



# Ministry of Health and Sports

## Department of Public Health

### Central Epidemiology Unit

# Monthly Epidemiology BULLETIN

October, 2018

## AFP surveillance Indicators by State and Region, 2018\*

State/Region	<15 Population	Minimum Expected Non Polio AFP Cases (2/100,000 pop)	Total no. of reported AFP Case	Non-Polio AFP Case	Annualized AFP Rate	Annualized Non-Polio AFP Rates	% of Adequate Stool
Ayeyarwady	1,653,018	33	36	23	2.57	1.64	97
Bago	1,282,089	27	52	49	4.79	4.52	94
Chin	187,080	2	5	5	3.16	3.16	100
Kachin	442,109	8	7	5	1.87	1.34	100
Kayah	94,003	2	3	3	3.77	3.77	100
Kayin	521,924	11	15	10	3.40	2.26	100
Magway	985,189	19	21	18	2.52	2.16	90
Mandalay	1,442,973	28	29	27	2.38	2.21	97
Naypyitaw	288,213	5	5	5	2.05	2.05	100
Mon	591,424	11	9	8	1.80	1.60	100
Rakhine	833,457	17	29	22	4.11	3.12	86
Sagaing	1,413,760	33	17	16	1.42	1.34	88
Shan East	227,670	4	4	3	2.08	1.56	75
Shan North	722,544	12	12	12	1.96	1.96	100
Shan South	735,534	12	12	8	1.93	1.29	100
Taninthayi	454,875	11	9	9	2.34	2.34	89
Yangon	1,550,049	29	27	24	2.06	1.83	93
<b>Total</b>	<b>13,425,911</b>	<b>264</b>	<b>292</b>	<b>247</b>	<b>2.57</b>	<b>2.17</b>	<b>94</b>

### Acute Flaccid Paralysis (AFP)

Total no. of expected non-polio AFP cases - 264

Annualized expected Non Polio AFP Cases (as of week.44) - 223

Reported AFP cases - 292

Discarded as non-polio AFP cases—247

Annualized AFP rate - 2.57

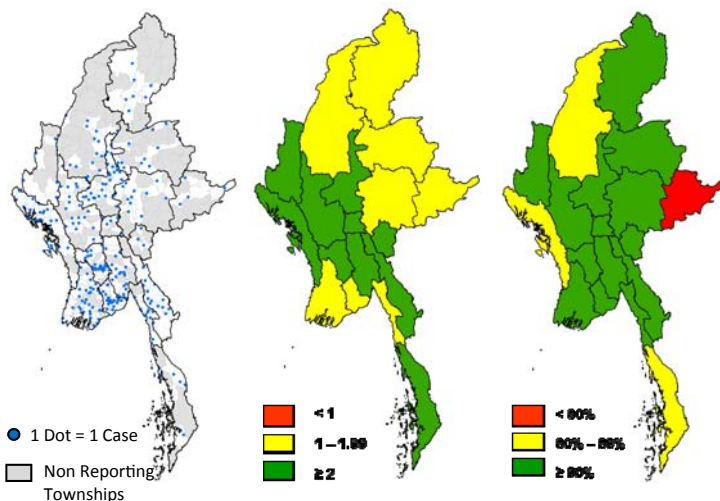
Annualized Non-polio AFP rate - 2.17

Percentage of adequate stool collection - 94%

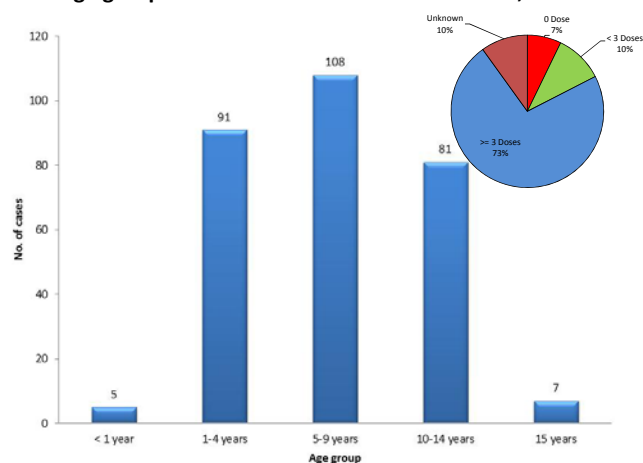
Pending for classification - 45

\*Data as of 31 October 2018

(week no. 44)



### Age group and vaccination status of AFP cases, 2018\*



Spot Map of AFP Cases Annualized Non polio AFP rate % of Adequate stool collection

## Environmental Surveillance in Myanmar

### Poliovirus and NPEV detected in Sewage samples in Myanmar, 2018\*

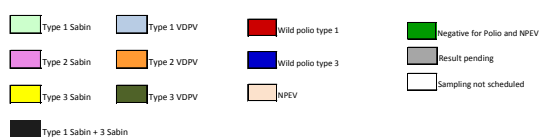
Sampling site	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	
Yangon																																													
Sitwe																																													
Maung Taw																																													

Percentage of NPEV detected in Sewage samples – 28.57%

Maungdaw - 13.33%

Sittwe - 20.00%

Yangon - 47.62%



\* Data as of week no. 44, 31 October 2018

## Fever with Rash Surveillance, 2018\*

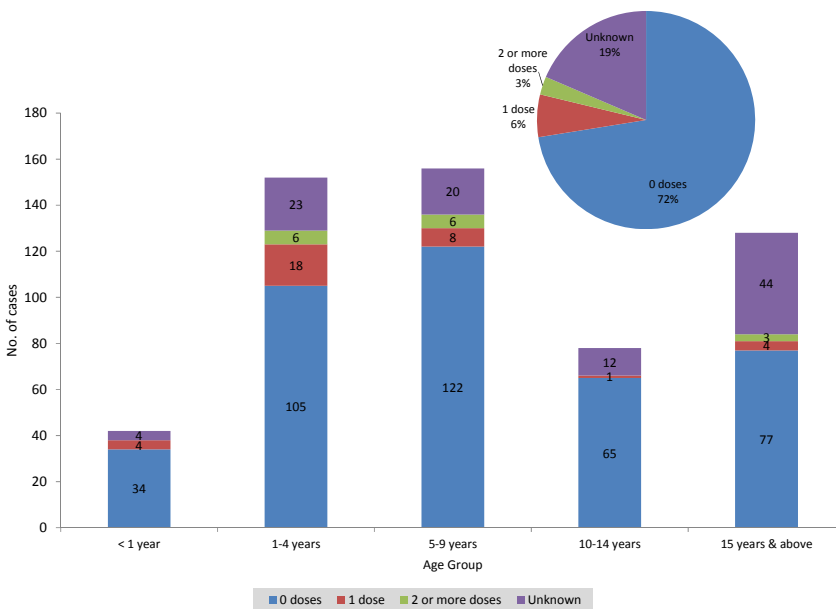
State/Region	Total Population	Expected Non-measles suspected measles Cases	Suspected cases reported	Total Serum Specimen tested in Laboratory	Confirmed Measles			Confirmed Rubella	Non Measles Non Rubella Cases	Pending	Annualized incidence of measles	Annualized incidence of non-measles/non-rubella suspected
					Lab-confirmed	Epi-confirmed	Clinically confirmed					
Ayeyarwady	6437373	129	28	28	8	0	0	0	20	0	1.24	0.31
Bago	5177071	104	91	63	16	7	0	0	65	3	4.44	1.26
Chin	532750	11	7	7	1	0	0	0	6	0	1.88	1.13
Kachin	1625316	33	41	23	2	22	0	2	14	0	14.77	0.86
Kayah	310330	6	2	2	0	0	0	0	2	0	0.00	0.64
Kayin	1664092	33	103	103	63	13	0	0	25	2	45.67	1.50
Magway	4327568	87	25	16	7	12	1	0	4	0	4.62	0.09
Mandalay	6206034	124	11	11		0	0	1	9	1	0.00	0.15
Mon	2321587	46	50	34	14	15	1	0	15	4	12.92	0.65
Nay Pyi Taw	1111897	22	13	12		0	1	1	11	0	0.90	0.99
Rakhine	2846882	57	39	39	17	0	0	1	17	3	5.97	0.60
Sagaing	5646315	113	16	14		0	1	0	14	1	0.18	0.25
Shan East	845364	17	64	16	12	51	0	0	1	0	74.52	0.12
Shan North	2507456	50	62	40	27	29	0	0	6	0	22.33	0.24
Shan South	2413792	48	93	56	23	39	2	0	23	0	26.51	0.95
Tanintharyi	1528308	31	20	20	7	0	0	1	12	0	4.58	0.79
Yangon	6848946	137	308	261	112	45	4	4	140	1	23.51	2.04
<b>National</b>	<b>52351081</b>	<b>1047</b>	<b>973</b>	<b>745</b>	<b>309</b>	<b>233</b>	<b>10</b>	<b>10</b>	<b>384</b>	<b>15</b>	<b>10.54</b>	<b>0.73</b>

Total suspected outbreaks—26

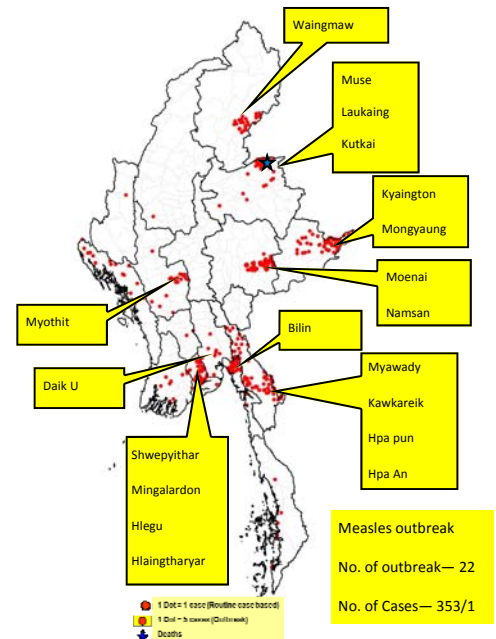
Confirmed measles outbreaks—22

Non Measles/Rubella outbreaks— 4

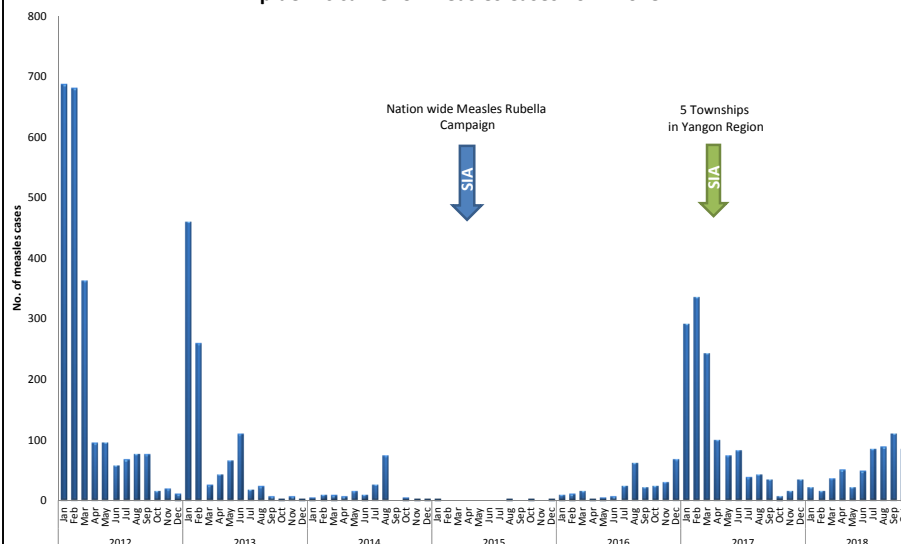
## Age and Vaccination Status of confirmed Measles cases, 2018\*



## Spot map of measles cases, 2018\*



## Epidemic curve for Measles Cases 2012-2018\*



## CRS Surveillance

Total no. of serum sample received - 8

Total no. of serum sample tested - 8

Laboratory Results - Negative

\* Data as of week no. 44, 31 October 2018

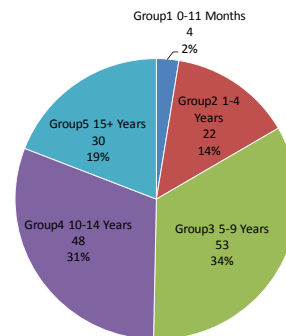
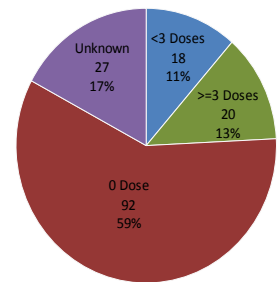
# Diphtheria, 2018\*

## Reported Suspected Diphtheria cases and deaths in State and Region

State/Region	Total no. of cases	Total no. of deaths
Ayeyarwady	21	5
Bago (East)	5	3
Kachin	5	1
Kayin	2	0
Magway	2	0
Mandalay	11	6
Naypyitaw	2	0
Rakhine	2	0
Sagaing	1	1
Shan State (North)	26	3
Shan State (South)	46	3
Yangon	34	7
<b>Grand Total</b>	<b>157</b>	<b>29</b>



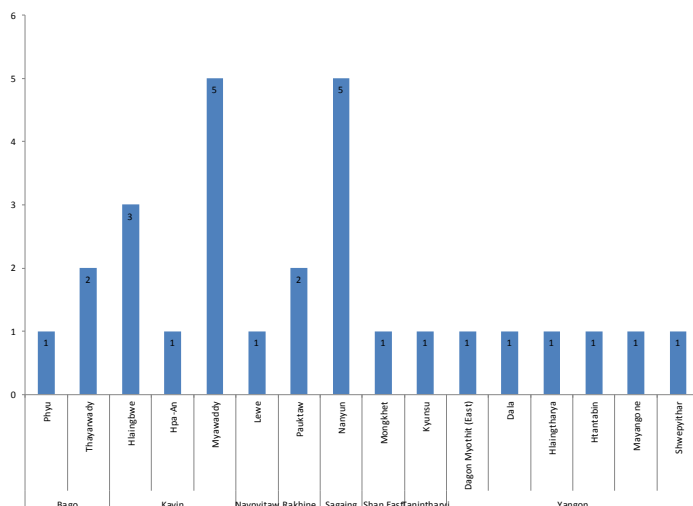
## Immunization Status of Suspected Diphtheria Cases



Suspected Diphtheria Cases by age group

# Pertussis (Whooping Cough), 2018\*

## Cases distribution of whooping cough cases in State and Region



Age group	0 Dose	<3 Doses	≥3 Doses	Total
0-11 Months	6	2	1	9
1-4 Years	2	1		3
5-9 Years	5	1	3	9
10-14 Years	7			7
<b>Grand Total</b>	<b>20</b>	<b>4</b>	<b>4</b>	<b>28</b>

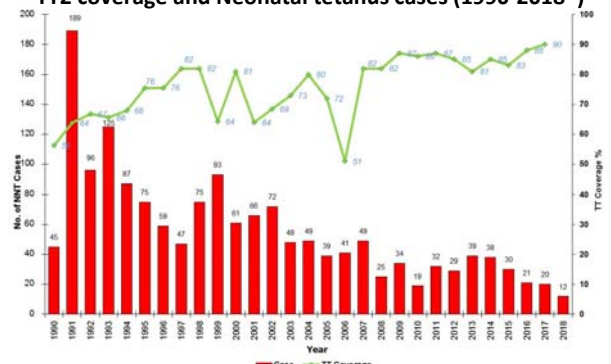
# Neonatal Tetanus, 2018\*

## Reported NNT cases and deaths in State and Region

State/Region	Township	Cases	Deaths
Ayeyarwady	Pyapon	1	1
Bago	Bago	1	1
Kachin	Waingmaw	1	0
Magway	Aunglan	1	1
	Taungdwingyi	1	0
Mandalay	Meiktila	1	1
	Kyaukse	1	1
	Natogyi	1	1
	Singu	1	1
Rakhine	Sittwe	2	1
	Pauktaw	1	1
Sagaing	Shwebo	1	1
Shan State (North)	Tangyan	1	0
Tanintharyi	Myeik	1	0
Yangon	Dagon Myothit (Seikkan)	1	1
	Dagon Myothit (South)	1	1
	Hlaingtharya	2	1
	Insein	1	0
<b>Total Reported</b>		<b>20</b>	<b>13</b>

Place of birth among reported	Reported NNT cases are	Vaccination status of
Hospital	1	Doctor
Health Center	BHS	2
Private Hospital	Trained TBA	1 Dose
Home	TBA	8
Other	Other	4
		≥2 Doses
Unknown	Not Attended	6
Total	20	Total
		20

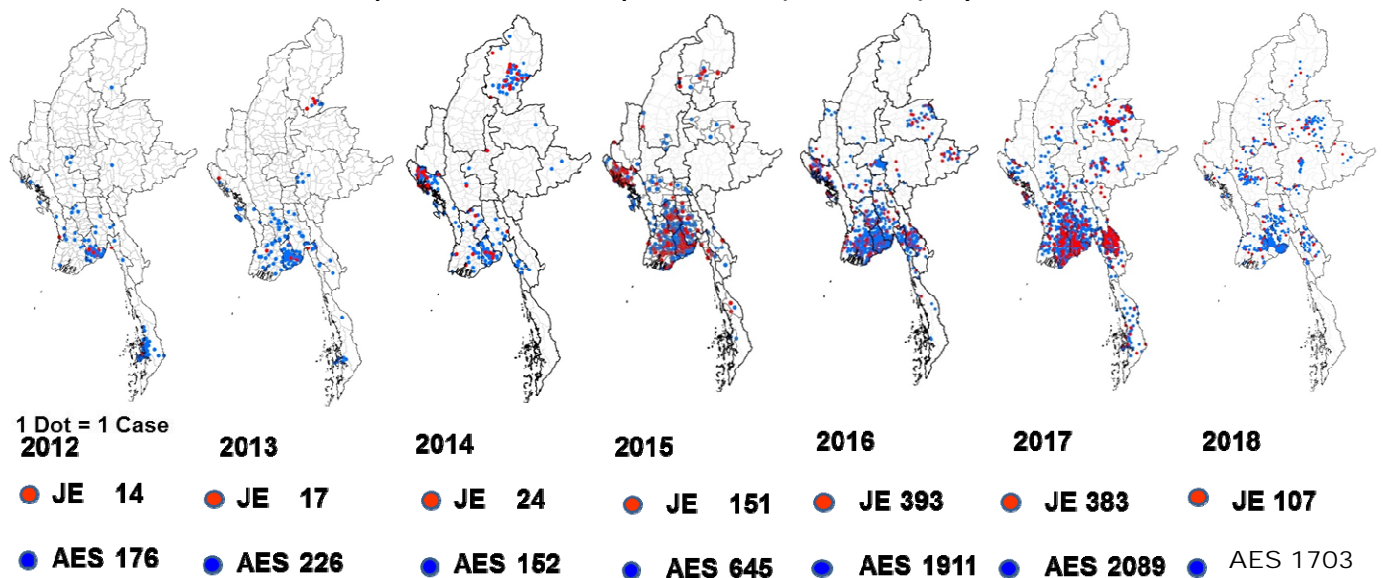
## TT2 coverage and Neonatal tetanus cases (1990-2018\*)



\* Data as of week no. 44, 31 October 2018

## Acute Encephalitis Syndrome

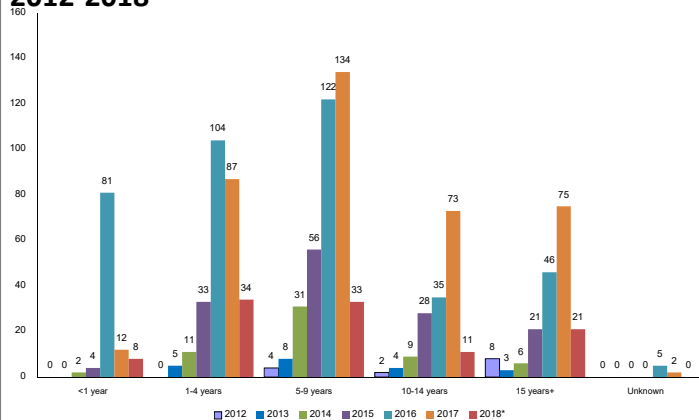
Reported AES cases & JE positive cases (2012-2018\*), Myanmar



### Region/State-wise Occurrences of JE 2012-2018\*

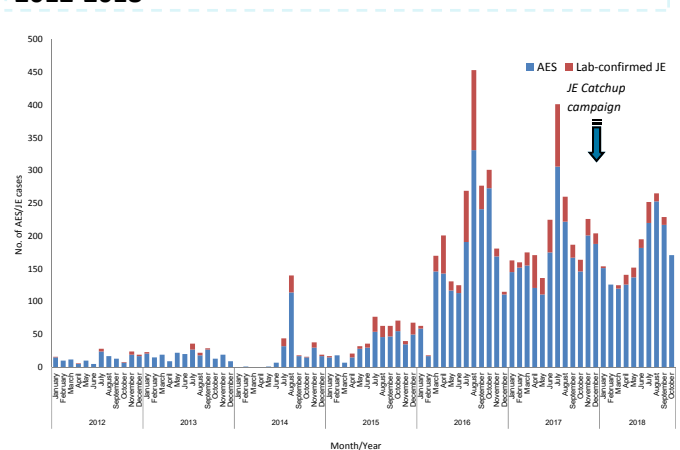
Region/State	2012		2013		2014		2015		2016		2017		2018*	
	AES	JE Positive	AES	JE Positive	AES	JE Positive	AES	JE Positive	AES	JE Positive	AES	JE Positive	AES	JE Positive
Ayeyawady	7	0	21	1	12	4	90	21	231	45	259	51	167	14
Bago	9	0	23	0	16	7	86	28	213	53	256	49	178	8
Chin	0	0	0	0	0	0	1	1	11	3	2	1	3	1
Kachin	1	0	4	4	10	1	12	5	8	1	7	2	13	3
Kayah	0	0	0	0	0	0	0	0	1	1	15	6	13	2
Kayin	0	0	2	0	0	0	6	1	136	37	165	65	44	8
Magway	4	0	1	0	1	1	10	4	30	4	58	6	100	14
Mandalay	1	0	0	0	5	3	2	0	122	19	6	1	119	2
Mon	2	1	10	2	5	0	29	5	60	8	61	13	41	2
Naypyitaw	0	0	0	0	0	0	1	0	5	2	12	1	15	1
Rakhine	6	1	9	1	47	2	126	46	120	26	88	17	42	4
Sagaing	0	0	0	0	0	0	6	1	52	9	18	2	64	5
Shan East	1	0	3	0	0	0	1	0	29	8	5	2	5	2
Shan North	0	0	0	0	0	0	4	0	90	16	88	42	72	15
Shan South	0	0	0	0	0	0	0	0	14	2	60	16	73	5
Tanintharyi	61	5	8	0	1	0	6	3	18	4	45	11	15	0
Yangon	84	7	145	9	55	6	265	36	771	155	889	92	723	21
Unknown State/Region											55	6	16	0
<b>Total</b>	<b>176</b>	<b>14</b>	<b>226</b>	<b>17</b>	<b>152</b>	<b>24</b>	<b>645</b>	<b>151</b>	<b>1911</b>	<b>393</b>	<b>2089</b>	<b>383</b>	<b>1703</b>	<b>107</b>

### JE incidence: lab confirmed cases by age groups 2012-2018\*



\* Data as of week no. 44, 31 October 2018

### Lab confirmed and reported AES cases by months 2012-2018\*



## Incidence of Vaccine preventable diseases (VPD)

	2013	2014	2015	2016	2017	2018*
<b>Diphtheria</b>	<b>38</b>	<b>29</b>	<b>87</b>	<b>136</b>	<b>68</b>	<b>157</b>
<b>Measles</b>	<b>1010</b>	<b>122</b>	<b>6</b>	<b>266</b>	<b>1293</b>	<b>552</b>
<b>Pertussis</b>	<b>14</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>28</b>
<b>Polio*</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Rubella</b>	<b>23</b>	<b>30</b>	<b>34</b>	<b>10</b>	<b>6</b>	<b>10</b>
<b>Neonatal tetanus</b>	<b>39</b>	<b>32</b>	<b>30</b>	<b>21</b>	<b>20</b>	<b>20</b>
<b>Japanese encephalitis</b>	<b>3</b>	<b>50</b>	<b>113</b>	<b>393</b>	<b>442</b>	<b>107</b>

\* Data as of week no. 44, 31 October 2018

## Incidence of Vaccine Preventable Diseases (VPD) by State and Region, 2018\*

State/Region	Diphtheria	Pertussis	Neonatal tetanus	Japanese encephalitis
Ayeyarwady	21	0	1	14
Bago	5	3	1	8
Chin	0	0	0	1
Kachin	5	0	1	3
Kayah	0	0	0	2
Kayin	2	9	0	8
Magway	2	0	2	14
Mandalay	11	0	4	2
Mon	0	0	0	2
Nay Pyi Taw	2	1	0	1
Rakhine	2	2	3	4
Sagaing	1	5	1	5
Shan East	0	1	0	2
Shan North	26	0	1	15
Shan South	46	0	0	5
Tanintharyi	0	1	1	0
Yangon	34	6	5	21
<b>National</b>	<b>157</b>	<b>28</b>	<b>20</b>	<b>107</b>

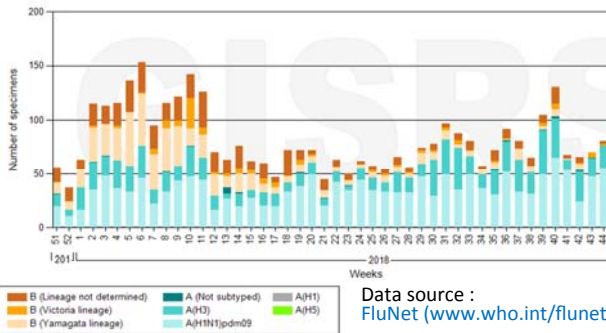
\* Data as of week no. 44, 31 October 2018



# Myanmar influenza surveillance report

Number of specimens positive for influenza by Southern Hemisphere subtype

ILI/SARI sentinel surveillance sites



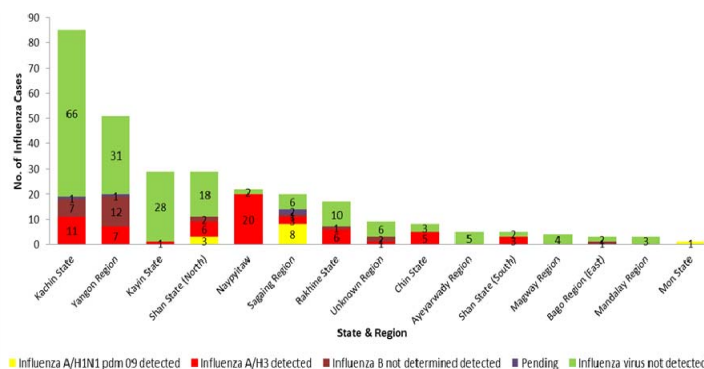
- ◆ Naypyidaw 1000 Bedded Hospital
- ◆ Yangon General Hospital
- ◆ Yangon Thingangyun Hospital
- ◆ Mandalay General Hospital
- ◆ Myitkyina General Hospital
- ◆ Sittwe General Hospital
- ◆ Myawaddy Township Hospital
- ◆ Muse Township Hospital



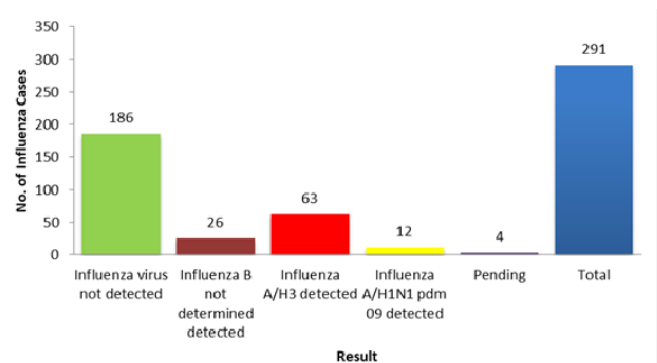
Specimen for Influenza Collected by Sentinel and other Hospitals (\*2018)

Name of Hospital	No. of Samples receipt	No. of Samples Positive	Pending	Type of Influenza
<b>Sentinel Hospitals</b>				
Yangon General Hospital (Y.G.H)	23	3	1	Influenza B not determined detected, Influenza A/H3 detected
1000 Bedded General Hospital, Nay Pyi Taw	3	2		Influenza A/H3 detected
Thingangyun Sanpya General Hospital (T.G.H)	25	7		Influenza B not determined detected, Influenza A/H3 detected
Myit Kyi Na General Hospital	86	19	1	Influenza B not determined detected, Influenza A/H3 detected
Sittwe General Hospital	12	5		Influenza A/H3 detected
Muse Township Hospital	28	11	2	Influenza B not determined detected, Influenza A/H3 detected, Influenza A/H1N1 pdm 09 detected
Myawaddy District Hospital	20			
Mandalay General Hospital	2			
<b>Other Hospitals</b>				
Taunggyi	5	3		
North Oakkalapa Hospital	1			
Other	86	54		Influenza B not determined detected, Influenza A/H3 detected, Influenza A/H1N1 pdm 09 detected
<b>Total</b>	<b>291</b>	<b>101</b>	<b>4</b>	

Virus Subtype distribution by State/Region, 2018\*



Specimens Positive for Influenza by Subtypes, 2018\*



## DISEASE OUTBREAK 2018\*

No.	Disease	Events	Cases	Deaths
1.	Measles	22	353	1
2.	Diphtheria	96	157	29
3.	Food Poisoning	48	1662	1
4.	Diarrhoea	15	616	11
5.	Meningitis	16	16	11
6.	Chicken pox	5	48	0
7.	Anthrax	4	20	0
8.	Mumps	4	349	1

\* Data as of week no. 44, 31 October 2018

## Activities of National Certification Committee for Polio Eradication (NCCPE)

The National Certification Committee for Polio Eradication (NCCPE) had been reformed in May 2017 with new members and terms of reference are updated. The main terms of reference of NCCPE is to advise and recommend the Immunization Programme and AFP surveillance system. The NCCPE is chaired by Epidemiologist who is the former Director General, Department of Public Health, Ministry of Health and Sports and the new members are physicians, pediatricians, microbiologist, and public health specialists. On behalf NCCPE, the chairman has to submit Annual Progress Report on maintaining polio-free status to Regional Certification Committee for Polio Eradication (RCCPE) yearly. The NCCPE gives recommendations in preparing and updating the national outbreak response plan and also gives technical assistance to the national program in implementation. Moreover, all NCCPE members had been actively participated in qualified AFP surveillance, monitoring in polio SIAa in Rakhine State (July and August 2017). NCCPE had provided technical support in conducting Table Top Exercise and guidance to the Regional Surveillance Officers (RSOs), team leaders (CEU/EPI), Central Epidemiology Unit and WHO how to deal with suspected polio outbreak and NCCPE also had been involved in development of the risk communication strategies. During 2017 and 2018, the NCCPE met for three times in May, August 2017 and November 2018.

## Performance of polio surveillance

Achieving the non-polio AFP rate of 2.94 and 2.37 and the adequate stool collection rate of 95% and 96% at national level, in 2017 and 2018 respectively, ensures that the quality AFP surveillance system is sensitive to rapidly and reliably detect the imported wild poliovirus and vaccine-derived poliovirus (VDPV). Non-Polio Enterovirus (NPEV) rate at sentinel sites for environmental surveillance is more than 10% in both in 2017 and 2018. Those surveillance indicators justify that any polio outbreak in Myanmar, wild or vaccine-derived can be detected immediately. Central Epidemiology Unit with accredited National Health Laboratory work hard with the technical support of WHO. AFP surveillance was enhanced throughout the country especially in Rakhine State where an annualized non-polio AFP rate of more than 3 and the adequate stool sample collection rate of 90% has attained both in 2017 and 2018. All States/ Regions and townships are enforced to intensify AFP surveillance through expanding of Regional Surveillance Officer Network.



National Certification Committee for Polio Eradication (NCCPE) Meeting



RSO's Quarterly Meeting (October, 2018)



Tabletop Exercise – Group Work

## Recommendations on AFP surveillance system by NCCPE

NCCPE is confident to interpret that Ministry of Health and Sports is making all efforts to keep on track to sustain polio-free status in Myanmar by increasing government commitment with increased funding along with the highest concern of the dedicated stakeholders. With special attention to the current situation in Rakhine State and all the low-performance areas, all efforts on surveillance and routine immunization improvement activities must be continued all over the country with special consideration for Rakhine State. The Government of Myanmar and relevant polio partners need to ensure availability of the required resources.

According to achievement of the AFP performance indicators in 2017 and 2018, NCCPE concluded that the AFP surveillance system is sensitive enough to detect wild and vaccine derive polio cases, however, there are challenges in risk areas such as conflict areas of Rakhine state, some of socially and geographically hard to reach areas in Kachin state, Shan (East) State and Shan (north) State. Regarding the levels of preparedness for timely and reliable detection of and response to poliovirus occurrence, Myanmar is adequate and up to date, concluded by NCCPE. NCCPE also concluded that Myanmar is now trying to reduce polio risk in the region for polio eradication for the following reasons; high political and MOHS's commitment and leadership, strong multisector and partner involvement, community participation and strong programme support for cEPI, CEU and NHL, and RSO system, improving OPV3 coverage in the country with innovative strategy to cover pockets and low coverage areas, achieving AFP standard indicators, effective laboratory containment, thorough risk assessment and well-developed outbreak response and preparedness plan.

**AFP Case Definition:**

Any case of AFP in a child aged <15 years, or any case of paralytic illness in a person of any age when polio is suspected.

Acute: rapid progression of paralysis from onset to maximum paralysis

Flaccid: loss of muscle tone, "floppy" – as opposed to spastic or rigid

Paralysis: weakness, loss of voluntary movement

Any case meeting this definition undergoes a thorough investigation to determine if the paralysis is caused by polio.

**Measles Case Definition: Suspected case of measles**

A patient in whom a health-care worker suspects measles infection, **OR** a patient with fever and maculo-papular (non-vesicular) rash.

**Laboratory confirmed measles:** A suspected case of measles, that has been confirmed by a proficient laboratory

**Epidemiologically linked confirmed case of measles:** A suspected case of measles, that has not been confirmed by a laboratory but was geographically and temporally related, with dates of rash onset occurring 7 - 21 days apart to a laboratory confirmed case, or, in the event of a chain of transmission to another epidemiologically confirmed measles case.

**Clinically compatible measles case:** A case with fever and maculo-papular (non-vesicular) rash and one of cough, coryza or conjunctivitis for which no adequate clinical specimen was taken and which has not been linked epidemiologically to a laboratory confirmed case of measles or another laboratory-confirmed communicable diseases.

**Congenital Rubella Syndrome CRS Surveillance****Standard Case Definitions**

Classification of cases for CRS surveillance purposes is based on clinical, epidemiological and laboratory data. The case definitions for CRS surveillance include the following categories: suspected, laboratory confirmed, clinically compatible, epidemiologically linked and discarded.

**Case definition for Diphtheria surveillance**Clinical description

An upper respiratory tract illness characterized by sore throat, low-grade fever, and an adherent membrane of the tonsil(s), pharynx, and/or nose.

Laboratory criteria: Isolation of *C. diphtheriae* from a clinical specimen, OR Histopathologic diagnosis of diphtheria.

**Whooping Cough Case Definitions****Clinical case definition**

In the absence of a more likely diagnosis a cough illness lasting ≥2 weeks with one of the following symptoms: Paroxysms of coughing, OR Inspiratory "whoop," OR Post tussive vomiting, OR Apnea (with or without cyanosis) (FOR INFANTS AGED <1 YEAR ONLY)

**Confirmed Case definition of Neonatal Tetanus:**

Any neonate with normal ability to suck and cry during first two days and who during 3 to 28 days cannot suck or cry and has convulsion or spasms, by triggered by minimal stimuli such as light, noise or touch or who has signs of stiffness and rigidity, which include any of the following: trismus, clenched fists or fits, continuously pursed lips, curved back (opisthotonus).

**Surveillance of AES****All cases of acute encephalitis syndrome should be reported**

Clinical case definition: A person of any age, in any geographical region, at any time of year with acute onset of fever and a change in mental status (including symptoms such as confusion, disorientation, coma, or inability to talk) AND/OR new onset of seizures (excluding simple febrile seizures).

**AFP Surveillance Indicators (core indicators)**

Indicator	Target	Calculation
1. Non-polio AFP rate	= 2/100,000	$\frac{\text{No. of discarded non-polio AFP cases among 15 years of age group}}{\text{Total number of children < 15 years of age}} \times 100000$
2. Reported AFP cases with 2 specimens collected = 14 days since onset.	= 80%)	$\frac{\text{No of AFP cases with 2 specimens collected within 14 days of paralysis onset}}{\text{Total number of children < 15 years of age}} \times 100$

*Data source:*

- Central Epidemiology Unit
- National Health Laboratory
- National Surveillance Coordinator Office (WHO)

**Measles Surveillance Indicators (core indicators)**

Indicator	Target	Definition
Disease incidence Annual incidence of confirmed measles cases Annual incidence of confirmed rubella cases	Absence of indigenous measles transmission	The numerator is the confirmed number of measles or rubella cases of the year denominator is the population in which the cases occurred multiplied by 1,000,000. When numerator is zero, the target incidence would be zero.
Proportion of sub-national administrative units reporting at least 2 discarded non-measles, non rubella cases per 100,000 population	>80%	The numerator is the number of sub-national units reporting at least 2 discarded non-measles non rubella cases per 100,000 and the denominator is the total number of sub-national units multiplied by 100

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