Ministry of Health and Sports
Department of Public Health
Central Epidemiology Unit

Monthly Epidemiology BULLETIN

March, 2019

AFP surveillance Indicators by State and Region, 2019*

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	2	2	0.48	0.48	100
Bago	1,282,089	27	12	11	3.74	3.43	100
Chin	187,080	2	2	2	4.28	4.28	100
Kachin	442,109	8	1	1	0.90	0.90	100
Kayah	94,003	2	0	0	0.00	0.00	100
Kayin	521,924	11	3	3	2.30	2.30	100
Magway	985,189	19	7	7	2.84	2.84	100
Mandalay	1,442,973	28	9	8	2.49	2.22	89
Naypyitaw	288,213	5	0	0	0.00	0.00	100
Mon	591,424	11	3	3	2.03	2.03	100
Rakhine	833,457	17	2	2	0.96	0.96	100
Sagaing	1,413,760	33	11	10	3.11	2.83	82
Shan East	227,670	4	4	4	7.03	7.03	100
Shan North	722,544	12	1	1	0.55	0.55	100
Shan South	735,534	12	9	8	4.89	4.35	100
Taninthayi	454,875	11	3	3	2.64	2.64	100
Yangon	1,550,049	29	2	2	0.52	0.52	100
Total	**13,425,911**	**264**	**71**	**67**	**2.28**	**2.20**	**98**

Acute Flaccid Paralysis (AFP)

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

Annualized expected Non Polio AFP Cases (as of week.13) - 66

Reported AFP cases - 71

Discarded as non-polio AFP cases—67

Annualized AFP rate - 2.28

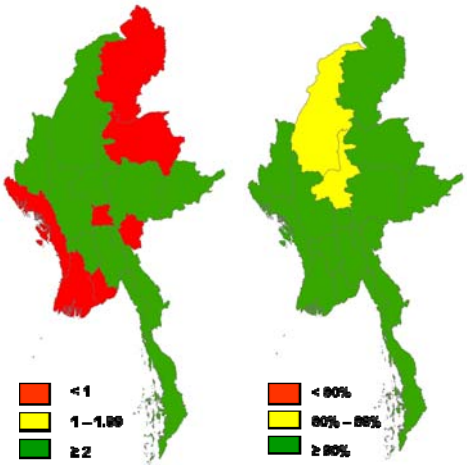
Annualized Non-polio AFP rate - 2.20

Percentage of adequate stool collection - 98%

Pending for classification - 4

**Data as of 10 April 2019 (week no. 13)*

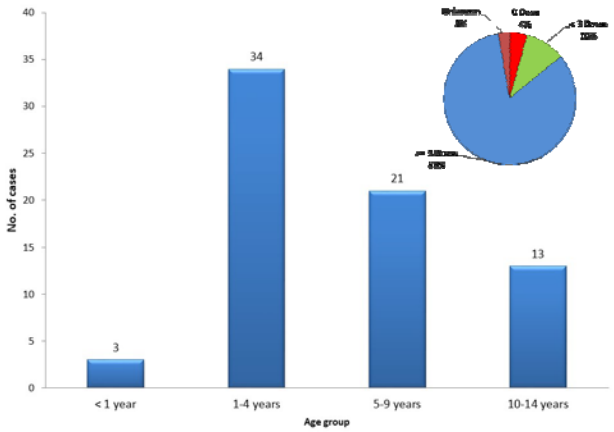
Spot Map of AFP Cases



Annualized Non polio AFP rate

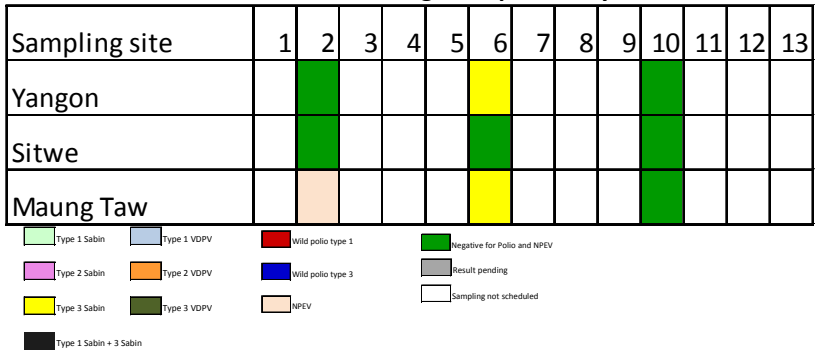
% of Adequate stool collection

Age group and vaccination status of AFP cases, 2019* (n=71)



Environmental Surveillance in Myanmar

Poliovirus and NPEV detected in Sewage samples in Myanmar, 2019*



Percentage of NPEV detected in Sewage samples – 11%

Maungdaw - 33%

Sittwe - 0%

Yangon - 0%

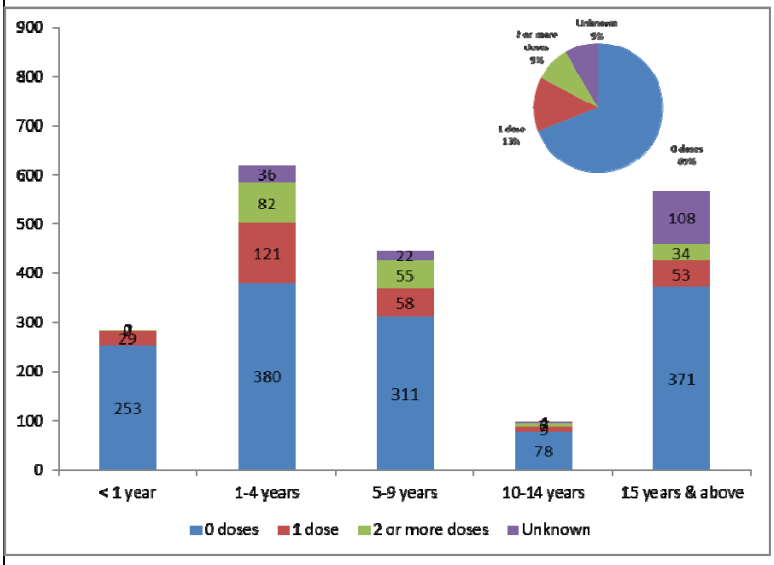
* Data as of week no. 13, 31 March 2019

Fever with Rash Surveillance, 2019* (week no.13)

State/Region	Total Population	Expected Non-measles suspected measles Cases	Suspected cases reported	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	239	109	0	9	0	13	108	16.93	0.20
Bago	5177071	104	481	192	39	8	0	25	217	44.62	0.48
Chin	532750	11	12	3	0	0	0	7	2	5.63	1.31
Kachin	1625316	33	13	7	0	0	0	4	2	4.31	0.25
Kayah	310330	6	37	16	1	0	1	1	18	54.78	0.32
Kayin	1664092	33	148	39	36	3	0	2	68	45.07	0.12
Magway	4327568	87	144	40	0	1	0	8	95	9.24	0.18
Mandalay	6206034	124	308	143	76	56	0	30	3	35.29	0.48
Mon	2321587	46	142	40	9	0	0	11	82	21.11	0.47
Nay Pyi Taw	1111897	22	69	15	3	4	0	7	40	16.19	0.63
Rakhine	2846882	57	110	41	0	1	1	13	54	14.40	0.46
Sagaing	5646315	113	262	31	12	0	0	74	145	7.62	1.31
Shan East	845364	17	80	15	45	0	0	1	19	70.98	0.12
Shan North	2507456	50	130	14	50	0	0	2	64	25.52	0.08
Shan South	2413792	48	182	35	115	3	0	8	21	62.14	0.33
Tanintharyi	1528308	31	53	5	0	0	0	6	42	3.27	0.39
Yangon	6848946	137	1303	760	12	25	3	97	406	112.72	1.42
National	**52351081**	**1047**	**3713**	**1505**	**398**	**110**	**5**	**309**	**1386**	36.35	**0.59**

Total suspected outbreaks– 52 ***Confirmed measles outbreaks—50*** ***Non Measles/Rubella outbreaks—2***

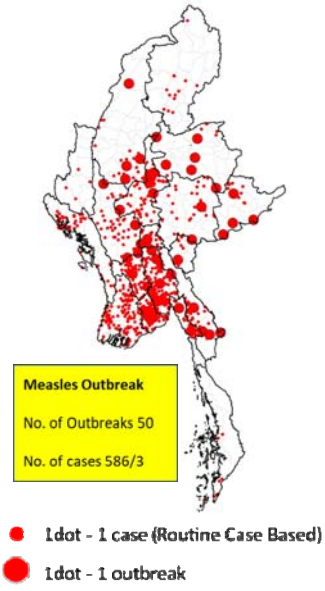
Age and Vaccination Status of Confirmed Measles cases, 2019* (n=2013)



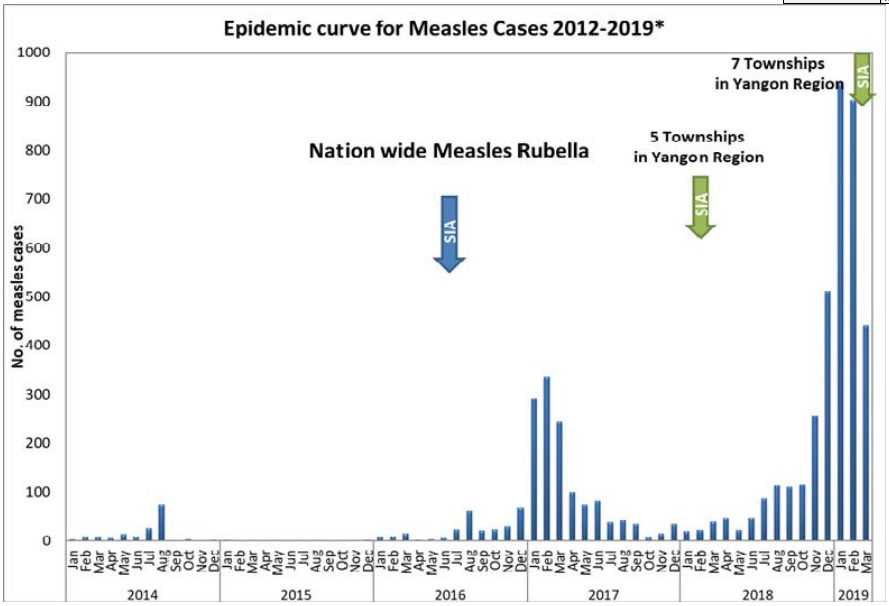
Occurrence of measles outbreak

State/Region	Township
Ayeyarwady Region	Mawlamyinegyun
Bago Region	Bago
	Kyaukkyi
	Kyauktaga
	Taungoo
	Waw
	Yedashe
	Letpadan
	Paungde
	Pyay
Kayah State	Hpasawng
Kayin State	Hlaingbwe
	Kawkareik
	Kyainseikgyi
Magway Region	Aunglan
	Chauk
	Myothit
	Pauk
Mandalay Region	Amarapura
	Chanayethazan
	Chanmyathazi
	Kyaukse
	Madaya
	Mahaaungmyay
	Thabeikkyin
Mon State	Bilin
	Mawlamyine
Naypyitaw	Det Khi Na Thi Ri
	Lewe
Sagaing Region	Chaung-U
	Hkamti
	Khin-U
	Tabayin
Shan State (East)	Mongping
	Tachileik
Shan State (North)	Kyaukme
	Lashio
Shan State (South)	Mawkmai
	Monghsu
	Nansang
Yangon Region	Dagon Myothit (North)
	Dagon Myothit (Seikkan)
	Dagon Myothit (South)
	Insein
	Mingaladon
	North Okkalapa
	Tamwe

Spot Map of Measles cases



Epidemic curve for Measles Cases 2012-2019*



CRS Surveillance

Total no. of serum sample received - None

Total no. of serum sample tested - None

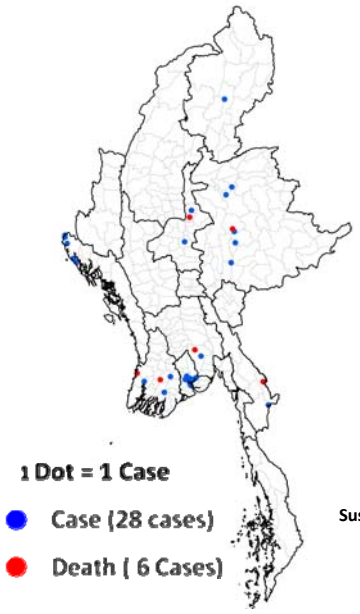
Data source: routine case based surveillance and outbreaks

* Data as of week no. 13, 10 April 2019

Diphtheria, 2019*

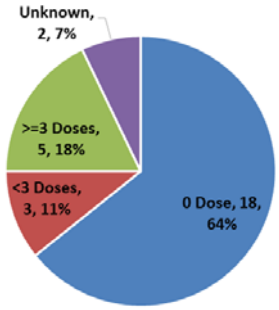
Reported Suspected Diphtheria cases and deaths in State and Region

State/Region	Total no. of cases	Total no. of death
Ayeyarwady	3	2
Bago	1	1
Chin	0	0
Kachin	1	0
Kayah	0	0
Kayin	1	1
Magway	0	0
Mandalay	2	1
Mon	0	0
Nay Pyi Taw	0	0
Rakhine	5	0
Sagaing	0	0
Shan East	0	0
Shan North	2	0
Shan South	3	1
Tanintharyi	0	0
Yangon	10	0
Grand Total	28	6

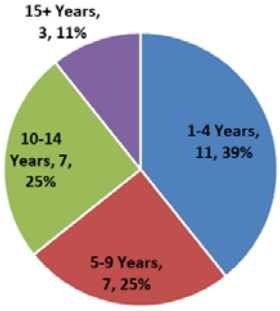


Percentage of Laboratory Confirmed Diphtheria Cases

Immunization Status of Suspected Diphtheria Cases



Suspected Diphtheria Cases by Age group



Pertussis (Whooping Cough), 2019*

- No reported Whooping Cough case in March'19

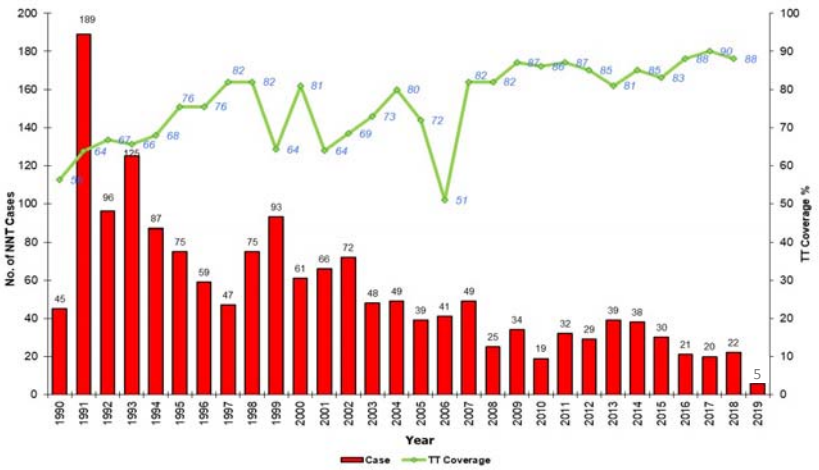
Neonatal Tetanus, 2019*

Reported NNT cases and deaths in State and Region

State/Region	Township	Cases	Deaths
Kachin	Tsawlaw	1	0
	Waingmaw	1	1
Shan State (South)	Loilen	1	1
	Nansang	1	1
Rakhine	Sittwe	1	0
Total Reported		**5**	**3**

Place of birth among reported NNT cases		Reported NNT cases are delivered by		Vaccination stauts of mother during pregnancy	
Hospital		Doctor		0 Dose	4
Health Center		BHS			
Private Hospital		Trained TBA			
Home	5	TBA	2	1 Dose	1
Other		Other	1		
Unknown		Not Attended	2	>=2 Doses	0
		Unknown			
Total	**5**	**Total**	**5**	**Total**	**5**

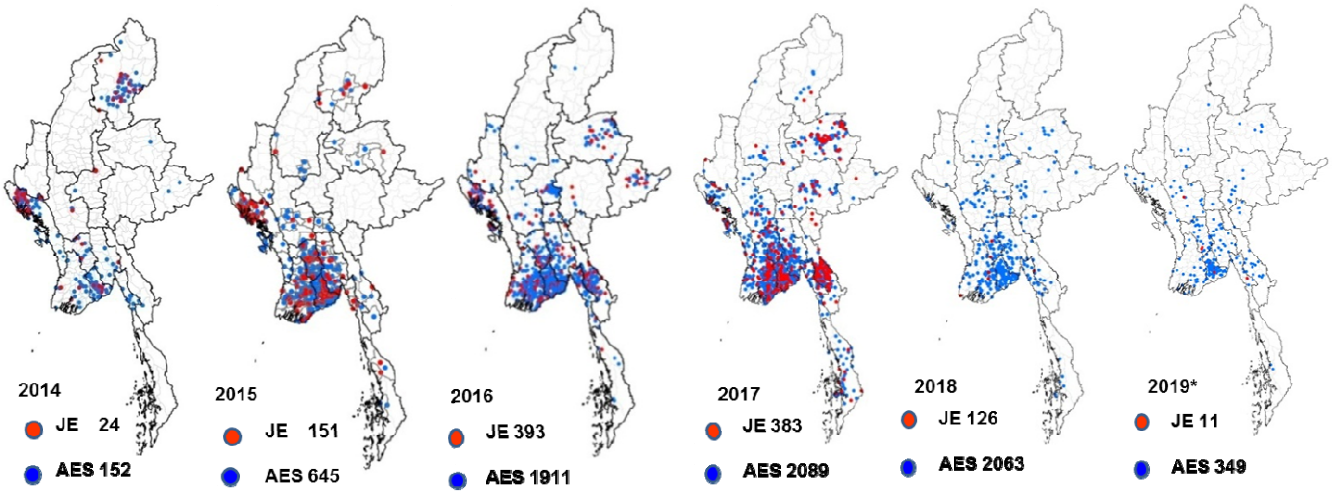
TT2 coverage and Neonatal tetanus cases (1990-2019*)



* Data as of week no. 13, 31 March 2019

Acute Encephalitis Syndrome

Reported AES cases & JE positive cases (2014-2019*), Myanmar

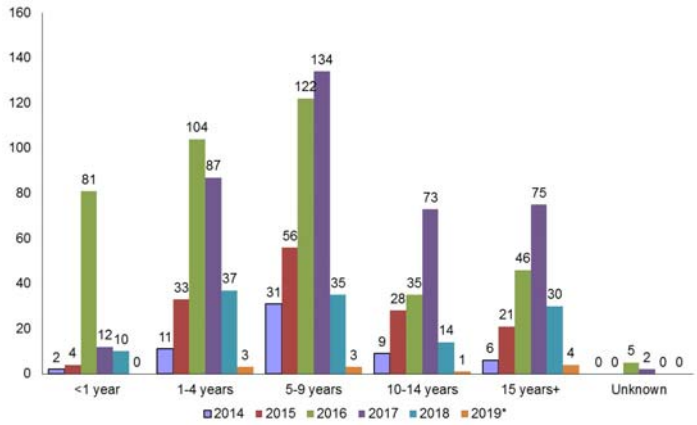


1 Dot = 1 Case

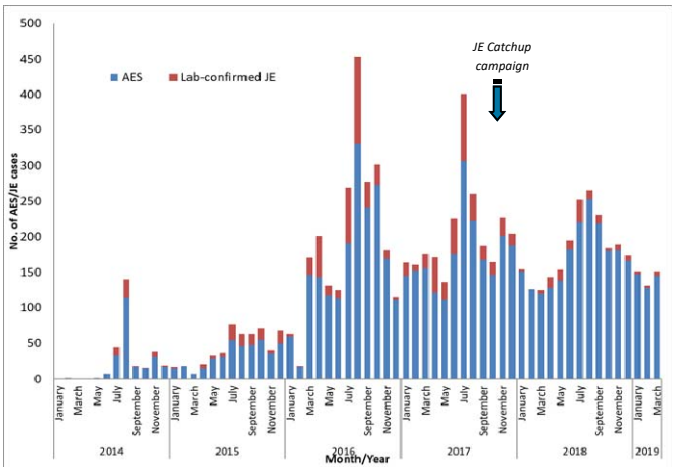
Region/State-wise Occurrences of JE 2014-2019*

Region/State	2014		2015		2016		2017		2018		2019	
	AES	JE Positive	AES	JE Positive	AES	JE Positive	AES	JE Positive	AES	JE Positive	AES	JE Positive
Ayeyawady	12	4	90	21	231	45	259	51	185	15	25	0
Bago	16	7	86	28	213	53	256	49	200	11	39	3
Chin	0	0	1	1	11	3	2	1	4	1	0	0
Kachin	10	1	17	5	8	1	7	2	14	3	0	0
Kayah	0	0	0	0	1	1	15	6	15	3	5	0
Kayin	0	0	6	1	136	37	165	65	63	10	14	0
Magway	1	1	10	4	30	4	53	6	122	17	18	1
Mandalay	5	3	2	0	122	19	6	1	155	2	0	0
Mon	5	0	29	5	60	8	61	13	50	4	10	1
Naypyitaw	0	0	1	0	5	2	12	1	15	1	1	0
Rakhine	47	2	126	46	120	26	83	17	60	4	10	0
Sagaing	0	0	6	1	52	9	13	2	83	5	3	0
Shan East	0	0	1	0	29	8	5	2	6	2	0	0
Shan North	0	0	4	0	90	16	83	42	83	19	5	0
Shan South	0	0	0	0	24	2	60	16	82	5	9	0
Tanintharyi	1	0	6	3	38	4	45	11	19	0	2	0
Yangon	55	6	265	36	771	155	889	92	881	24	198	6
Hospital data							55	6	26	0	10	0
Total	152	24	645	151	1911	393	2089	383	2063	126	349	11

JE incidence: lab confirmed cases by age groups 2014-2019*



Lab confirmed and reported AES cases by months 2014-2019*



* Data as of week no. 13, 31 March 2019

Incidence of Vaccine preventable diseases (VPD)

	2014	2015	2016	2017	2018	2019*
Diphtheria	**29**	**87**	**136**	**68**	**187**	**28**
Measles	**122**	**6**	**266**	**1729**	**1985**	**2013**
Pertussis	**5**	**5**	**2**	**4**	**28**	**0**
Polio	**0**	**0**	**0**	**0**	**0**	**0**
Rubella	**30**	**34**	**10**	**6**	**13**	**5**
Neonatal tetanus	**32**	**30**	**21**	**20**	**22**	**5**
Japanese encephalitis	**24**	**151**	**393**	**383**	**126**	**11**

* Data as of week no. 13, 31 March 2019

Incidence of Vaccine Preventable Diseases (VPD) by State and Region, 2019*

State/Region	Diphtheria	Pertussis	Neonatal tetanus	Japanese encephalitis
Ayeyarwady	3	0	0	0
Bago	1	0	0	3
Chin	0	0	0	0
Kachin	1	0	2	0
Kayah	0	0	0	0
Kayin	1	0	0	0
Magway	0	0	0	1
Mandalay	2	0	0	0
Mon	0	0	0	1
Nay Pyi Taw	0	0	0	0
Rakhine	5	0	1	0
Sagaing	0	0	0	0
Shan East	0	0	0	0
Shan North	2	0	0	0
Shan South	3	0	2	0
Tanintharyi	0	0	0	0
Yangon	10	0	0	6
National	28	0	5	11

* Data as of week no. 13, 31 March 2019

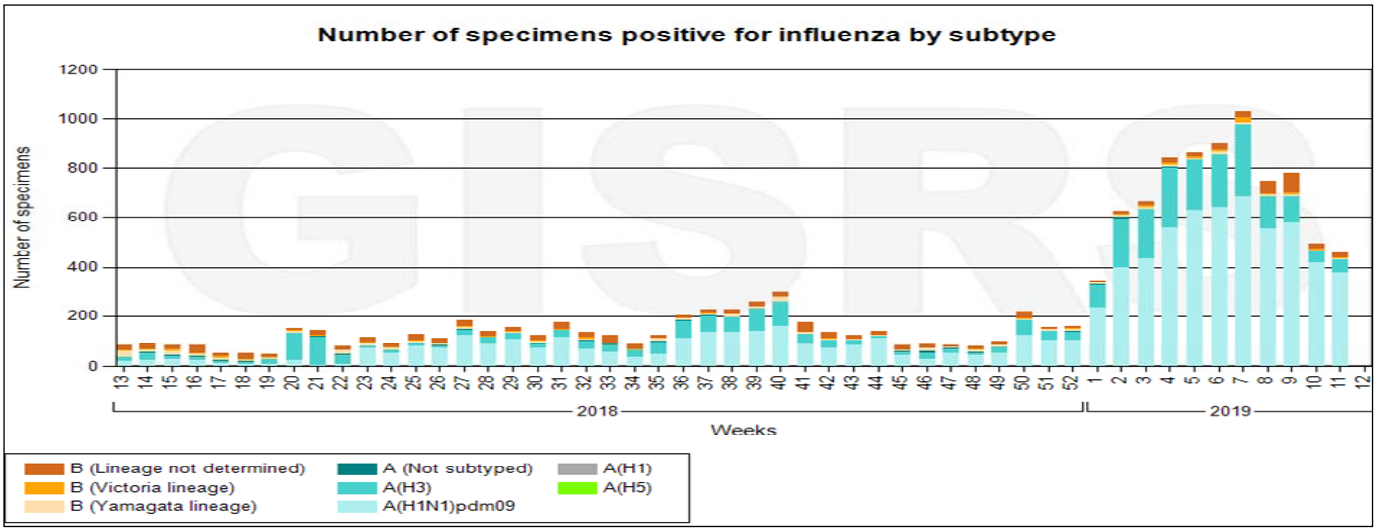
DISEASE OUTBREAK 2019*

No.	Disease	January– February			March		
		Events	Cases	Deaths	Events	Cases	Deaths
1.	Anthrax	1	2	0	0	0	0
2.	Chicken pox	8	276	0	3	35	0
3.	Diarrhoea	3	72	1	1	9	0
4.	Diphtheria	19	19	5	5	9	1
5.	Food Poisoning	12	515	0	2	53	0
6.	Measles	48	414	3	2	172	0
7.	Meningitis	5	5	1	0	0	0
8.	Mumps	0	0	0	0	0	0

* Data as of week no. 13, 31 March 2019

Myanmar influenza surveillance report

Number of specimens positive for influenza by Southern Hemisphere subtype

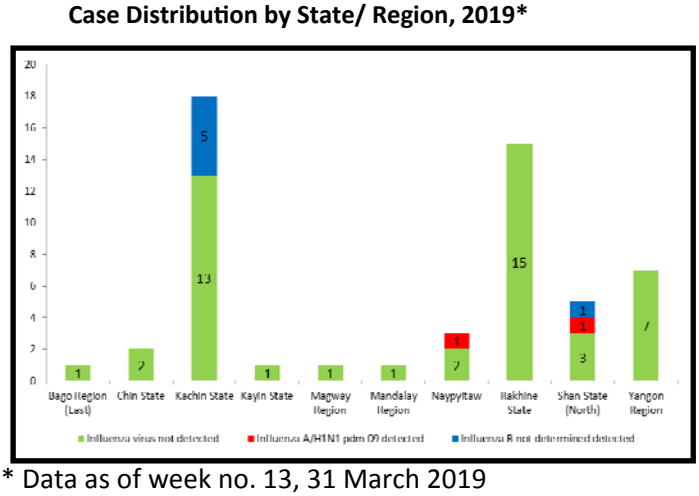


Myanmar Influenza Surveillance report, 2019* (Hospital Distribution)

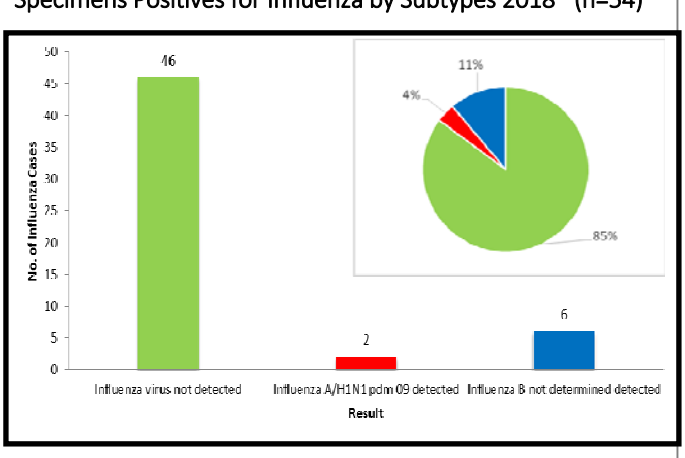
Name of Hospital	A/H1N1 pdm 09 detected	B not determined detected	virus not detected	Total
Sentinal Hospitel				
1000 Bedded General Hospital, Nay Pyi Taw	0	0	0	0
Thingangyun Sanpya General Hospital (T.G.H)	0	0	3	3
Mandalay General Hospital	0	0	0	0
Muse Township Hospital	1	1	3	5
Myawaddy District Hospital			1	1
Myit Kyi Na General Hospital	0	5	13	18
Sittwe General Hospital	0	0	15	15
Yangon General Hospital (Y.G.H)	0	0	4	4
Other Hospital/Source	1	0	7	8
Total	**2**	**6**	**46**	**54**

ILI/SARI sentinel surveillance sites

Case Distribution by State/ Region, 2019*



Specimens Positives for Influenza by Subtypes 2018* (n=54)



* Data as of week no. 13, 31 March 2019

Fever with Rash Surveillance

Since 2007 fever with rash case-based surveillance system has been established to monitor progress toward measles elimination and rubella control, confirmation with accredited laboratory within the Global Measles and Rubella Laboratory Network.

1. Objective

To detect, investigate, and classify all the fever with rash cases and to respond to the confirmed outbreaks

2. Case definition

(a) Suspected case of measles or rubella

A patient **with** fever and maculo-papular (non-vesicular) rash, or a patient whom a health-care worker suspects has measles or rubella irrespective of the age.

(b) Measles or rubella outbreak

If there was a clustering of ≥ five suspected cases within a district or geographical area with population equiva lent to 100,000 within a period of four weeks, it is defined a suspected measles/rubella outbreak.

3. Case notification and reporting

Health-care workers or other informers should immediately notify and report every suspected case to the local health authority/ Township Public Health Officer (TPHO)/ Township Health Officer (THO).

4. Case investigation

Case investigation is important to confirm the disease and identify the magnitude of public health response required and it should be within 48 hours of case reporting using standard Fever with Rash Case Investigation Form.

5. Specimen collection and transportation

(a) Serology

During outbreaks, 5-10 blood specimens should be collected from suspected cases within 4 – 28 days after the onset of he rash.

(b) Viral isolation

Throat swabs should be collected within 5 days of onset of rash for viral detection and isolation to identify the source of infection, whether they are indigenous or imported. Urine can be collected for virology if throat swab is difficult to obtain. It is preferable to obtain the first urine passed in the morning.

6. Case Classification

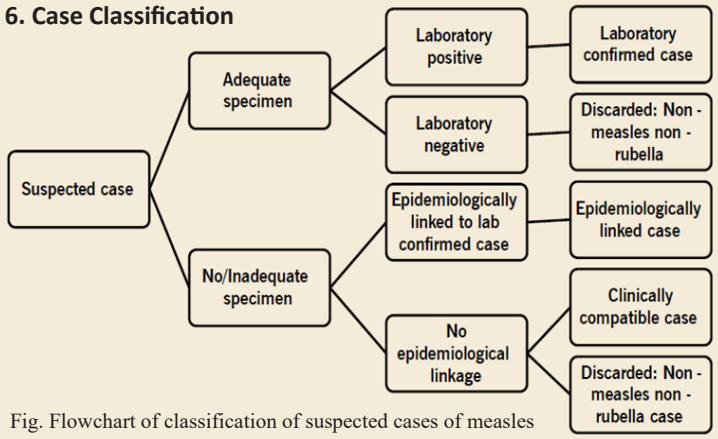


Fig. Flowchart of classification of suspected cases of measles

Measles and rubella surveillance performance indicators

No	Indicators	Targets
1	Reporting rate of discarded non-measles non-rubella cases per 100,000 population	≥ 2
2	% Weekly zero reports received among expected (Completeness)	≥80%
3	% Weekly zero reports received on time (Timelineless)	≥80%
4	Proportion of districts reporting at 2 discarded non-measles non-rubella case per 100,000 population	≥80%
5	Proportion of suspected cases with adequate investigation initiated within 48 hours of notification	≥80%
6	Proportion of suspected cases with adequate specimen collection	≥80%
7	Proportion of specimens received at the laboratory within 5 days of collection	≥80%
8	Proportion of serology results reported by the laboratory within 4 days of specimen receipt	≥80%

7. Case management

There is currently no specific antiviral treatment for measles or rubella. Administration of vitamin A to children with measles has been shown to decrease both the severity of disease and the case-fatality rate.

Vitamin A Schedule		
Age	**Immediately on diagnosis**	**Next day**
< 6 months	50,000 IU	50,000 IU
6-11 months	100,000 IU	100,000 IU
> 12 months	200,000 IU	200,000 IU

Suspected measles patients should be isolated until 4 days after appearance of rash.

8. Public Health Intervention

Public health intervention should be initiated for all confirmed cases of measles and/ or rubella

Public health response:

(a) Conduct contact tracing to determine who infected the case in addition to whom the case may have infected; for suspected rubella cases, determine the pregnancy status for the contacts.
(b) Enhance case-based surveillance, including community survey for additional cases
(c) Review population immunity/gaps
(d) Enhance population immunity against measles and rubella.

* Data as of week no. 13, 31 March 2019

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	No. of discarded non-polio AFP cases among 15 years of age group / Total number of children < 15 years of age x 100000
2. Reported AFP cases with 2 specimens collected = 14 days since onset.	= 80%)	No of AFP cases with 2 specimens collected within 14 days of paralysis onset / Total number of children < 15 years of age x 100

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

Data source:

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

CEU produced this bulletin with the support of EPI Unit, WHO Country Office Myanmar

Address: Central Epidemiology Unit, Department of Public Health, Ministry of Health and Sports
Phone: +95 67 3431432 Fax : +95 67 3431434 Email address: dophceu@gmail.com