mobile phones for reporting to the health facilities is ongoing. 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 (W14 2019)

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



- Counties that submitted their IDSR reports in week 14, 2019 are shown in green in map 1a.
- Counties that did not submit their IDSR reports in week 14, 2019 are shown in grey in map 1a.

Table 4 | EWARS surveillance performance indicators by partner (W14 2019)

| Partner | Performance | | Reporting | |
|--------------|-------------|--------------------|--------------|------------|
| | # sites | # reports received | Completeness | Timeliness |
| CMD | 3 | 2 | 67% | 67% |
| GOAL | 2 | 2 | 100% | 100% |
| HLSS | 1 | 1 | 100% | 100% |
| IMA | 7 | 5 | 71% | 71% |
| IMC | 5 | 5 | 100% | 100% |
| IOM | 11 | 9 | 82% | 82% |
| IRC | 1 | 1 | 100% | 100% |
| Medair | 2 | 2 | 100% | 100% |
| MSF-E | 2 | 1 | 50% | 50% |
| MSF-H | 3 | 2 | 67% | 67% |
| SMC | 7 | 4 | 57% | 57% |
| UNIDO | 1 | 1 | 100% | 100% |
| UNKEA | 2 | 1 | 50% | 50% |
| World Relief | 1 | 1 | 100% | 100% |
| TRI-SS | 2 | 2 | 100% | 100% |
| LIVEWELL | 1 | 0 | 0% | 0% |
| Total | 57 | 43 | 75% | 72% |

Table 5 | Summary of key EWARS surveillance indicators

| W14 | Cumulative (2019) | |
|-----|-------------------|---------------------------------|
| 57 | - | Number of EWARS reporting sites |
| 75% | 73% | Completeness |
| 72% | 69% | Timeliness |

Table 6 | EWARS report submissions

| W14 | Cumulative (2019) | |
|-----|-------------------|-----------------------|
| 43 | 649 | total submissions |
| 1 | 24 | submissions by mobile |
| 42 | 625 | submissions by web |

- The completeness and timeliness for EWARS reporting by partners was 75% and 72% respectively for week 14, while the cumulative completeness and timeliness are 73% and 69% respectively for 2019

EVENT-BASED SURVEILLANCE

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

Table 7 | Alert performance indicators by Hub

| Hub | W14 | | Cumulative (2019) | |
|-------------|----------|----------|-------------------|----------|
| | # alerts | % verif. | # alerts | % verif. |
| Aweil | 2 | 100% | 28 | 100% |
| Bentiu | 3 | 67% | 63 | 89% |
| Bor | 5 | 20% | 34 | 74% |
| Juba | 0 | 0% | 94 | 81% |
| Kwajok | 1 | 0% | 10 | 50% |
| Malakal | 3 | 33% | 44 | 80% |
| Rumbek | 2 | 50% | 199 | 83% |
| Torit | 8 | 75% | 60 | 83% |
| Wau | 1 | 0% | 58 | 59% |
| Yambio | 7 | 71% | 76 | 79% |
| South Sudan | 32 | 56% | 664 | 77% |

Table 8 Summary of key alert indicators

| W14 | Cumulative (2019) | |
|-----|-------------------|------------------------|
| 32 | 664 | Total alerts raised |
| 56% | 77% | % verified |
| 0% | 0% | % auto-discarded |
| 6% | 7% | % risk assessed |
| 6% | 5% | % requiring a response |

- Out of 32 alerts that were received in week 14, 56% were verified, 6% were risk assessed and 6% required a response.

Table 9 | Alert performance indicators by event

| Event | W14 | | Cumulative (2019) | |
|-------------------------------------|----------|----------|-------------------|----------|
| | # alerts | % verif. | # alerts | % verif. |
| Indicator-based surveillance | | | | |
| Malaria | 6 | 33% | 76 | 78% |
| AWD | 2 | 0% | 328 | 74% |
| Bloody Diarr. | 1 | 100% | 131 | 69% |
| Measles | 10 | 50% | 174 | 73% |
| Meningitis | 0 | 0% | 0 | 0% |
| Cholera | 2 | 100% | 22 | 82% |
| Yellow Fever | 0 | 0% | 8 | 100% |
| Guinea Worm | 0 | 0% | 22 | 77% |
| AFP | 1 | 100% | 77 | 88% |
| VHF | 0 | 0% | 5 | 80% |
| Neo. tetanus | 0 | 0% | 8 | 88% |
| Event-based surveillance | | | | |
| EBS total | 0 | 0% | 18 | 78% |

Table 10 | Event risk assessment

| W14 | Cumulative (2019) | |
|-----|-------------------|----------------|
| 1 | 15 | Low risk |
| 21 | 21 | Medium risk |
| 1 | 9 | High risk |
| 0 | 3 | Very high risk |

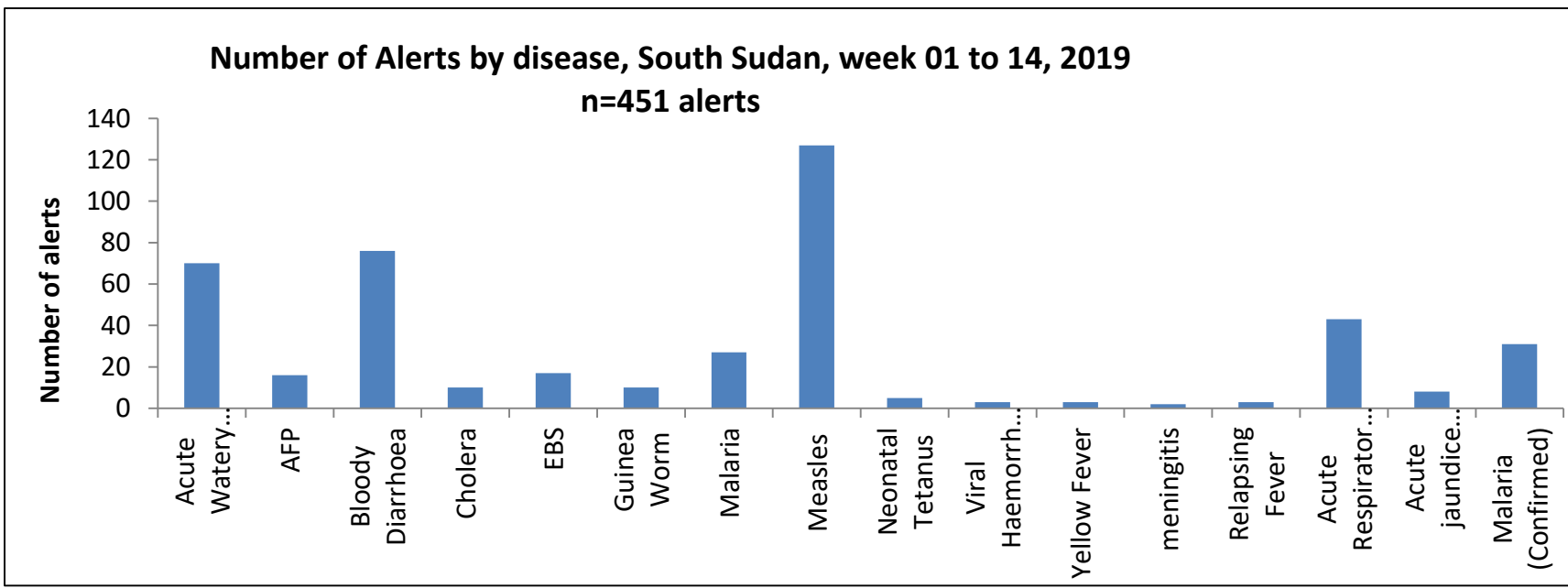
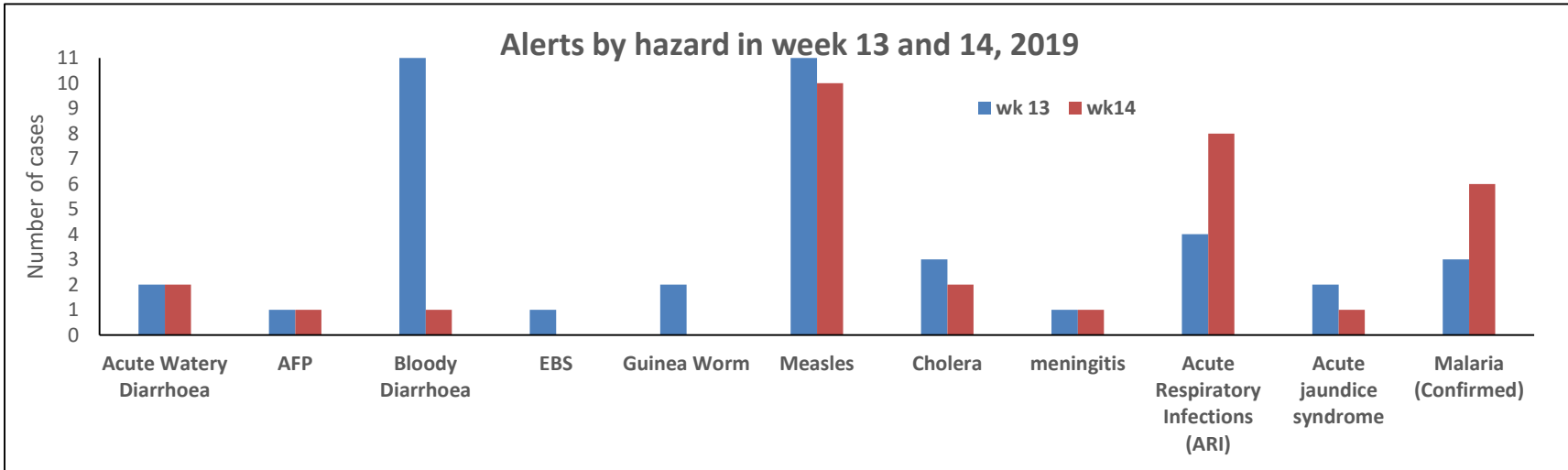
- Measles (10), malaria (6) and cholera were the top three most common alerts generated in week 14, 2019.

Alert by disease and county in W14 2019

| Counties | AJS | ARI | Cholera | AWD | Bloody Diarrhoea | AFP | Meningitis | Malaria | Measles | Total |
|--------------------|----------|----------|----------|----------|------------------|----------|------------|----------|-----------|-----------|
| Rubkona | 1 | | | | | | | | | 1 |
| Longechuk | | | | | | | | | 1 | 1 |
| Kapoeta East | | | | 1 | | | | | | 1 |
| Kapoeta North | | | | 1 | | | | | | 1 |
| Duk | | | | | | | | | 1 | 1 |
| Gogerial West | | | | | | | | | 1 | 1 |
| Lopa/Lafon | | | | | | 1 | | | | 1 |
| Ezo | | 1 | | | | | | | | 1 |
| Yambio | | | | | | | | 1 | | 1 |
| Mvolo | | | | | | | | 1 | | 1 |
| Nagero | | | | | 1 | | | | 1 | 2 |
| Rumbek East | | 1 | | | | | | | | 1 |
| Ibba | | 1 | | | | | | | | 1 |
| Maridi | | 1 | | | | | | | | 1 |
| Wau | | | | | | | | 1 | 1 | 2 |
| Aweil West | | | | | | | | | 1 | 1 |
| Rubkona | | | 1 | | | | | | 1 | 2 |
| Malakal | | | | | | | | | 2 | 2 |
| Cueibet | | | | | | | 1 | | 1 | 2 |
| Ayod | | | | | | | | 1 | | 1 |
| Pibor | | | | | | | | 1 | | 1 |
| Bor | | 1 | | | | | | | | 1 |
| Ikotos | | 3 | 1 | | | | | 1 | | 5 |
| Total Grand | 1 | 8 | 2 | 2 | 1 | 1 | 1 | 6 | 10 | 32 |

Acute Jaundice Syndrome cases in Pibor

- Four (4) patients presenting with yellowish discoloration of sclera and urine, and fever were seen at Pibor PHCC
 - First case was seen on 28th March 2019 while the other three cases were on 4th April 2019
 - Three of the cases are children aged between 1-8 years. The fourth case was a nineteen year old adult.
 - The cases reside four different villages in Pibor Payam: Labrap, Kavachoch, Hai Sanduk and Lenveris.
- Two cases tested positive for malaria while the other two tested negative for malaria
- No samples were collected
 - The patients were referred to MSF PHCC but never got to the referral facility
 - MSF PHCC also reported a similar case which tested positive for Hepatitis E virus
- Recommendation
 - Health facilities encouraged to collect samples from subsequent cases and fill the case based investigation forms to accompany the samples to Juba



The Figures show comparison of alerts by hazards reported in week 13 and 14, 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 | 3 | 1 | 66 | 70 |
| AFP | | | 16 | 16 |
| Bloody Diarrhoea | 2 | 2 | 72 | 76 |
| EBS | 3 | | 14 | 17 |
| Guinea Worm | | | 10 | 10 |
| Neonatal Tetanus | | | 5 | 5 |
| Viral Haemorrhagic Fever | | | 3 | 3 |
| Yellow Fever | | | 3 | 3 |
| Measles | 15 | 3 | 109 | 127 |
| Cholera | | | 10 | 10 |
| Malaria | | | 27 | 27 |
| meningitis | 2 | | | 2 |
| Relapsing Fever | | | 3 | 3 |
| Acute Respiratory Infections (ARI) | 4 | | 39 | 43 |
| Acute jaundice syndrome | 2 | | 6 | 8 |
| Malaria (Confirmed) | | | 31 | 31 |
| Total Alerts | 31 | 6 | 414 | 451 |

- The table shows the cumulative alerts by risk assessment status in 2019
- Of the 451 alerts reported in 2019; 414 (91.8%) alerts were verified and six (1.3%) underwent risk assessment..

OUTBREAKS IN 2019

Major suspected and confirmed outbreaks in
South Sudan in 2019

Confirmed Outbreaks South Sudan – As at 16th 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, Yirol East and Gogrial West; Measles in Juba; Measles in Pibor; Measles in Gogrial West; Rubella in NBG; Measles in Mayom, Aweil South, Melut, Tonj North, Gogrial East, Aweil West and Aweil Centre

Outbreak diseases

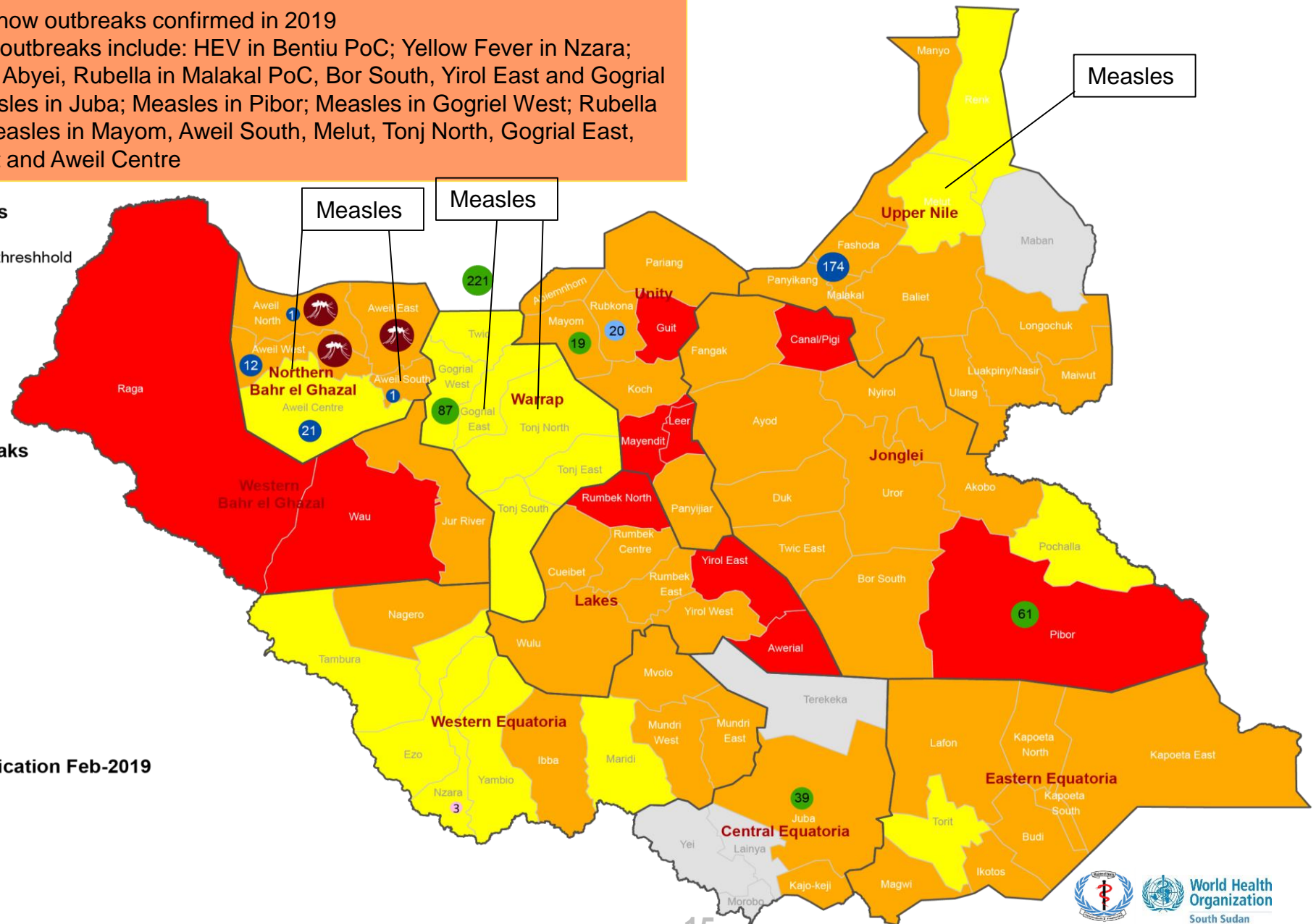
- Malaria -above threshold
- Measles
- Rubella
- Hepatitis E
- Yellow Fever

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 16th April 2019

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

Week- 08 Suspected Outbreak diseases

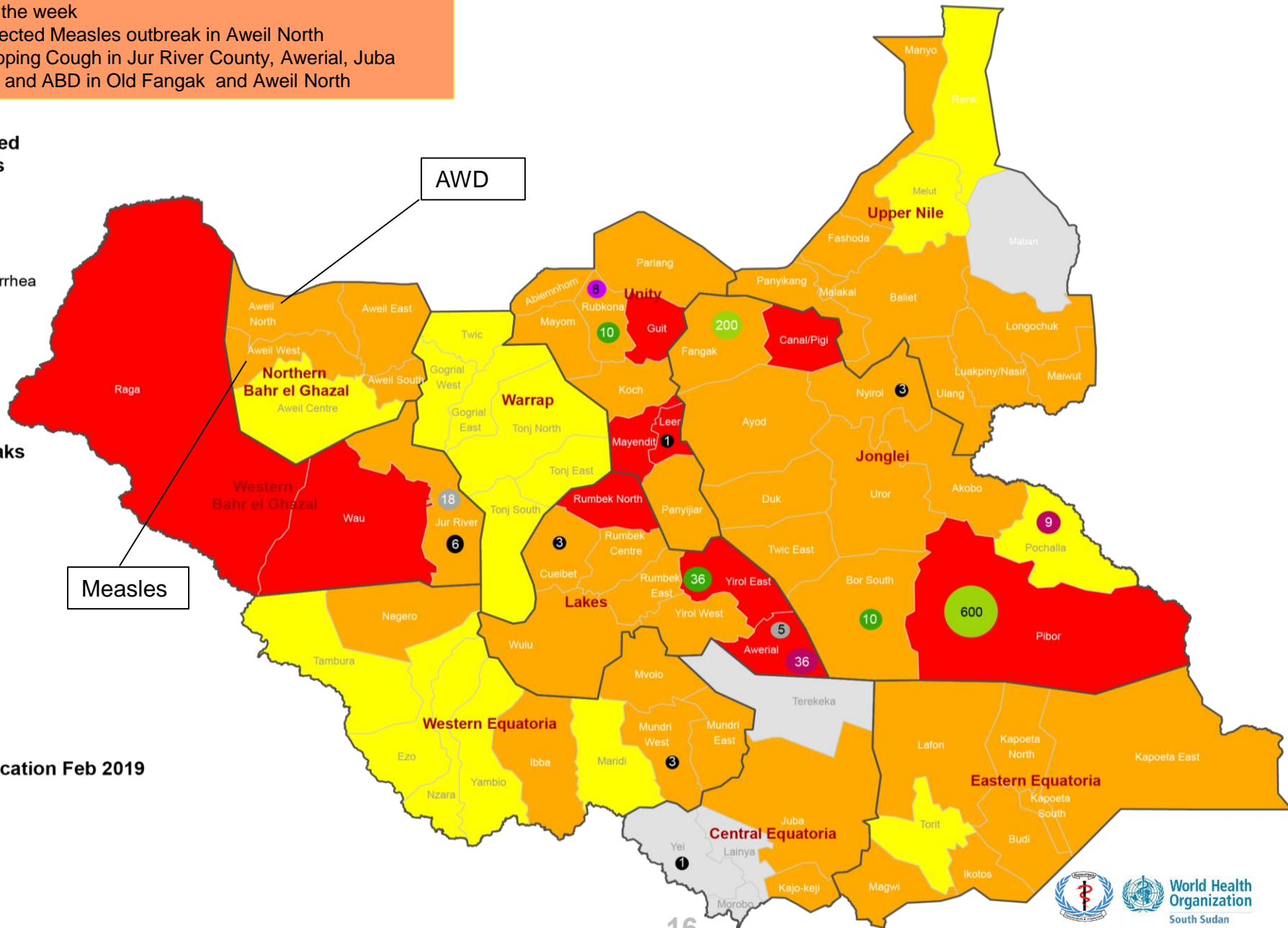
- Meningitis
- Measles
- Acute Watery Diarrhea
- Rabies probable
- Pertusis
- Chicken Pox

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



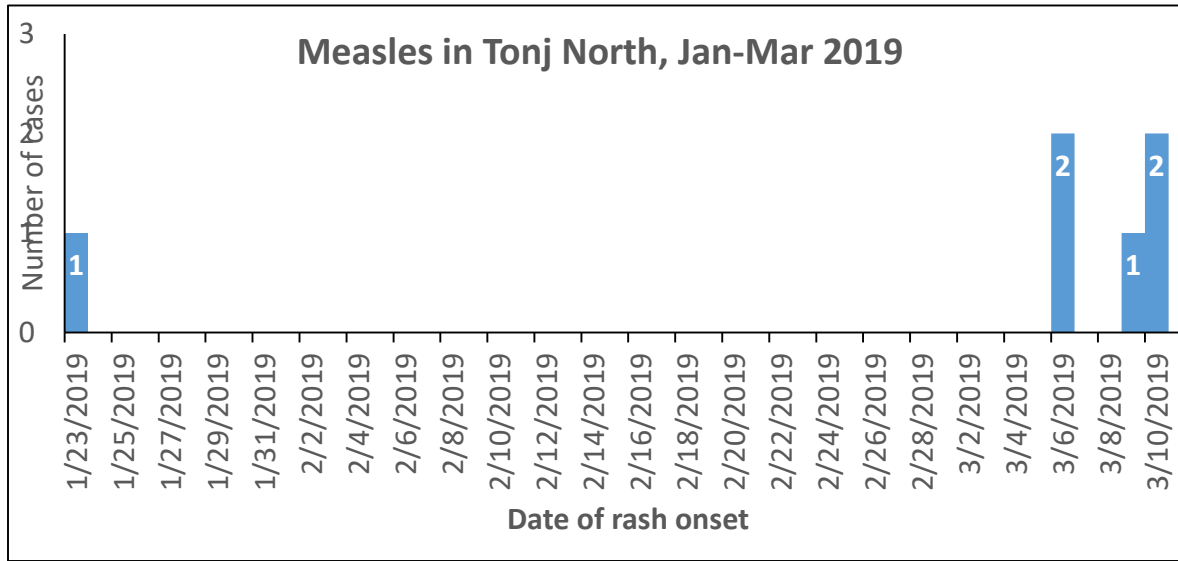
| Aetiological agent | Location (county) | Date first reported | New cases since last bulletin | Cumulative cases to date (attack rate %) | Interventions | | | |
|--------------------------|-------------------|---------------------|-------------------------------|--|-----------------|-------------|------------------|------|
| | | | | | Case management | Vaccination | Health promotion | WASH |
| Ongoing epidemics | | | | | | | | |
| Hepatitis E | Bentiu PoC | 03/01/2018 | 2 | 34 (0.011) | Yes | No | Yes | Yes |
| Measles | Juba | 15/01/2019 | 5 | 68 (0.01) | Yes | Yes | Yes | N/A |
| Measles | Pibor | 17/01/2019 | 0 | 136 (0.015) | Yes | Yes | Yes | N/A |
| Measles | Gogrial West | | 0 | 156 (0.025) | Yes | Yes | Yes | N/A |
| Rubella | Aweil Center/NBG | | 0 | 35 (0.028) | Yes | No | Yes | N/A |
| Measles | Aweil South | 15/03/2019 | 0 | 33 (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 | 2/04/2019 | 0 | 6 (0.002) | Yes | Yes | Yes | N/A |
| Measles | Gogrial East | 4/04/2019 | 0 | 11 (0.003) | Yes | Yes | Yes | N/A |
| Measles | Aweil Centre | 4/04/2019 | 0 | 5 (0.005) | Yes | Yes | Yes | N/A |
| Measles | Aweil West | 4/04/2019 | 0 | 7 (0.003) | Yes | Yes | Yes | N/A |

| 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 |
| Controlled epidemics | | | | | | | | |
| 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 |
| Measles | Abyei | 12/02/2018 | 0 | 306 (0.40) | Yes | Yes | Yes | N/A |
| Measles | Mayom | 17/01/209 | 0 | 19 (0.010) | Yes | Yes | Yes | N/A |

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



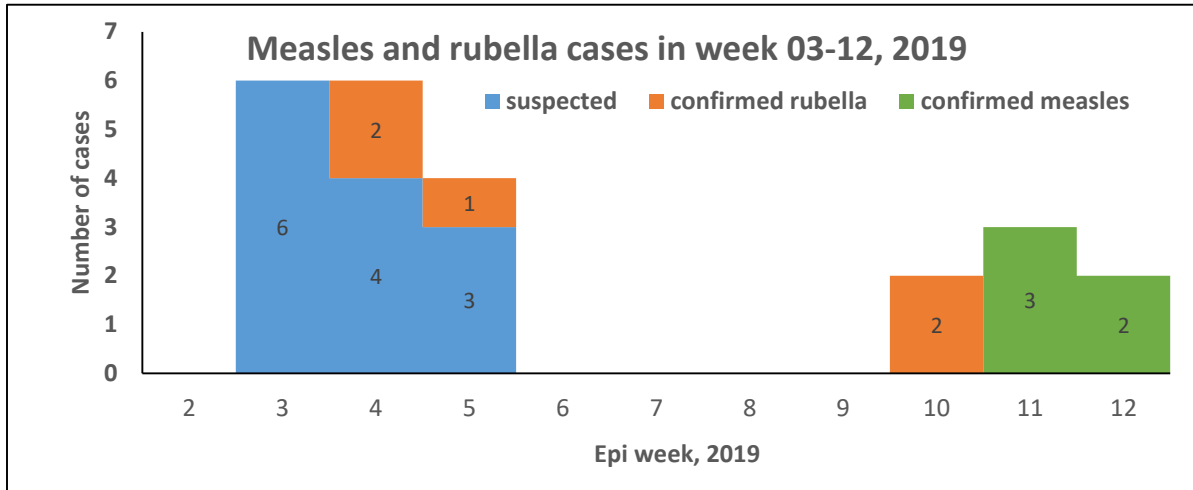
Outbreak description

- A new measles outbreak has been confirmed in Tonj North County in Warrap. A total of six (6) suspected measles cases were line listed.
- All the six (6) samples that were received tested positive for measles IgM
 - One case tested positive for measles on 16th February 2019 (probably not related to the outbreak)
- Most of the cases are children < 5 years of age with mean ages of 3.2 years
- All the cases are from Akop Payam.
 - Four (4) cases from Ariik Village

Recommended response

- SMOH and partners to finalize development of a response plan including a micro-plan for a reactive vaccination campaign
- All partners involved including the new HPF partners taking over the facilities in the county are expected to support this process to ensure timely response to the outbreak
- 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
- Training of health workers on case management of measles cases (supportive management including vitamin A supplementation)

Confirmed Measles and Rubella outbreak – Aweil Centre



Introduction

- A measles outbreak has been confirmed in Aweil Centre, a county with an ongoing rubella outbreak and an ongoing measles outbreak in a neighboring county of Aweil South.
- Twenty-three (23) cases are listed
 - Five (5) suspected cases confirmed positive for measles IgM antibodies. The samples tested negative for rubella IgM antibodies.
 - Five cases (5) tested positive for rubella IgM antibodies
 - Clinically, it may not be easy to differentiate suspected measles and suspected rubella cases.
- Additionally, two (2) cases tested positive for measles in Aweil East while five (5) cases tested positive for rubella in Aweil North. No cases tested positive for measles in Aweil North.

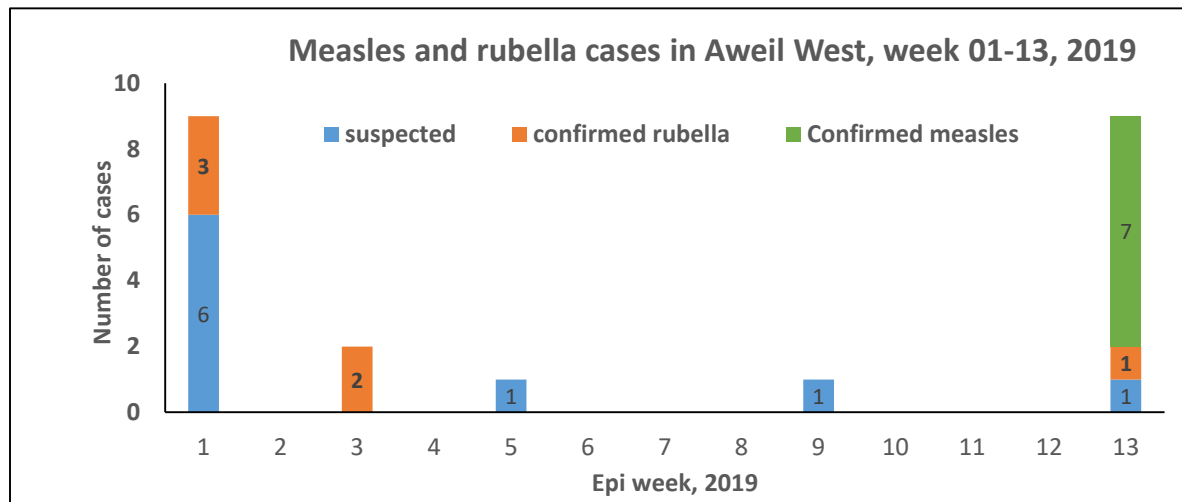
Descriptive Epidemiology

- Three of the measles confirmed cases are from Sikadit, and one from Dhalal and Nyalath.
- The mean age of the confirmed measles cases was 5.9 years with three of them being children <5 years
- No deaths have been reported.

Recommended response

1. A collaborative effort needed at the state level to develop an appropriate response plan for the two outbreaks.
 1. This should include a reactive vaccination campaign for measles, and proper case management for the suspected cases of measles and rubella.
2. An Intensification of the surveillance activities to ascertain the magnitude and geographical extent of the outbreak
3. Scaling of the routine immunization activities with clear plans to reach at risk populations in hard to reach areas
4. Collection of more samples and active case search in Aweil East and North is recommended.

Confirmed Measles and Rubella outbreak – Aweil West



Introduction

- Aweil West County becomes the third county from Aweil to be affected by the ongoing measles outbreaks. The outbreak was confirmed on 4th April 2019 after 7 samples tested positive for measles.
- Aweil West County has been having rubella cases since early January, 2019. One sample tested positive for rubella in week 13, 2019.

Descriptive Epidemiology

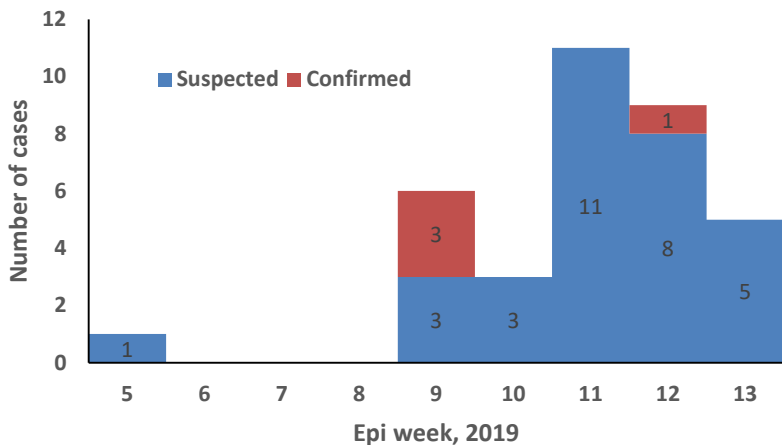
- Cumulatively, 22 cases line listed in Aweil West, out of which
 - Five (5) confirmed for measles while six (6) were confirmed for rubella.
- The confirmed measles cases are from Ayuang (5) and Sikahadid (2) payams
- Six out of the 7 confirmed measles cases are children < 5 years
- No deaths have been reported.

Recommended response

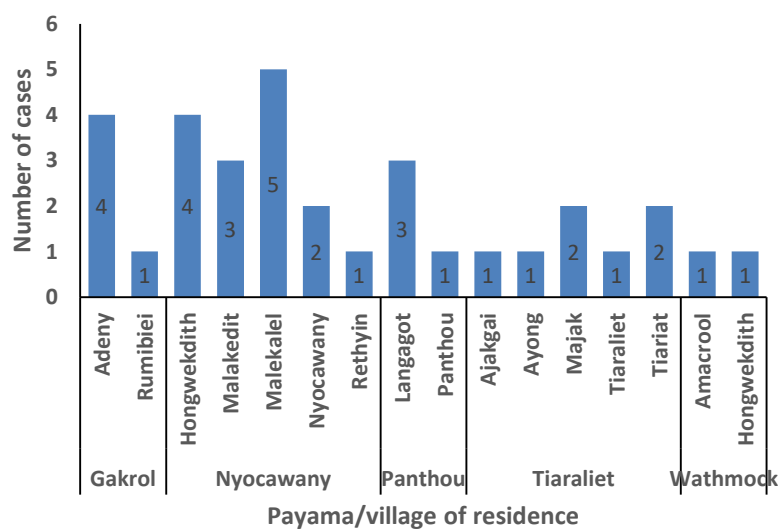
1. A collaborative effort needed at the state level to develop an appropriate response plan for the two outbreaks.
 1. This should include a reactive vaccination campaign for measles, and proper case management for the suspected cases of measles and rubella.
 2. A micro-plan targeting 28,488 children aged 6-59 months from Aweil West and Aweil Center has been developed and mobilization for support to implement the plan is ongoing.
2. An Intensification of the surveillance activities to ascertain the magnitude and geographical extent of the outbreak
3. Scaling up of the routine immunization activities with clear plans to reach at risk populations in hard to reach areas
4. Monitoring of rubella infection among pregnant mothers is also recommended.

Confirmed Measles outbreak – Aweil South

Measles cases in Aweil South, week 5-13, 2019



Measles in Aweil South, week 5-13, 2019



| Age groups | Female | Male | Total | Percentage, % | Cumulative % |
|-------------|--------|------|-------|---------------|--------------|
| <1 | | 3 | 3 | 9.1 | 9.1 |
| 1-4 | 7 | 13 | 20 | 60.6 | 69.7 |
| 5-9 | 2 | 8 | 10 | 30.3 | 100.0 |
| Total cases | 9 | 24 | 33 | 100.0 | |

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
- Cumulatively, a total of 33 cases have been line listed. One case tested positive for rubella IgM antibodies.
- The index case has a history of travel to the neighboring Gogrieli West County which has a confirmed ongoing measles outbreak

Descriptive Epidemiology for measles cases in Aweil South

- The majority (70%) of cases are children <5 years
- Nyocawany Payam has most cases with 15 (45.5%) cases coming from five villages. Five payams affected by the outbreak.
- Eighteen (54.5%) 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
 - The campaign has been completed with post-campaign evaluation currently ongoing. The preliminary data indicates that a coverage of about 116% (24261) was achieved.
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 and Aweil North 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 and Gogrial East

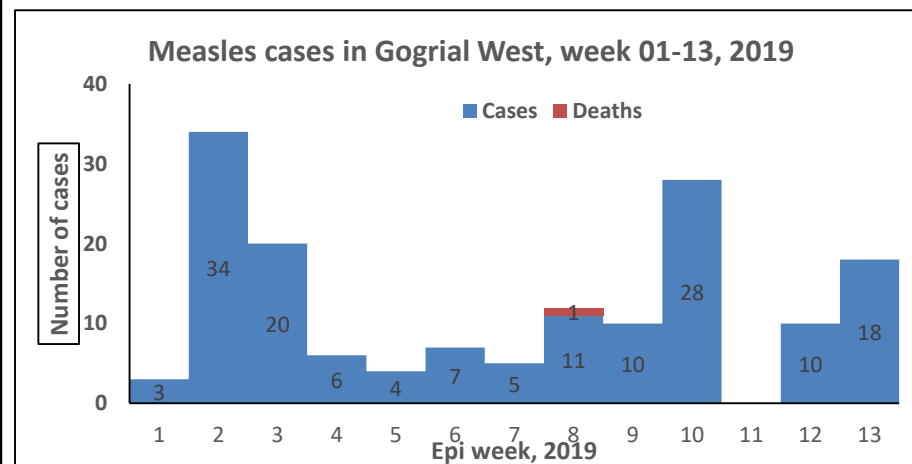
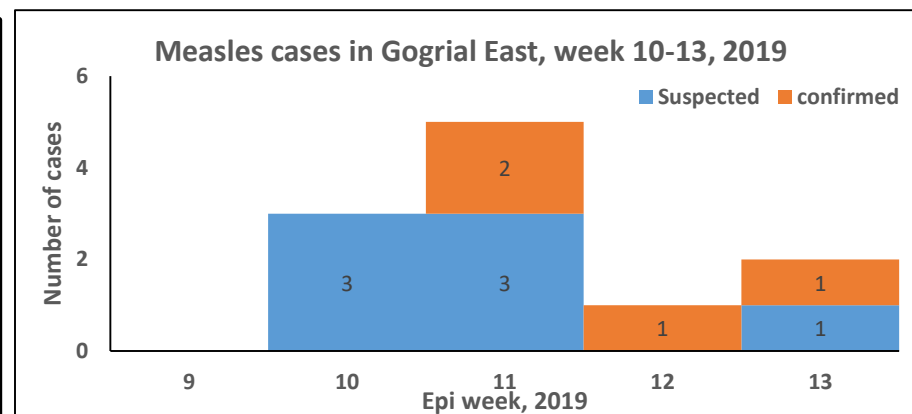
Descriptive Epidemiology

The outbreak threshold for measles has been reached in Gogrial East County after 4 cases tested positive for measles IgM antibodies

- There are 11 cases as at end of week 13, 2019. No deaths have been reported.
- Seven (7) payams have been affected with Toch East (4 cases) and Toch North (2) having the most cases.
- Gogrial East borders Gogrial West County with an ongoing active outbreak for several weeks

In Gogrial West, there are 156 cases reported as at end of week 13 with one (1) death being reported in week 08,

- Three (3) cases are laboratory-confirmed. Children < 5 years of age constituted 60% (103) of all the cases.
- 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.
- Most (82.1%) of the cases have never been vaccinated against measles indicating poor routine vaccination coverage in the county.

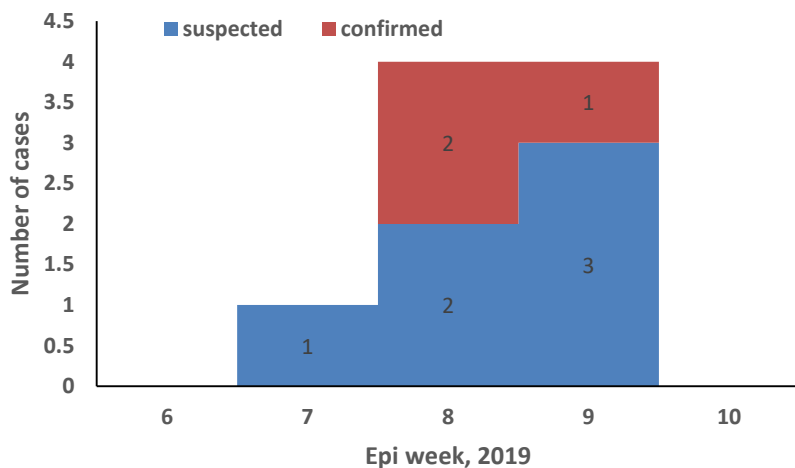


Recommended response

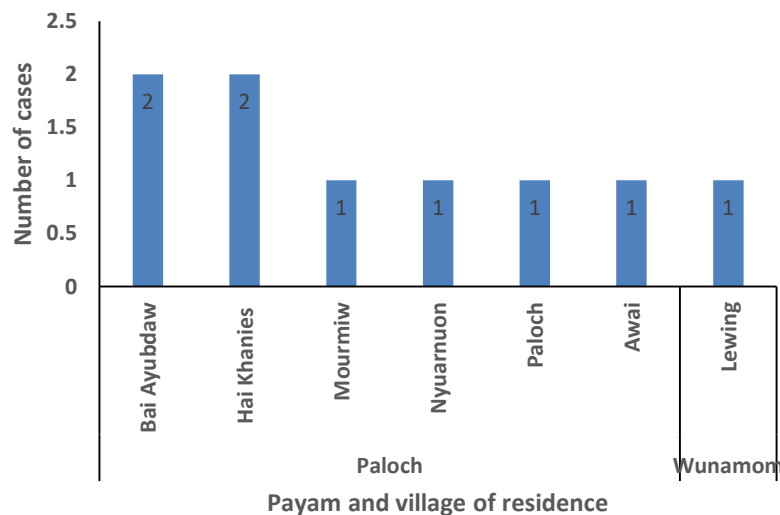
1. SMOH and partners advised to plan and extend the ongoing campaign in Gogrial West to Gogrial East County. The number targeted for vaccination is 62,535 children aged 6-59 months.
2. Continued strengthening of both routine surveillance and immunization in both counties
3. A reactive vaccination campaign targeting 76024 children aged between 6-59 months is ongoing in all the 9 payams of Gogrial West.
 - According to preliminary data over 143, 000 children aged 6 month to <15 years have been vaccinated.
 - The age groups targeted for vaccination was expanded to include 5-15 years according to earlier recommendation and vaccination of this group is ongoing

Confirmed Measles outbreak – Melut

Measles cases in Melut, week 07-09, 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 Melut

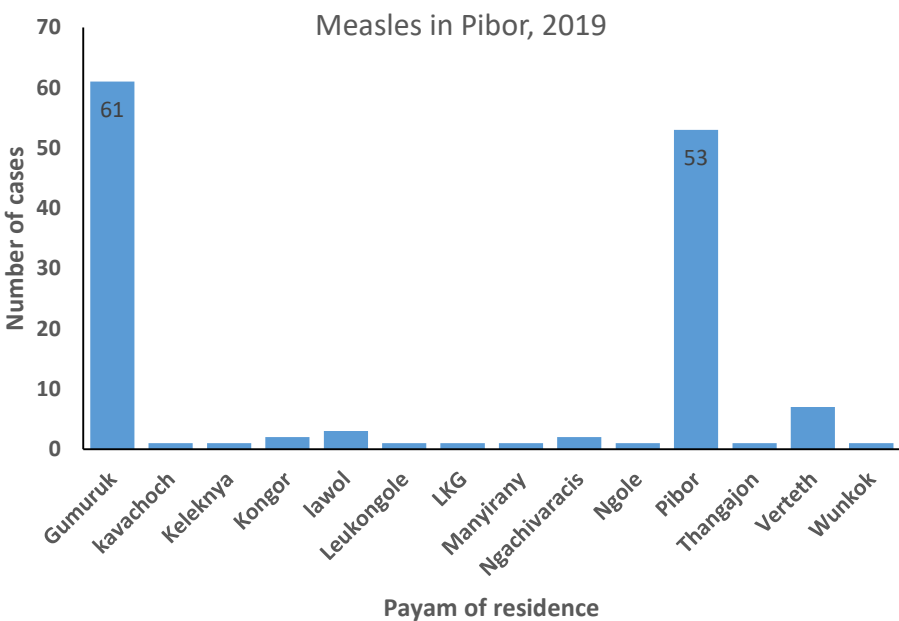
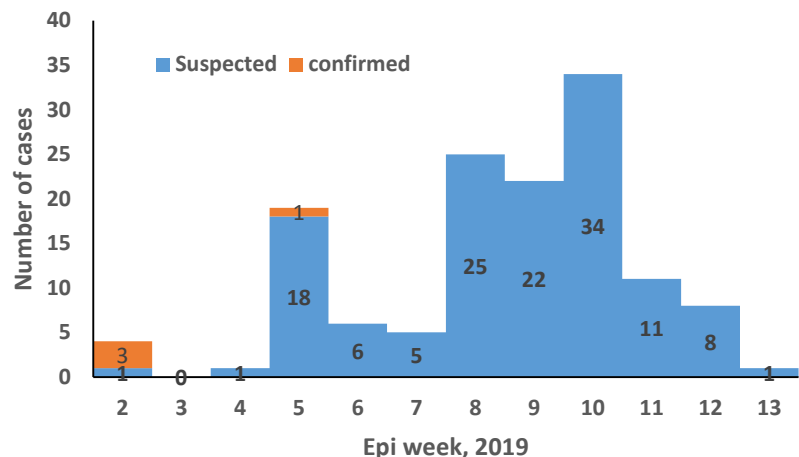
- The first cases among the line listed cases reported that their skin rash started in week 07, 2019.
- No deaths have been reported
- Out of the 9 cases, 8 (88.9%) are children < 5 years. The mean age for the cases is 1.5 years (SD=1.3)
- The majority of the cases are from Paloch Payam with 8 (88.9%) 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 is targeting 15,502 children aged 6 months to 5 years.
 - The campaign is underway having started on 10th 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 – 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 |
| Total cases | 59 | 77 | 136 | 100.0 | |

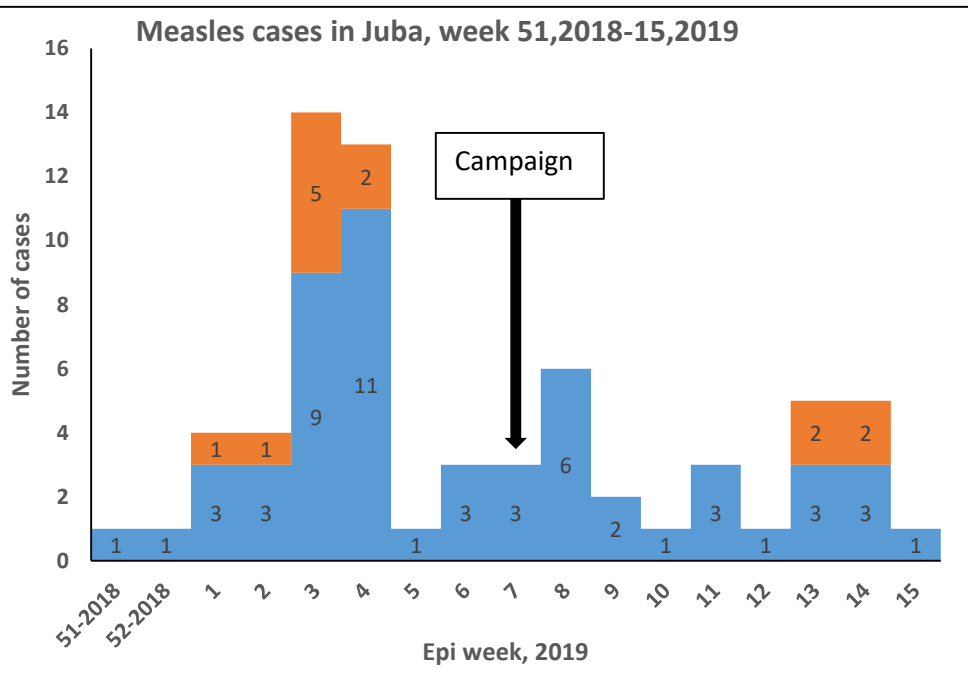
Descriptive Epidemiology

- 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

1. A reactive vaccination campaign targeting 47,328 children aged 6 months to 15 years in all the payams was conducted where a total of 13882 (30%) children vaccinated. About 4,000 additional children had been vaccinated by MSF-OCB before the campaign started.
2. 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
3. Partners advised to continue strengthening routine immunization with focus on the areas with poor coverage during the emergency campaign

Confirmed Measles outbreak – Juba

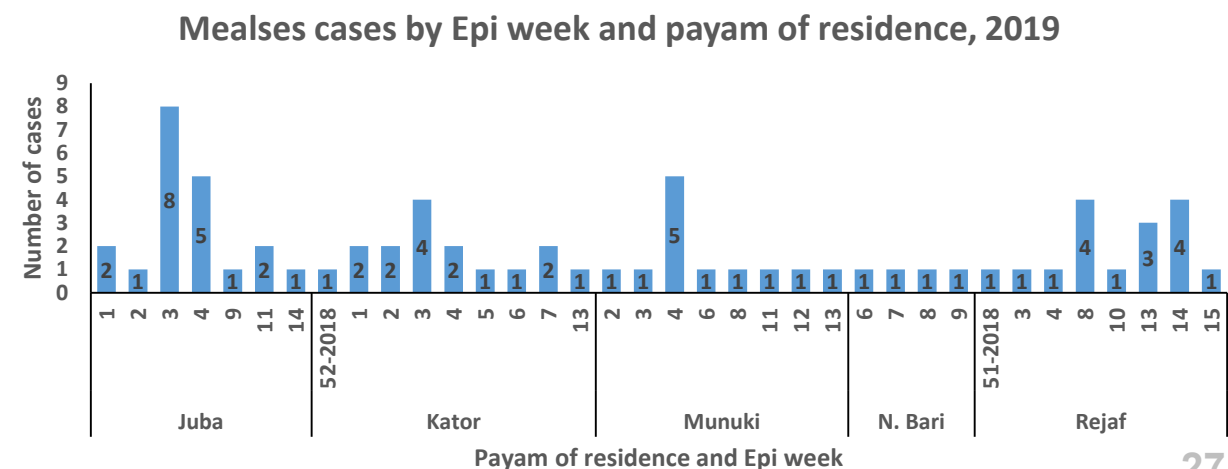


Descriptive Epidemiology

- A total of 68 measles cases reported from Juba as at end of week 15. This include five cases reported from Juba PoC (1 from PoC1 and 4 from PoC 3)
 - Nine cases identified during the active case exercise that was conducted to ascertain presence of more cases in the community
 - Thirteen lab confirmed cases including two (2) confirmed cases from Juba PoC 3.
 - Three (CFR 6.3%) deaths reported; two (2) from Amarat and One (1) from Khator. All the deaths are among <5 children.
- A majority (81%) of the cases are children < 5 years. Two of the case the PoC are children < 5years with the youngest being 9 months old.
- All the five payams continue having cases almost two months after the campaign.

Recommended response

1. A reactive vaccination campaign in Juba Poc 2, Juba PoC 3 and the five (5) payams in Juba

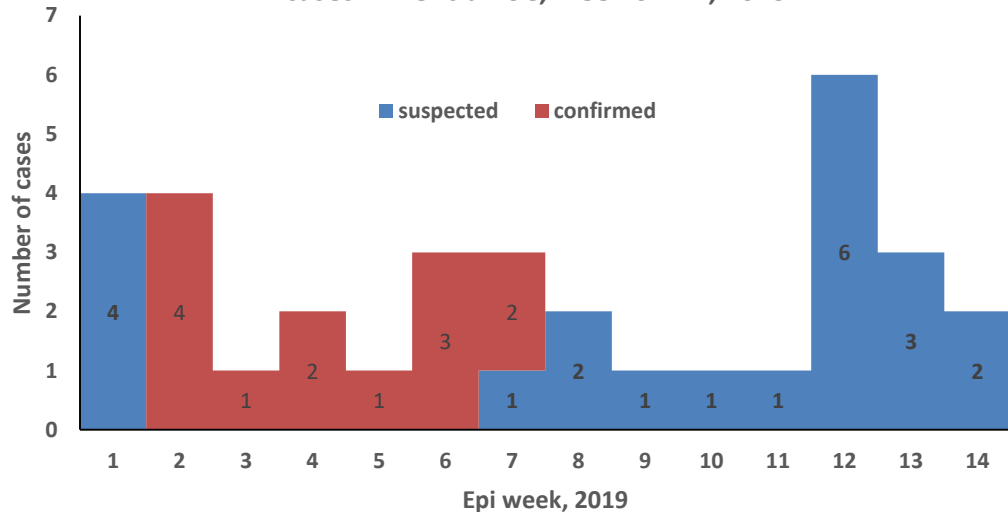


Recommended response

2. Enhance surveillance and routine immunization activities in all the areas
3. Increase community awareness about measles case management as some communities have been reported to be using traditional home remedies.
4. Continue verification and investigation of alerts and reports from the communities.

Hepatitis E, Bentiu PoC

HEV cases in Bentiu PoC, week 01-14, 2019



Bentiu PoC

- The persistent transmission of HEV in Bentiu PoC continues with cumulative caseload of 34 cases as at end of week 14, 2019
 - Thirteen (13) cases confirmed on PCR testing
- Two new cases were reported in week 14, 2019
- There were 159 HEV cases reported in 2018
- All the cases were managed as outpatient cases except for one case who was admitted on 23rd February, 2019
- All the recent cases have recovered
- Half (50%) of the cases are female.
- Age groups 1-4 years and 15-44 years had the most cases with 10 cases (29.4%) each.
- Of the 17 female cases, 6 (35.3) are aged 15-44 years
 - At risk of adverse outcomes when infected in the 3rd trimester of pregnancy
- Use of unsafe drinking water likely to be source of infection
- Recommended response
 - 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 | 6 | 4 | 10 | 29.4 | 29.4 |
| 5-9 years | 1 | 4 | 5 | 14.7 | 44.1 |
| 10-14 years | 4 | 3 | 7 | 20.6 | 64.7 |
| 15-44 years | 4 | 6 | 10 | 29.4 | 94.1 |
| 45+years | 2 | 0 | 2 | 5.9 | 100.0 |
| Total cases | 17 | 17 | 34 | 100.0 | |

Malaria trends

Current malaria trends

Malaria was the leading cause of morbidity and mortality accounting for 44.3% of all morbidities and 23.7% of all mortalities in week 14, 2019. The trend analyses showed at least 5 counties in four 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(Gogrial west)**
2. **Wau hub(Wau)**
3. **Rumbek hub(Rumbek Center, Rumbek East)**
4. **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

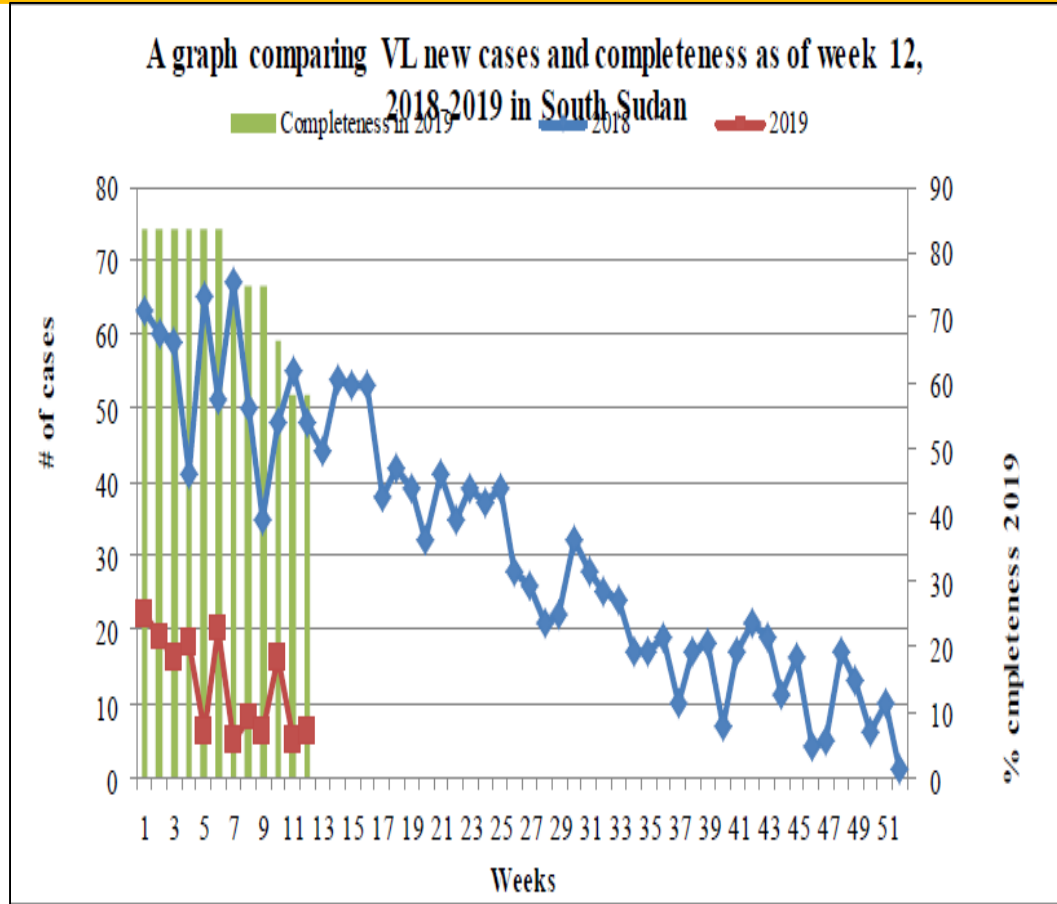
Visceral Leishmaniasis | Kala-azar

Kala-azar is endemic Upper Nile, Unity, Jonglei and Kapoeta.

In week 12, seven (7) health facilities reported **9** cases; **6 (66.7%)** new cases, and **3(33.3%)** relapses. One death and zero defaulters reported.

Since the beginning of 2019, a total of **208** cases including **6** deaths (CFR **2.9%**) and **4 (1.9%)** defaulters have been reported from 10 treatment centers. Of the 208 cases reported, **147(70.7%)** were new cases, **4(1.9%)** PKDL and **57(27.4 %)** relapses.

In the corresponding period in 2018, a total of **831** cases including **23** deaths (CFR **2.8%**) and **18 (2.2%)** defaulters were reported from 21 treatment centers.



A majority of cases were reported from Lankien (**96**) accounting for **46.1%** of the total cases. The other affected areas include KCH (**35**), Pagil (**27**) Chuil (**18**), and Narus (**14**).

The most affected groups included, males [**123** cases (**59.1%**)], those aged ≥ 15 years and above [**106 (51.0%)**] and children aged 5 - 14 years [**67** cases (**32.2**)]. A total of **35** cases (**16.8%**) occurred in children < 5 years.

The number of cases reported in 2018 was almost four times higher than the number of cases reported in 2019. However, the trend is more or less the same. The sharp drop is as a result of few health facilities reporting 5/14 in 2018.

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 th Jan 2019 |
| 09 Feb 19 | 1 | 0 | Juba | | Nd | -ve | -ve | Investigated on 09 th Feb 2019 |
| 21 st Feb 19 | 1 | 1 | Yambio | | Nd | -ve | -ve | Investigated on 21 st Feb 19 |
| 25 rd Feb 19 | 1 | 0 | Yambio | | Nd | -ve | -ve | Investigated on 25 th Feb 19 |
| 26 th Feb 19 | 1 | 0 | Yambio | | Nd | -ve | -ve | Investigated on 26 th Feb 19 |
| 14 th Mar 19 | 1 | 0 | Tambura | | Nd | -ve | -ve | Investigated on 14 th Mar 19 |
| 22 nd Mar 19 | 1 | 0 | Juba | | Nd | -ve | -ve | Investigated on 22 nd Mar 19 |
| 26 th Mar 19 | 1 | 0 | Ezo | | Nd | -ve | -ve | Investigated on 26 th Mar 19 |

- Blood samples have been obtained from nine (9) Ebolavirus alerts; all tested negative for Ebolavirus and other viral hemorrhagic fevers including RVF, Marburg; Yellow Fever; and CCHF.

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 13th Apr 2019

Current situation

- Currently in 34th week of the outbreak
- **1251** Cases [1185 confirmed & 66 probable]
- **803** Deaths [737 confirmed & 66 probable]
- **85** Health workers [30 dead]

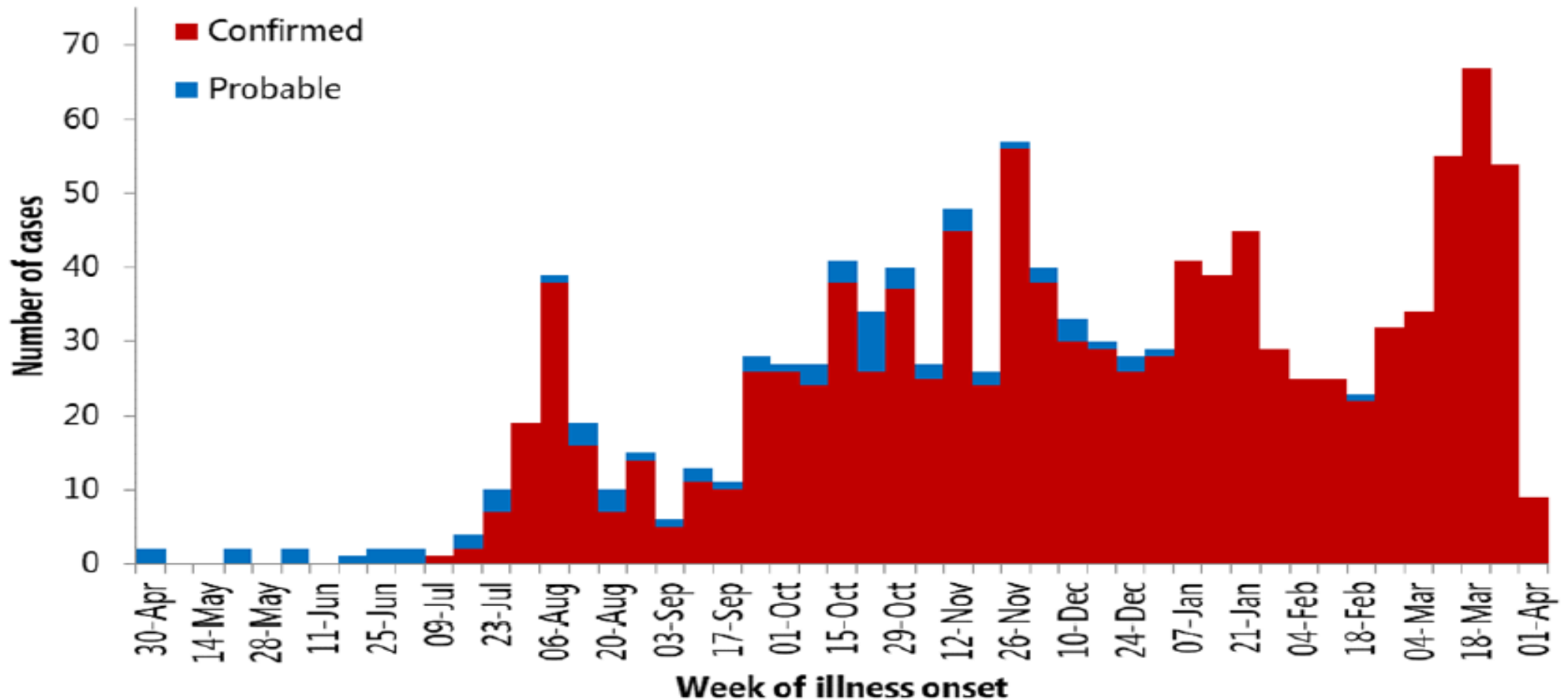
Response update

- **8 678** contacts under surveillance [83-87% followed up]; 96 133 vaccinated

Affected health zones

- **2** provinces [North Kivu & Ituri]
- **19** health zones [14 North Kivu & 5 Ituri]
- **199** cases in last 21 days (18 Mar- Apr); Katwa (69), Vuhovi (36), Mandima (30), Beni (18), Butembo (16), Masereka (13), Oicha (8), Kayna (2), Lubero (2), Musienene (2), Kalunguta (1), Bunia (1) and Mabalako (1)

EVD trends & case distribution in DR Congo



- A notable escalation in the number of Ebola virus disease (EVD) cases continues in the North Kivu provinces contributing significantly to the overall case load.

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 | 2,395 | 0 | 0 | 0 | 0 | 0 |
| Bangangal | 0 | 0 | 0 | 0 | 0 | 0 |
| Basukangbi | 0 | 0 | 0 | 0 | 0 | 0 |
| Bazi Border | 1,794 | 0 | 0 | 0 | 0 | 0 |
| Birigo | 0 | 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 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kaya | 2,754 | 0 | 0 | 0 | 0 | 0 |
| Kaya Border | 0 | 0 | 0 | 0 | 0 | 0 |
| Kerwa | 2,306 | 0 | 0 | 0 | 0 | 0 |
| Khorjo | 1,912 | 0 | 0 | 0 | 0 | 0 |
| Lasu | 0 | 0 | 0 | 0 | 0 | 0 |
| Makpandu | 0 | 0 | 0 | 0 | 0 | 0 |
| Maridi Airstrip | 14 | 0 | 0 | 0 | 0 | 0 |
| Nimule Airstrip | 0 | 0 | 0 | 0 | 0 | 0 |
| Nimule Border | 0 | 0 | 0 | 0 | 0 | 0 |
| Okaba | 1,624 | 0 | 0 | 0 | 0 | 0 |
| Panjala Docking River | 0 | 0 | 0 | 0 | 0 | 0 |
| Pure | 2,281 | 0 | 0 | 0 | 0 | 0 |
| Sakure Border | 0 | 0 | 0 | 0 | 0 | 0 |
| Sala Musala | 2,581 | 0 | 0 | 0 | 0 | 0 |
| Sangus 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tikori | 101 | 0 | 0 | 0 | 0 | 0 |
| Wau Airport | 58 | 0 | 0 | 0 | 0 | 0 |
| Yambio Airport | 0 | 0 | 0 | 0 | 0 | 0 |
| Yei Airport | 24 | 0 | 0 | 0 | 0 | 0 |
| Yei RRC | 8 | 0 | 0 | 0 | 0 | 0 |
| South Sudan | 17,852 | 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 14, 17,852 travellers 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 th Dec 2018 and 28 th 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 th 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. |

Outbreaks in 2019

| 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 th Jan, 2019. The cases, 30year old patient, was investigated, sample collected which tested negative on GneneXpert and PCR testing. |
| 17/01/2019 | Measles | 1 | Gogriol 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 st 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 |
| 4/04/2019 | Measles | 0 | Gogriol East | | 11 cases out of which four were laboratory confirmed for measles |
| 4/04/2019 | Measles | 0 | Aweil Centre | | Five cases tested positive for measles |

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Technical support from WHO**

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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>

