



## Republic of South Sudan

### Situation Report #106 on Cholera in South Sudan

As at 23:59 Hours, 3 February 2017

#### Situation Update

Cholera outbreaks have been confirmed in **9 (28%)** of 32 states countrywide. The affected states include Imatong, Eastern Lakes, Jubek, Terekeka, Jonglei, Western Bieh, Northern Liech, Southern Liech; and Central Upper Nile ([Table 1](#) and [Figure 1.0](#)). Suspect cholera cases are being investigated in Jalle, Bor South; Shambe in Yirol East; and five neighborhoods in Jubek ([Table 4](#)). Two samples from Madol in Mayendit tested positive for cholera by culturing on 31 January 2017. Cumulatively **159 (36.5 %)** of the samples tested positive for *Vibrio Cholerae inaba* in the National Public Health Laboratory as of 3 February 2017 ([Table 3](#)).

**Table 1: Summary of cholera cases reported in South Sudan as of 3 February 2017**

Reporting Sites	New admissions WK 5	New discharges WK 5	New deaths WK 5	Total cases currently admitted	Total facility deaths	Total community deaths	Total deaths	Total cases discharged	Total cases
Jubek – Juba	1	-	-	1	8	19	27	2,017	2,045
Jonglei-Duk	-	-	-	-	3	5	8	84	92
Terekeka	-	-	-	-	-	8	8	14	22
Eastern Lakes - Awerial	22	11	-	12	2	3	5	364	381
Imatong - Pageri	-	-	-	-	-	1	1	28	29
Western Bieh - Fangak	-	-	-	-	4	-	4	266	270
Northern Liech - Rubkona	NR	-	-	-	7	2	9	1,042	1,051
Southern Liech - Leer	-	-	-	-	3	-	3	94	97
Southern Liech - Panviiar	-	-	-	-	14	2	16	394	410
Southern Liech - Mayendit	15	-	-	-	-	4	4	136	140
Central Upper Nile - Pigi	-	-	-	-	5	-	5	163	168
<b>Total</b>	<b>38</b>	<b>11</b>	<b>-</b>	<b>13</b>	<b>46</b>	<b>44</b>	<b>90</b>	<b>4,602</b>	<b>4,705</b>

#### Highlights in week 5 of 2017:

1. Resurgence of cholera cases reported in Mingkaman IDP settlement where 22 cases including one death were reported in week 5 [Table 1](#).
2. Suspect cholera cases have been reported and investigated in Kwei Island, Bor South; Shambe, Yirol East; and five neighborhoods in Jubek [Table 4](#).
3. Two samples from Madol in Mayendit tested positive for cholera by microbiological culturing [Table 3](#).
4. One new cholera case reported from UN House PoC [Table 1](#).
5. A total of 38 new cholera cases were reported in week 5 [no line list received from the MSF-H-CTC in Bentiu PoC [Table 1](#)].

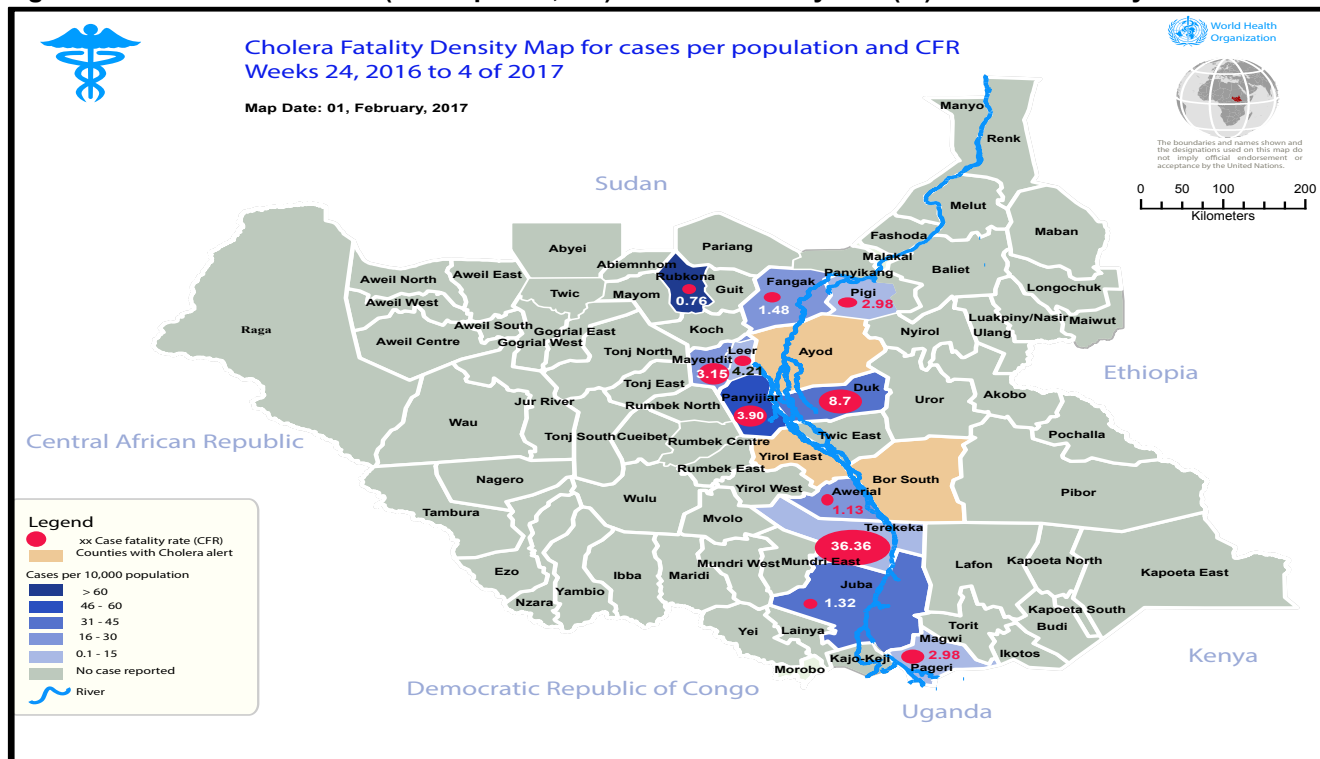
In Jubek, there has been resurgence of cases in UN House PoC where at least 43 cases including at least 10 confirmed cases have been reported since week 52 of 2016. The majority, 39 (95%) of the cases from the recent wave of cases in UN House PoC originated from PoC 3. Transmission in UN House PoC is now contained following a multisectoral integrated response. Cholera risk assessment is underway in UN House PoC to facilitate vaccination using oral cholera vaccines. On the 4 Feb 2017; at least five suspect cholera cases were reported from five neighborhoods in Jubek (Table 4). Sample have been obtained from the cases that are now admitted in JTH-CTC and follow up investigations by the rapid response team are underway.

In Northern Liech state, at least 1,051 cholera cases including 25 confirmed cases and nine deaths (CFR 0.76%) were reported in Bentiu Town/PoC since 29 September 2016. The cholera taskforce, chaired by MoH and constituted by Health and WASH cluster partners is coordinating the response. Ongoing transmission is suspected to be associated with exposure to an unsecured water reservoir whose water is used for washing, bathing, swimming, and occasionally for domestic use. Bentiu PoC now has the highest cumulative incidence for cholera Table 1.1. Cholera risk assessment is underway to facilitate complementary vaccination using oral cholera vaccines.

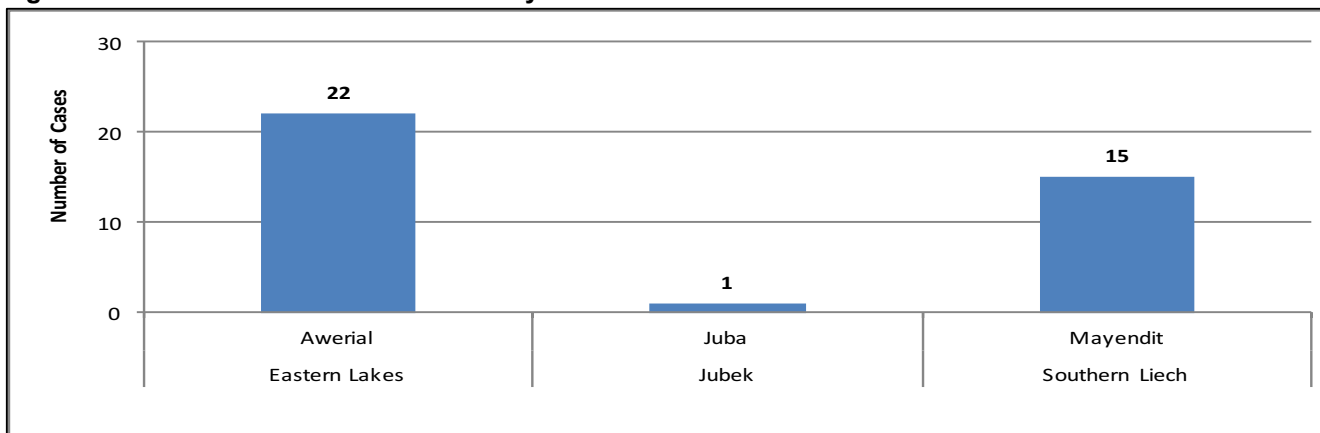
In Southern Liech, two cholera cases originating from Leer Town tested positive for *Vibrio cholerae Inaba* on 11 October 2016. One additional case from Ganyliel in Panyijiar tested positive for cholera on 3 January 2017; and on 31 January, two samples from Madol in Mayendit tested positive for cholera by culturing. Cumulatively, 94 cholera cases including three deaths have been line listed from Leer and at least 410 cases including 16 deaths from Panyijiar in Southern Liech state. The initial case in Panyijiar was seen on 22 October 2016 involving a trader from Duk. Facility and community based response is ongoing with most cases being managed in facilities like Duong PHCC, Ganyliel PHCC, and Nyal PHCC with support from IRC, and UNIDO.

Since 7 October 2016, at least 140 suspect cholera cases including three deaths were reported by UNIDO and MedAir response teams in Mayendit. The MedAir CTU in Madol 1 has seen at least 66 cases since 7 January 2017. Cholera risk assessments are underway in Panyijiar and Mayendit to facilitate complementary vaccination of high-risk populations using oral cholera vaccines.

**Figure 1.0: Cholera incidence (cases per 10,000) and case fatality rate (%) as of 3 February 2017**



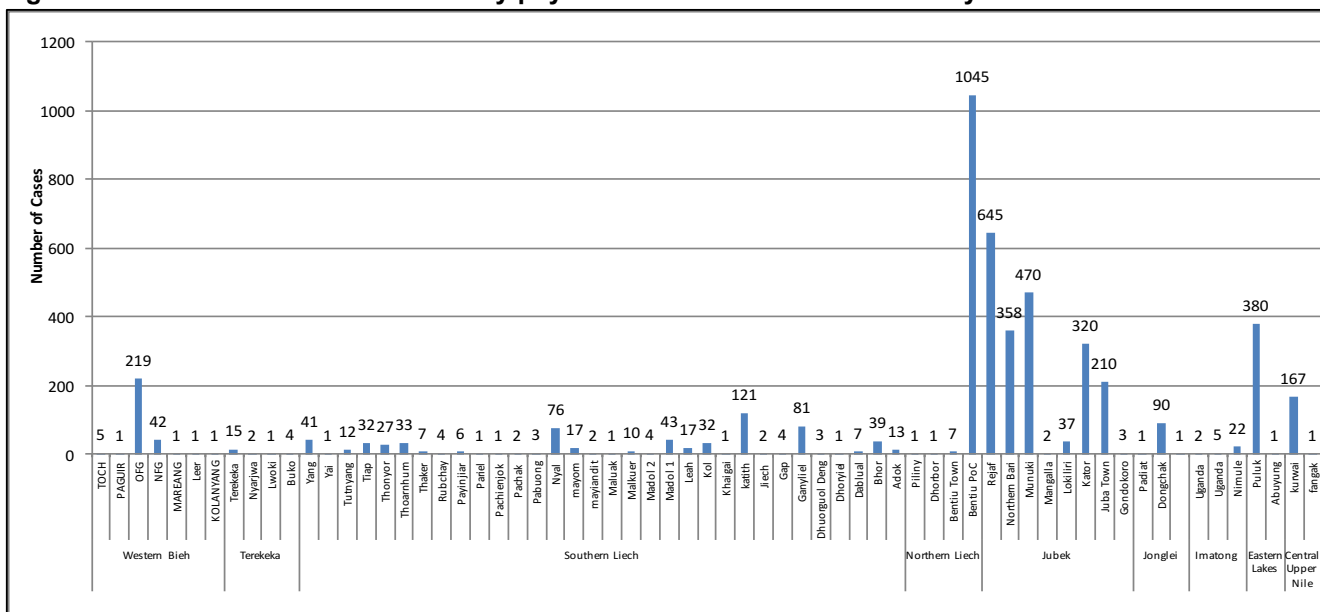
**Figure 1.1: New cholera cases admitted by location in week 5 of 2017**



In Eastern Lakes state, cholera cases were reported in Mingkaman IDP settlement. The initial cases were confirmed on 24 August 2016, after **two** of four samples tested positive for *Vibrio cholerae Inaba*. The cumulative cases are **364** cholera cases including **19** confirmed cases and **5** deaths (one facility and four community) (CFR **1.31** %). This outbreak has been controlled with only sporadic cases being reported – the last case being admitted on 16 December 2016. However; after a lull of two weeks, new cases were reported from 1 January 2017 with a total of 29 new cases including at least one death being reported since the beginning of 2017 (Fig 2.1). The new cases have been reported from informal settlements in Mingkaman with inadequate no access to safe water and sanitation facilities. Current response is led by the CHD with support from CUAMM and HLSS. A rapid response team is being dispatched with supplies to augment the current response in Mingkaman. In Shambe, Yirol East, at least 21 suspect cholera cases including 5 deaths in reported since 1 Feb. 2017. Initial response is led by CUAMM and will soon be joined by the state rapid response team from Rumbek.

In Jonglei state, **92** suspected cholera cases including **8** deaths (CFR **8.7** %) were reported from Duk County involving mainly the three Islands of Kawer, Long, and Moldova. The index case was reported on 3<sup>rd</sup> July 2016 from Moldova Island. Of the five samples from Duk Islands that underwent culturing, one sample from Moldova Island, also the most affected, was confirmed as cholera on 29 July 2016. The most recent cases reported in Duk originated from Koyom Island on 10 Nov 2016. However, on 30 January 2017, new suspect cholera cases were reported by Jalle Pagam PHCC in Bor South county where at least eight suspect cholera cases including four deaths (two community deaths) – were reported all from Kwei Islands. An initial verification and response mission was undertaken by Health and WASH partners on 31 January 2017. Additional rapid response teams and supplies are being dispatched from Juba to support the local response efforts.

**Figure 1.2: Cumulative cholera cases by payam of residence as at 3 February 2017**



Terekeka state has reported **22** cases of cholera including **8** deaths (CFR **36.4%**) with 2 samples confirmed by the laboratory to be cholera. All the deaths were reported at the onset of the outbreak from Islands on River Nile where access to health services is poor. No additional deaths occurred after the rapid response team was deployed. The most of the recent cases originated from Kuda village, Lwoki payam, Nyori county on 22 September 2016. No additional cases were reported since then.

In Nimule, Imatong state, a cumulative of **29** cholera cases including four laboratory confirmed cases and one death (CFR **3.45%**) were reported from 15 August 2016. The affected locations in Imatong state included Abila, Malakia, and Motoyo. The last cholera case in Nimule was admitted in Nimule hospital on 29 Sept 2016 and discharged on 2 Oct 2016. No additional cases were reported since then.

**Table 1.1: Cholera cases and deaths by state and county as of 3 February 2017**

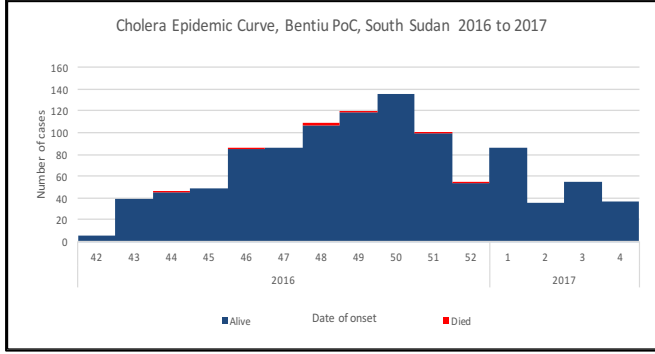
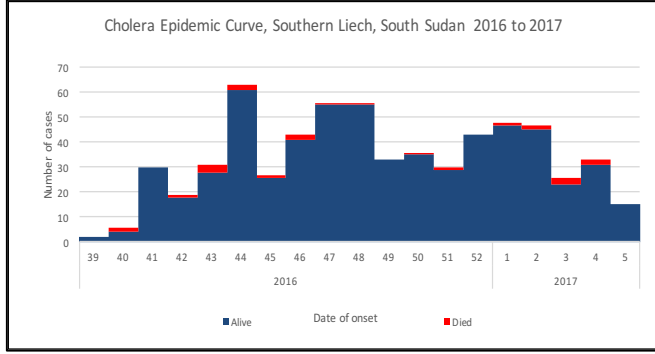
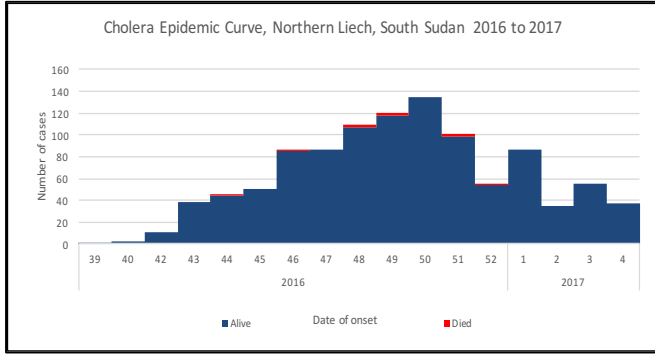
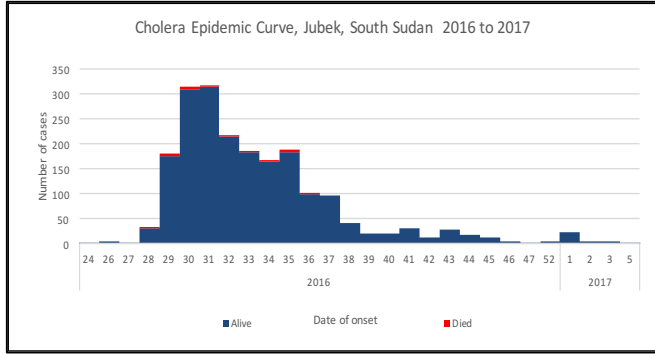
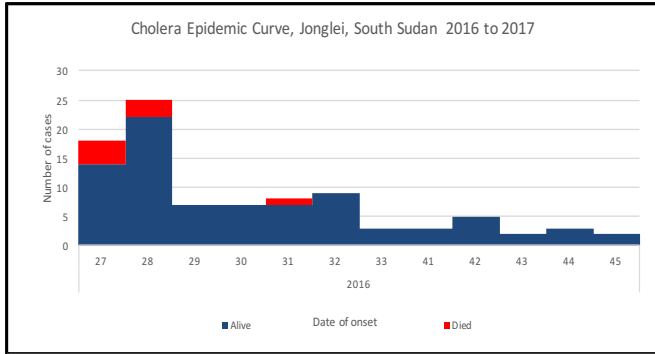
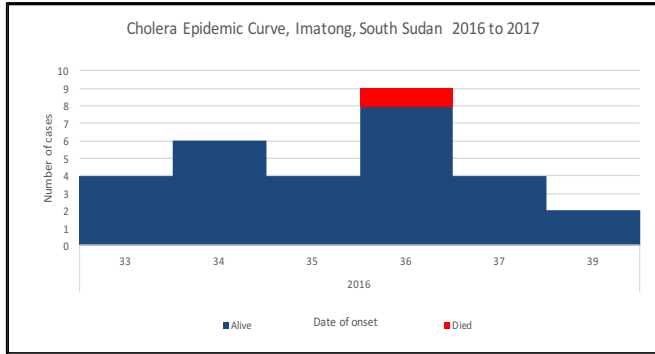
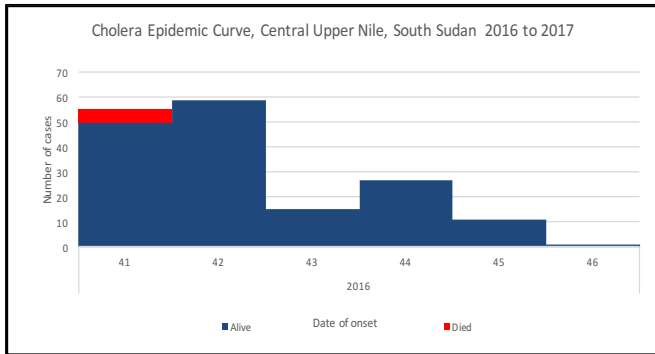
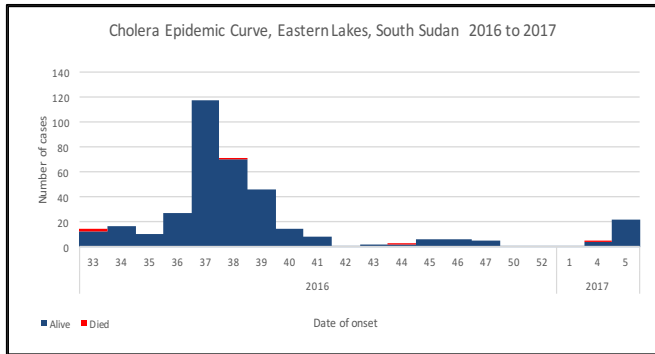
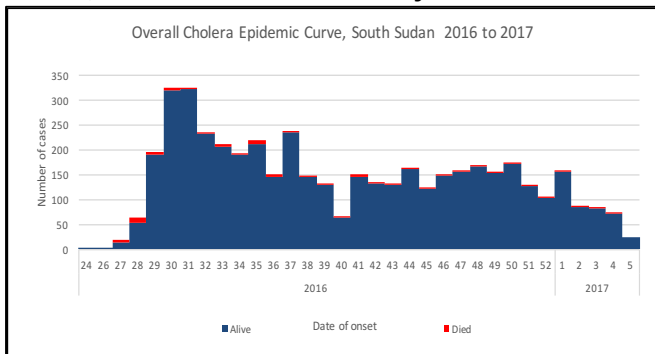
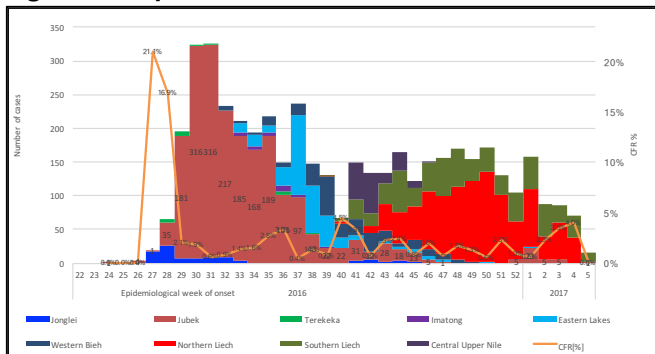
State	County	Population at risk	Week 5		Weeks 24, 2016 to 5 of 2017		CFR [%]
			New cases W5	Cases per 10,000 population	No. cases	Cases per 10,000 population	
Western Bieh	Fangak	139,509	0	-	269	19.3	1.48
Northern Liech	Rubkona	126,976	NR	#VALUE!	1051	82.8	0.76
Southern Liech	Leer	67,167	0	-	98	14.6	4.21
Southern Liech	Panyijiar	64,254	0	-	410	63.8	3.90
Southern Liech	Mayendit	68,131	15	2.20	140	20.5	2.86
Eastern Lakes	Awerial	114,837	22	1.92	381	33.2	1.31
Imatong	Pageri	215,130	0	-	29	1.3	3.45
Jonglei	Duk	26,180	0	-	92	35.1	8.7
Jubek	Juba	471,762	1	0.02	2,045	43.3	1.32
Terekeka	Terekeka	177,849	0	-	22	1.2	36.36
Central Upper Nile	Pigi	125,496	0	-	168	13.4	2.98
	<b>Total</b>	<b>1,597,291</b>	<b>38</b>	<b>0.24</b>	<b>4,705</b>	<b>29.5</b>	<b>1.91</b>

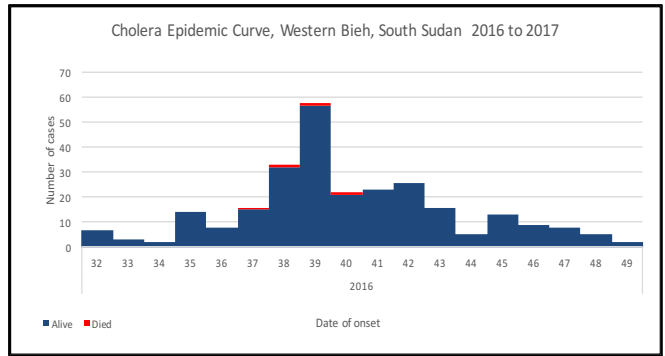
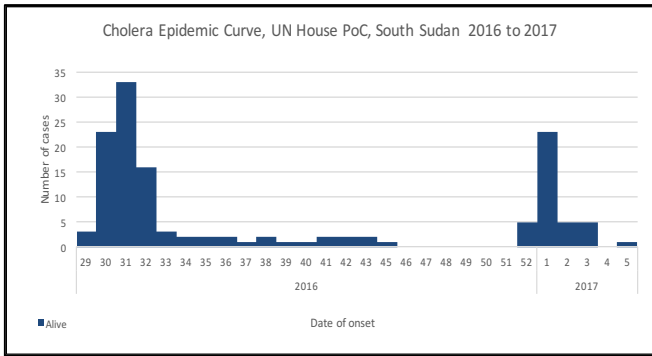
The cholera outbreak in Western Bieh state was confirmed on 22 September 2016 after **two** of four samples tested positive for *Vibrio cholerae inaba*. The initial cases were reported on 10 August 2016 in Old Fangak. The cumulative cases are **269** cholera cases including **13** confirmed cases and **4** deaths (**4** facility and zero community) (CFR **1.48%**). As of 3 February 2017, the affected areas included Old Fangak (217 cases); New Fangak (42 cases); Mareang (1 case); Paguir (1 cases); Toch (3 cases); and Kolanyang (1 case) ([Figure 1.2](#)). The last case from Old Fangak in week 49 of 2016.

Cumulatively, **4,705** cholera cases including **90** deaths (**46** facilities and **44** community) (CFR **1.91%**) have been reported in South Sudan involving **9** states since the initial case was reported on 18 June 2016 for Jubek state; 3<sup>rd</sup> July 2016 in Jonglei state; 14 July 2016 for Terekeka state, 15 August 2016 for Eastern Lakes and Imatong states; 10 August 2016 for Fangak in Western Bieh and state; 29 September 2016 for Rubkona in Northern Liech state; 11 October 2016 for Leer and 22 October 2016 for Panyijiar in Southern Liech state; 10 October 2016 for Pigi in Central Upper Nile state; and 7 October 2016 for Mayendit in Southern Liech state ([Figure 2.1](#) and [Table 1.1](#)).

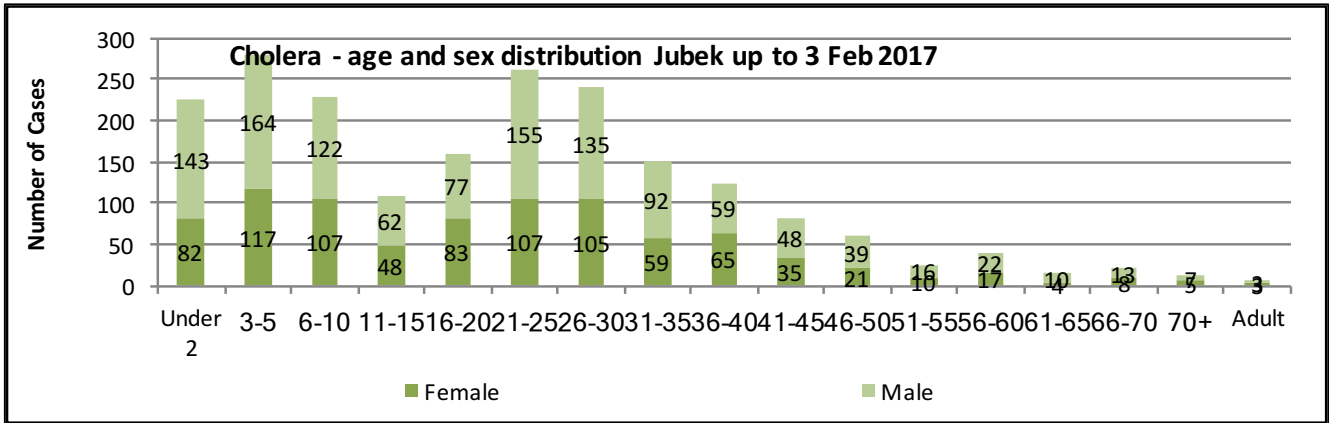
As seen from Figure 2.1 there was a spike in cholera transmission in weeks 42-50 of 2016 that was attributed to transmission in Bentiu PoC where most cases originate from sectors 1, 2, and 3 in blocks that are surrounding a water retention reservoir ([Annex 1](#)). Bentiu PoC now has the highest cumulative incidence for cholera.

**Figure 2:1 Epidemic curve for cholera cases in South Sudan, from 18 June - 3 February 2017**



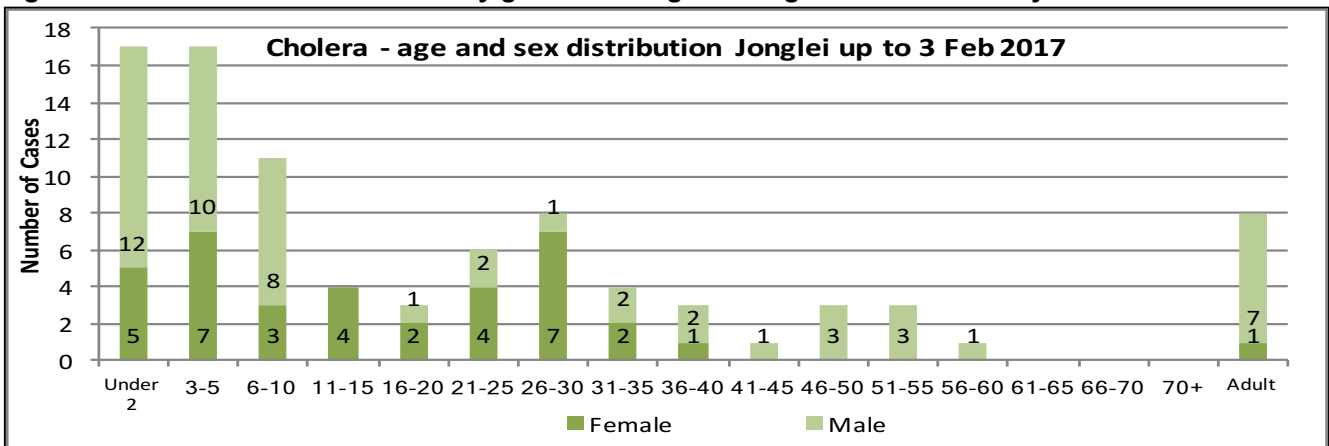


**Figure 3:1 Cholera case distribution by gender and age in Jubek State 3 February 2017**



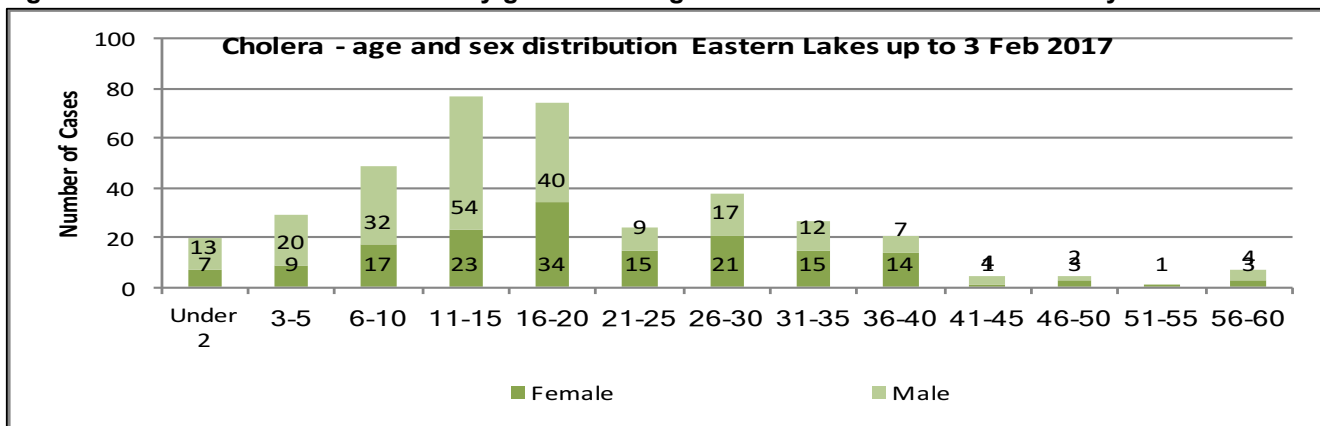
Out of the 2045 cholera cases in Jubek State, 876 (42.8%) were female, while 1169 (57.2%) were male

**Figure 3:2 Cholera case distribution by gender and age in Jonglei State 3 February 2017**



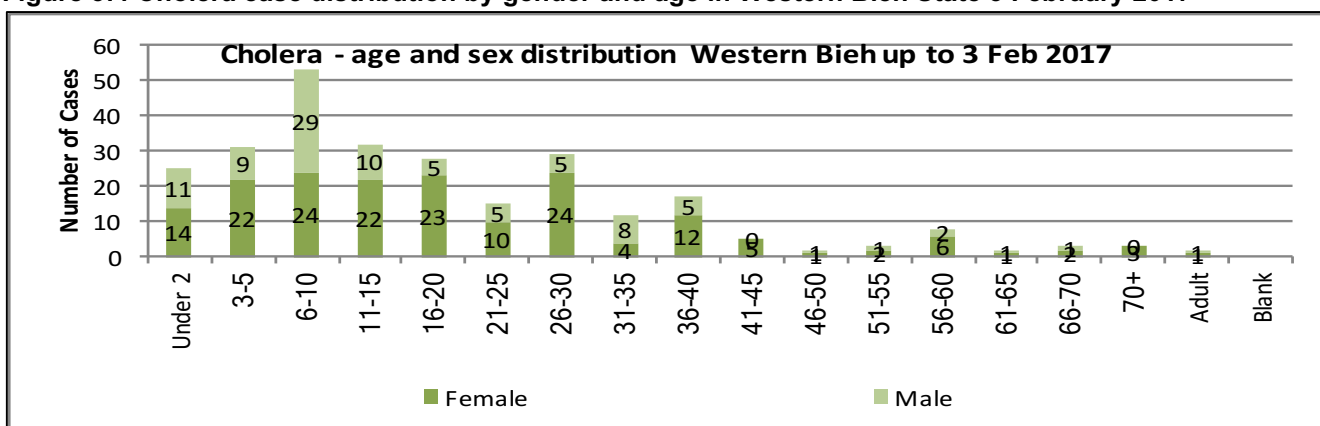
Out of the 92 cholera cases, in Jonglei State 40 (43.5 %) were female, while 52 (56.5%) were male

**Figure 3:3 Cholera case distribution by gender and age in Eastern Lake State 3 February 2017**



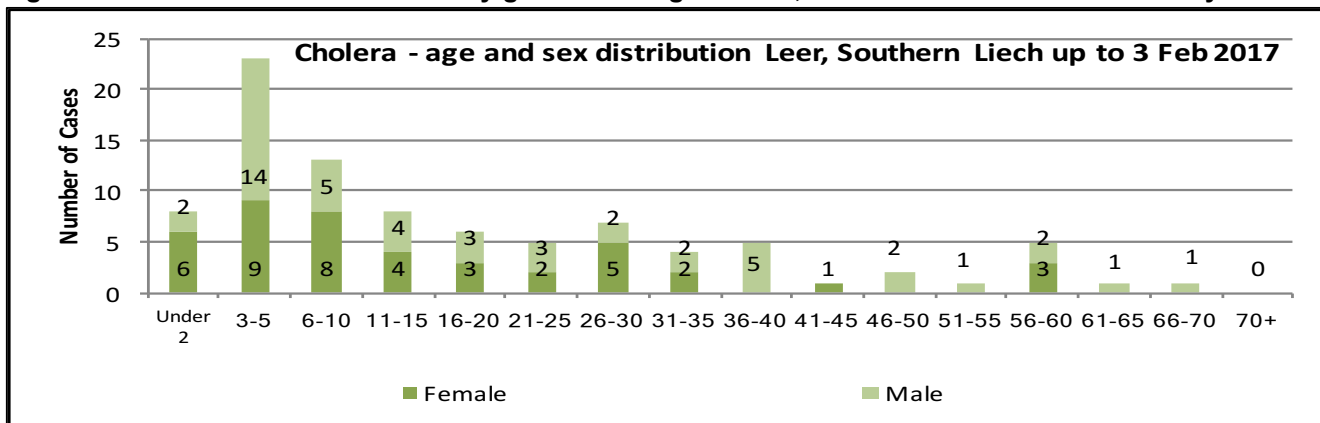
Out of the 381 cholera cases, in Eastern Lake State 165 (43.3 %) were female, while 216 (56.7 %) were male.

**Figure 3:4 Cholera case distribution by gender and age in Western Bieh State 3 February 2017**



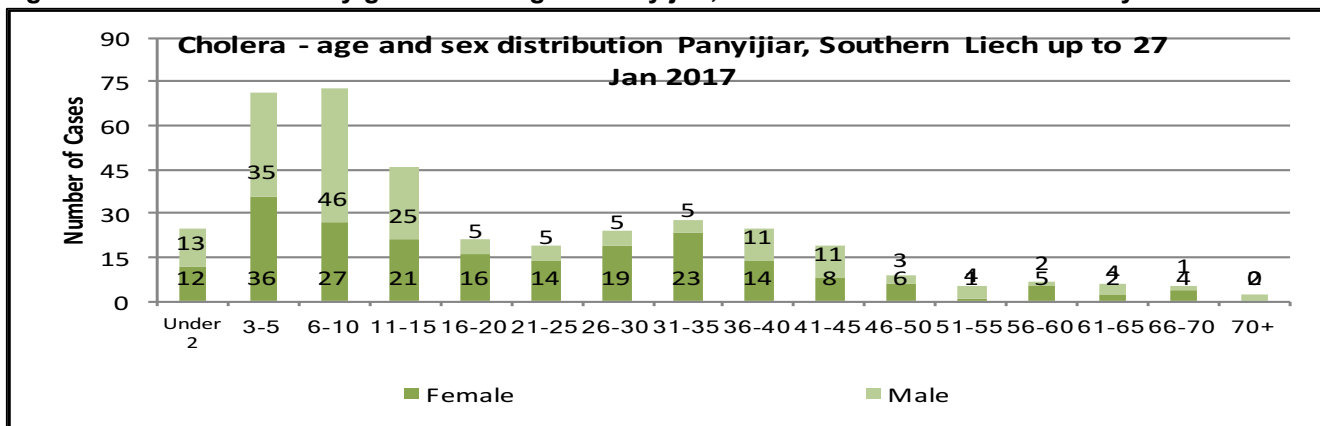
Out of the 268 cholera cases, in Western Bieh State 174 (65 %) were female, while 94 (35 %) were male.

**Figure 3:5 Cholera case distribution by gender and age in Leer, Southern Liech State 3 February 2017**



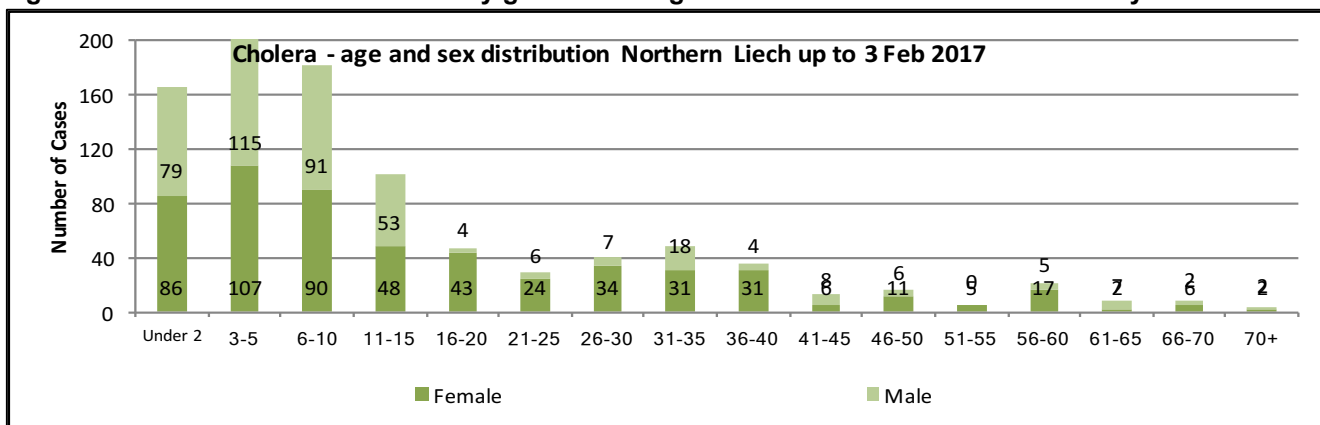
Out of the 91 cholera cases, in Leer, Southern Liech State 44 (48.4 %) were female, while 47 (51.6 %) were male.

**Figure 3:5 Cholera cases by gender and age in Panyijiar, Southern Liech State 3 February 2017**



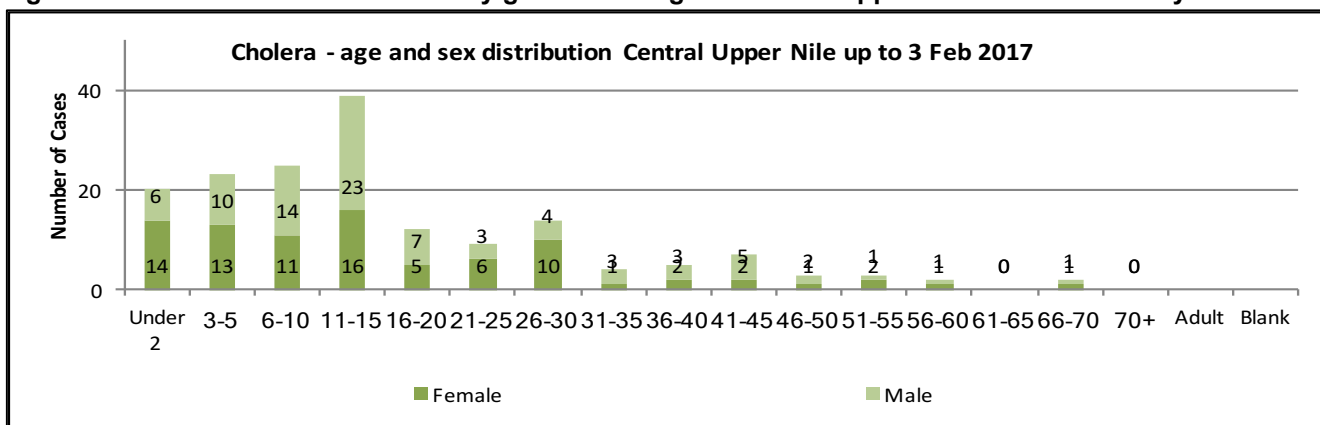
Out of the 385 cholera cases, in Panyijiar, Southern Liech State 208 (54 %) were female, while 177 (46 %) were male.

**Figure 3:6 Cholera case distribution by gender and age in Northern Liech State 3 February 2017**



Out of the 1,054 cholera cases, in Northern Liech State 608 (57.7 %) were female, while 446 (42.3 %) were male.

**Figure 3:7 Cholera case distribution by gender and age in Central Upper Nile State 3 February 2017**



Out of the 168 line listed cholera cases, in Central Upper Nile State 85 (50.6 %) were female, while 83 (49.4 %) were male.



**Table 2: Case distribution by gender in South Sudan 3 February 2017**

States	Female	Male	Total cases
Eastern Lakes	165	216	381
Imatong	13	16	29
Jonglei	40	52	92
Jubek	876	1,169	2,045
Terekeka	13	9	22
Western Bieh	176	94	270
Northern Liech	608	446	1,054
Southern Liech	357	287	644
Central Upper Nile	85	83	168
<b>Total cases</b>	<b>2,333</b>	<b>2,372</b>	<b>4,705</b>

**Probable risk factors**

The probable risk factors fueling transmission include: using untreated water from the River Nile and water tankers; lack of household chlorination of drinking water; eating food from unregulated roadside food vendors or makeshift markets; open defecation/poor latrine use especially following the conflict.

**Other factors**

1. Due to the protracted nature of the crisis since 2013, there has been destruction of infrastructure and limited investments to improve social services to the general population as such, living conditions have deteriorated with declining access to safe water and sanitation amenities.
2. Due to the worsening, economic situation, the cost of accessing safe water from the water trucks has increased substantially thus forcing households to resort to unsafe water sources.
3. In Southern Liech, humanitarian access remained limited due to persistent hostilities that kept away partners and thus impeding the initiation of comprehensive and sustained cholera interventions to interrupt transmission and prevent widespread and protracted outbreak. Consequently, transmission has continued in Southern Liech since late September 2016 with continued case spillovers to Bentiu Town and Bentiu PoC in Northern Liech.
4. While WASH partners have endeavoured to improve access to safe water and sanitation in Bentiu PoC; the continued arrival of people into the PoC has remained a challenge. In addition, current transmission in Bentiu PoC is linked to an oxidation water pond that is being used for bathing, washing, swimming and sometimes to collect water for household use since its water is soft and considered more palatable by the local population. The pond therefore needs to be secured-off to stem the ongoing transmission and to prevent future outbreaks.
5. During the protracted crisis, cholera transmission hotspots have expanded to include the following:
  - a. Internally Displaced persons – UN House PoC, Bentiu PoC, Bor PoC, Mingkaman, Wau, and Malakal, Melut, and Wau Shiluk.
  - b. Refugee populations
  - c. Neighbourhoods in urban settings with inadequate access to safe water and sanitation – Juba, Torit, Bor, etc.
  - d. Towns and counties along the Nile – Nimule, Juba, Bor, Terekeka, Leer, Panyijiar, Ayod, Fangak, Pigi, Malakal etc.
  - e. Populations on islands with nearly no access to health care and at risk for high mortality from cholera – Terekeka, Leer, Duk, Ayod etc.

**Laboratory updates****Table 3: Cholera laboratory test results for Juba by 3 February 2017**

State	Culture results			Total tested
	New positives in week 5	Cumulative Positive	Cumulative Negative	
Central Upper Nile	0	0	5	5
Jonglei	0	1	4	5

State	Culture results			
	New positives in week 5	Cumulative Positive	Cumulative Negative	Total tested
Jubek	0	83	128	211
Terekeka	0	2	0	2
Eastern Lakes	0	19	42	61
Imatong	0	7	1	8
Fangak	0	13	29	42
Wau	0	0	6	6
Boma	0	0	2	2
Northern Liech	0	26	53	79
Southern Liech – Leer	0	2	0	2
Southern Liech - Panyijiar	0	1	0	1
Southern Liech – Mayendit	0	2	2	4
Central Upper Nile (Pigi)	0	3	5	8
<b>Total tested</b>	<b>0</b>	<b>159</b>	<b>277</b>	<b>436</b>

**Table 4: Cholera Alerts**

Date of notification	Details of the alert	Area	Action
13-Sept-16	No alerts From 14-17 Nov, the MedAir team responded to 78 suspect cholera cases including 15 deaths in Wiechdeng, Ayod. One case tested positive on cholera RDT.	Wiechdeng, Ayok county, Southern Bieh state	MedAir responded to suspect cholera cases in Wiechdeng by setting up a 10 bed CTU. Recent assessments by MedAir show there is no active transmission in Pagil; Haat; and Wiechdeng.
30 Jan 2017	Jalle Pagam PHCC in Bor South county reported eight suspect cholera cases including four deaths (two community deaths) – all from Kwei Islands	Kwei Island, Bor South county, Jonglei	Initial verification by health and WASH cluster partners conducted on 30 Jan. 2017; CTU established in Jalle PHCC to support case management. National RRT being deployed with additional supplies to augment the response in Jalle.
26-Jan-17	At least 21 suspect cholera cases including 5 deaths in reported from Shambe in Yirol East	Koduwau, Panhom, Wunlit, Mayom Abun, Wanemageu, Jualnhom, and Shambe in Yirol East	Initial investigations supported by CUAMM and state MoH RRT; with support from the state. Additional WASH and Health cluster support required to augment the response.
4-Feb-17	At least five isolated suspect cholera cases reported from different neighborhoods in Jubek	Shirkat; Mangala; Hai Amarat; Hai Cinema; Mapau (Rejaf) in Jubek	Four of the cases are currently isolated in JTH CTC; sample have been obtained for culture; preliminary screening of the cases revealed no case-clustering is families or village. Water sources reported include River water at the workplace; water tanker water at home; and borehole water. Further RRT investigations to follow.

### Cholera Response Activities

Overall coordination of the cholera response at the national level is coordinated by the National cholera taskforce to review outbreak trends and progress of implementation activities. Security concerns have remained a major impediment to the implementation of sustained and comprehensive cholera investigation and response activities in Leer and Mayendit.

Cholera case management is ongoing at the designated cholera treatment facilities in the nine affected states. As cases decline in the affected areas, laboratory surveillance has been strengthened to ensure that all suspect cholera cases undergo rapid diagnostic testing and stool culturing to confirm cholera. WHO has therefore supported the partners operating cholera treatment facilities with ample supplies for sample collection, onsite rapid diagnostic testing, and shipment to the National Public Health Laboratory for culturing.

WHO is supporting the cholera investigation and response activities in all the nine affected states and the two states with alert suspect cases. Core to WHO's support to the current cholera response is technical support to the taskforce committees by providing updated situation reports; supporting the investigation and testing of suspect cases; support towards case management activities through trainings on cholera case management protocols; recommending tailored strategies in response to emerging trends; and support for the outbreak evaluation process that is already underway. WHO technical officers are currently deployed in Mingkaman; Bentiu, Bor, Malakal, Imatong, and Juba to support the ongoing response activities.

UNICEF continues to support the Cholera response at the community level across all relevant sectors of Health, WASH, and communication through active partnerships with following implementing partners: Health Link South Sudan (HLSS), LiveWell, ACROSS, CAPIAD, THESO, BEDN, IMC, RUWASSA, SMC, NHDF, UNIDO, World Relief, and ARUDA.

On 1 February; the rapid response mechanism meeting was convened by the health cluster in Juba. During the meeting, partners were updated on the current plans to augment the ongoing cholera response using oral cholera vaccines. At least 8 high-risk IDP populations were identified for immediate vaccination using oral cholera vaccines to interrupt residual transmission and to prevent risk of further transmission during the next transmission season. For the rest of the cholera transmission hotspots, a multi-year oral cholera vaccine response plan will be developed so that vaccines can be secured from the Global Cholera Taskforce.

### **Planned Activities/recommendations**

1. The next weekly EPR/cholera taskforce meeting is scheduled for 8 February 2017 starting 2:00pm in the WHO Conference Hall.
2. Continue social mobilization activities, active case surveillance, and street announcements with open van, house to house awareness and distribution of WASH supplies by HHPs in affected and at risk areas in UN House PoC, Northern Liech, and Southern Liech.
3. Camp management in Bentiu PoC has been engaged to secure-off the oxidation pond as it is now perceived as a public health hazard for cholera, Hepatitis E, and malaria.
4. WHO has engaged the health cluster and WASH partners to:
  - a. Identify high risk populations that should be prioritized for immediate oral cholera vaccination to interrupt the residual transmission and prevent cholera risk in the next two years. Cholera risk assessments are underway for a total of eight high risk IDP sites to facilitate complementary oral cholera vaccination.
  - b. Develop a multi-year plan for oral cholera vaccination in transmission hotspots alongside interventions for improving access to safe water and sanitation.
5. Deploy teams to verify and support the response to suspect cholera case clusters in Kwei Islands/Jalle in Bor; Shambe in Yirol East, and five neighborhoods in Jubek.

Many thanks to the staff at CTCs, MoH at national level and state levels, especially the Department of IDSR, who have helped to gather the information presented here. Situation Reports are posted on the WHO website: <http://www.who.int/hac/crises/ssd/en/> as well as on the Humanitarian Info webpage: <http://southsudan.humanitarianresponse.info/clusters/health>.

The MoH/WHO surveillance team welcomes feedback and data provided by individual agencies. Given the fast evolving nature of this epidemic, errors and omissions are inevitable: we will be grateful for any information that helps to rectify these. Send any comments and feedback to: E-mail: [outbreak\\_ss\\_2007@yahoo.com](mailto:outbreak_ss_2007@yahoo.com), **The Toll-free number for Vivacell calls is: 1144.**

### **Contacts**

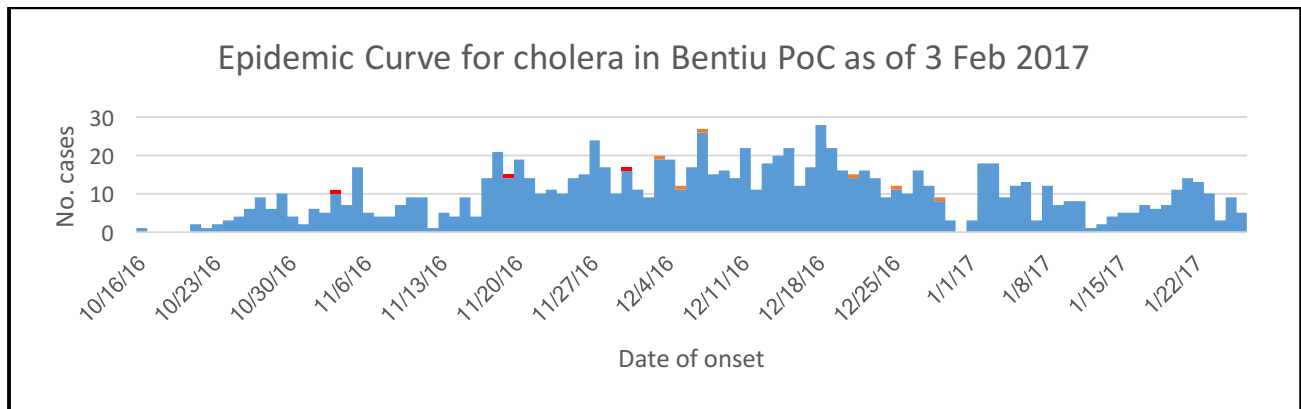
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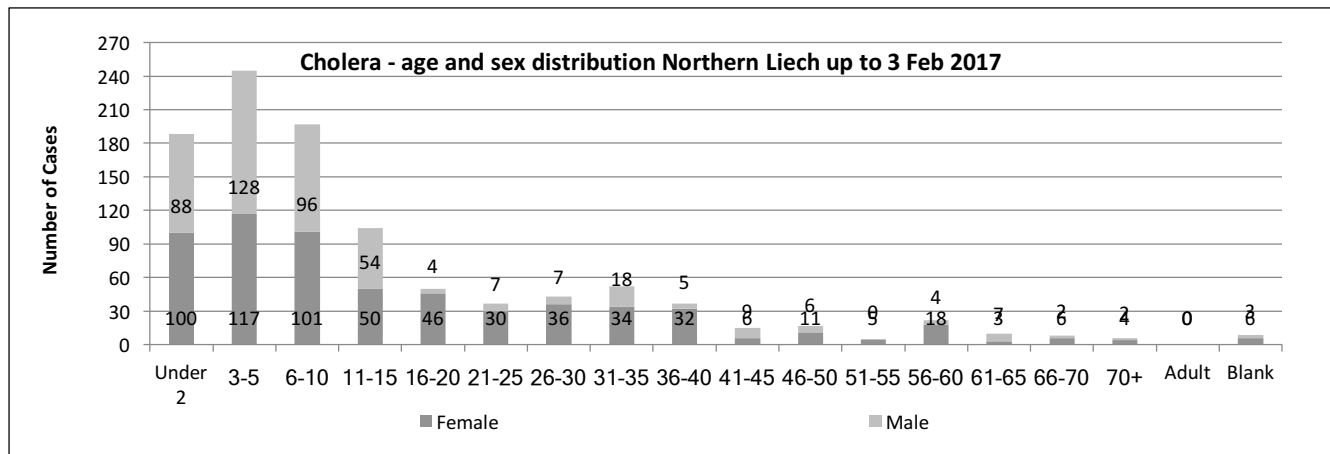
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## Annex 1: Cholera distribution in Bentiu PoC as of 3 February 2017

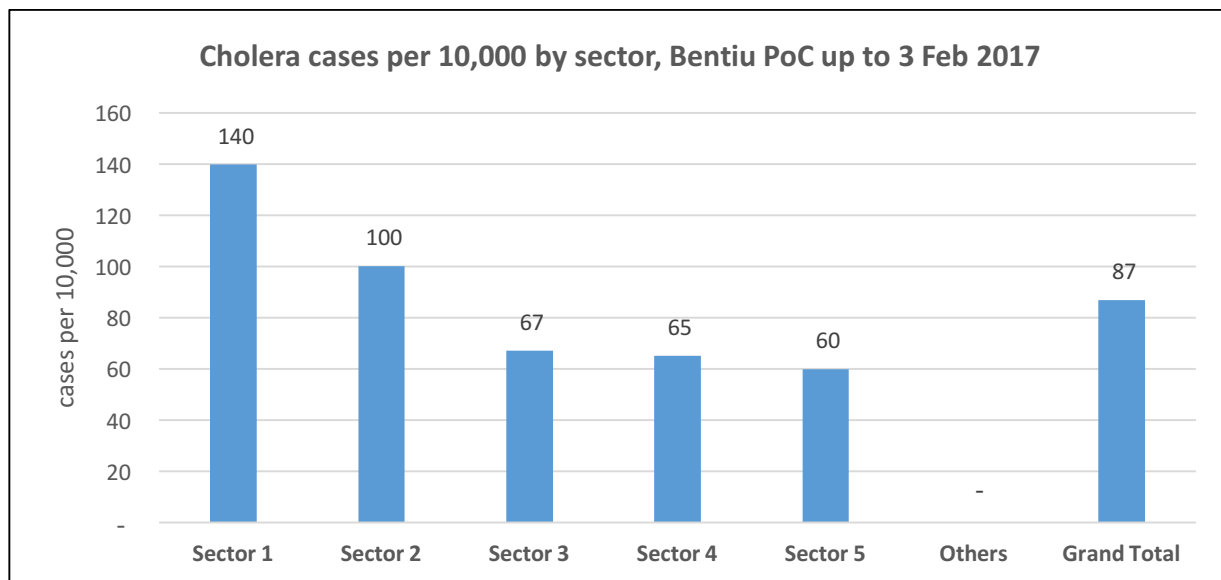
### Annex 1.1: Cholera case distribution by time in Bentiu PoC 3 February 2017



### Annex 1.2: Cholera age and sex distribution in Bentiu PoC as of 3 February 2017



### Annex 1.3: Cholera case distribution by sector in Bentiu PoC as of 3 February 2017



Annex 1.4: Cholera case distribution by sector and block in Bentiu PoC as of 3 February 2017

