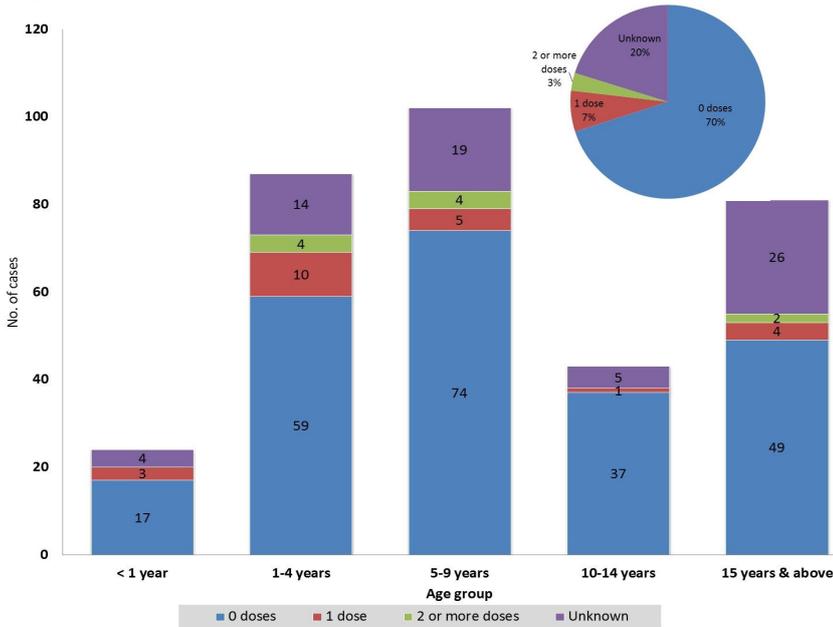


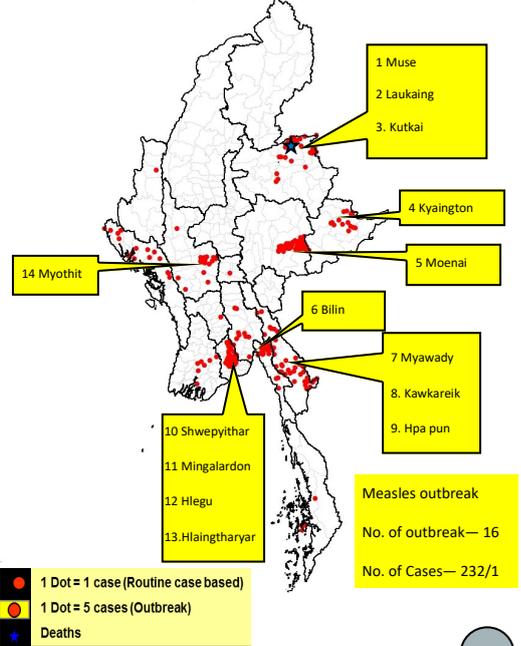
Fever with Rash Surveillance, 2018*

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 measles cases
					Lab-confirmed	Epi-confirmed	Clinically confirmed					
Ayeyarwady	6437373	129	28	28	8	0	0	0	20	0	1.24	0.31
Bago	5177071	104	53	53	10	0	0	0	41	2	1.93	0.79
Chin	532750	11	4	4	1	0	0	0	3	0	1.88	0.56
Kachin	1625316	33	18	18	0	0	0	1	10	7	0.00	0.62
Kayah	310330	6	0	0	0	0	0	0	0	0	0.00	0.00
Kayin	1664092	33	55	55	36	4	0	0	12	3	24.04	0.72
Magway	4327568	87	23	14	7	12	1	0	3	0	4.62	0.07
Mandalay	6206034	124	8	8	0	0	0	1	7	0	0.00	0.11
Mon	2321587	46	35	21	10	15	1	0	8	1	11.20	0.39
Nay Pyi Taw	1111897	22	8	7	0	0	1	0	7	0	0.90	0.63
Rakhine	2846882	57	32	32	16	0	0	1	13	2	5.62	0.46
Sagaing	5646315	113	5	5	0	0	0	0	2	3	0.00	0.04
Shan East	845364	17	16	9	6	9	0	0	0	1	17.74	0.00
Shan North	2507456	50	52	31	23	28	0	0	1	0	20.34	0.04
Shan South	2413792	48	68	31	8	38	1	0	10	11	19.47	0.41
Tanintharyi	1528308	31	11	11	5	0	0	1	0	5	3.27	0.00
Yangon	6848946	137	192	149	48	46	1	4	92	1	13.87	1.36
National	52351081	1047	608	476	178	152	5	8	229	36	6.40	0.44

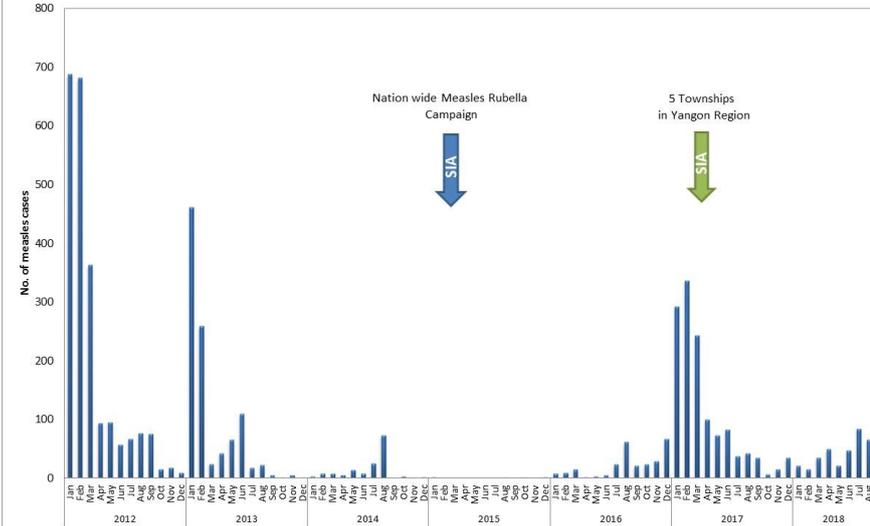
Age and Vaccination Status of confirmed Measles cases, 2018*



Spot map of measles cases, 2018*



Epidemic curve for Measles Cases 2012-2018*



CRS Surveillance

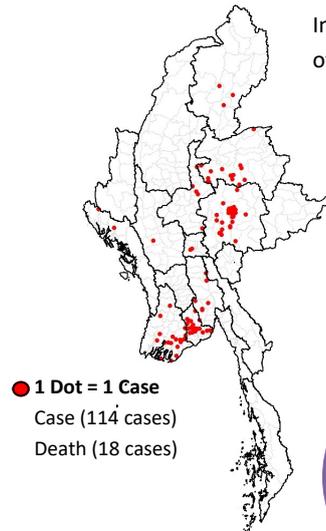
Total no. of serum sample received - 7
Total no. of serum sample tested— 7
Laboratory Results - Negative

* Data as of week no. 35, 31 August 2018

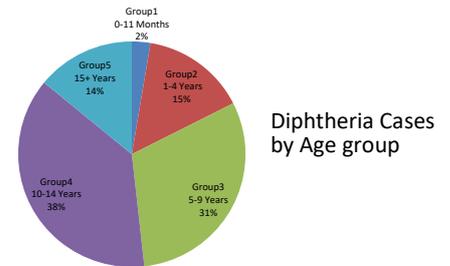
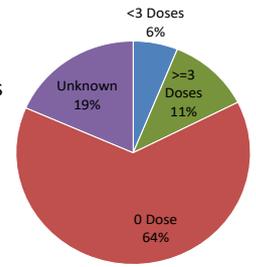
Diphtheria, 2018*

Reported Diphtheria cases and deaths in State and Region

State/Region	Probable	Confirmed	Total
Ayeyarwady	16	2	18
Bago (East)	4	1	5
Kachin	2	1	3
Magway		1	1
Mandalay	4		4
Naypyitaw	1	1	2
Rakhine	2		2
Shan State (North)	15	1	16
Shan State (South)	30	6	36
Yangon	22	5	27
Grand Total	96	18	114

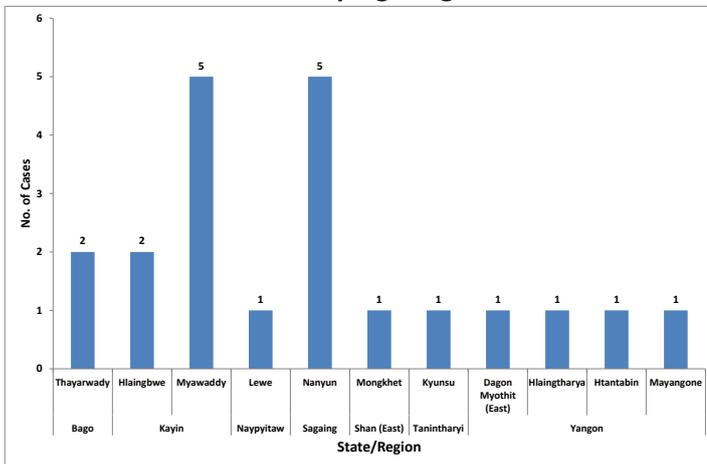


Immunization Status of Diphtheria Cases



Pertussis (Whooping Cough), 2018*

Cases distribution of whooping cough cases in State and Region



Age group	0 Dose	1 Dose	2 Doses	3 Doses	Total
0-11 Months	5	1	1	1	8
1-4 Years	1				1
5-9 Years	4			1	5
10-14 Years	7				7
Grand Total	17	1	1	2	21

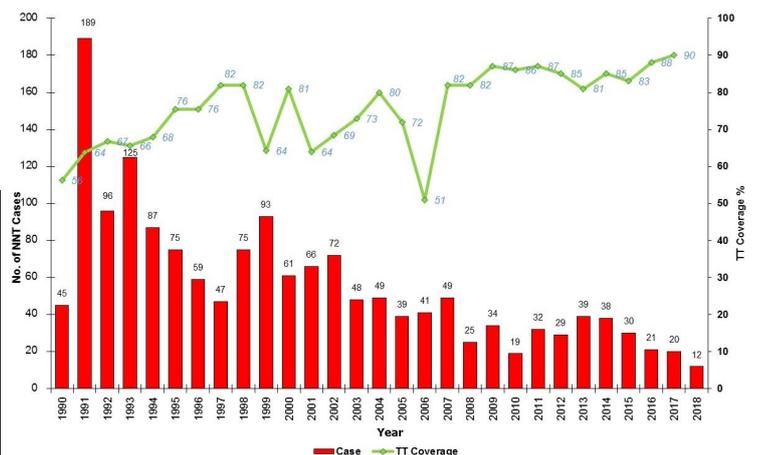
Neonatal Tetanus, 2018*

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
Rakhine	Sittwe	1	0
Sagaing	Shwebo	1	1
Tanintharyi	Myeik	1	0
Yangon	Dagon Myothit (South)	1	1
	Hlaingtharys	2	1
Total Reported		12	7

Place of birth among reported NNT cases	Reported NNT cases are delivered by	Vaccination status of mother during pregnancy	
		0 Dose	>=2 Doses
Hospital	Doctor	8	
Health Center	BHS	2	
Private Hospital	Trained TBA		2
Home	TBA		2
Other	Other	4	
Unknown	Not Attended	2	
Total	Total	12	12

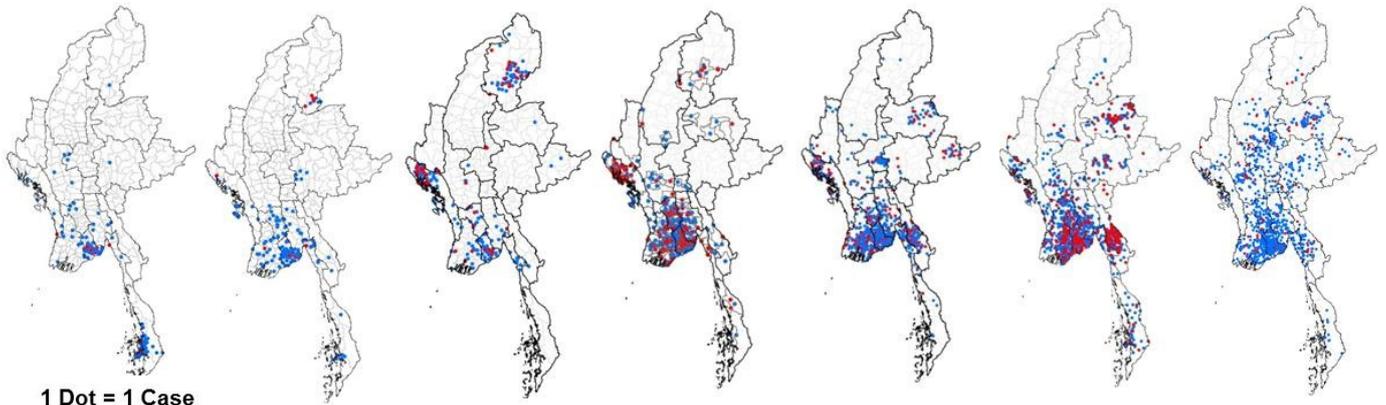
TT2 coverage and Neonatal tetanus cases (1990-2018*)



* Data as of week no. 35, 31 August 2018

Acute Encephalitis Syndrome

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



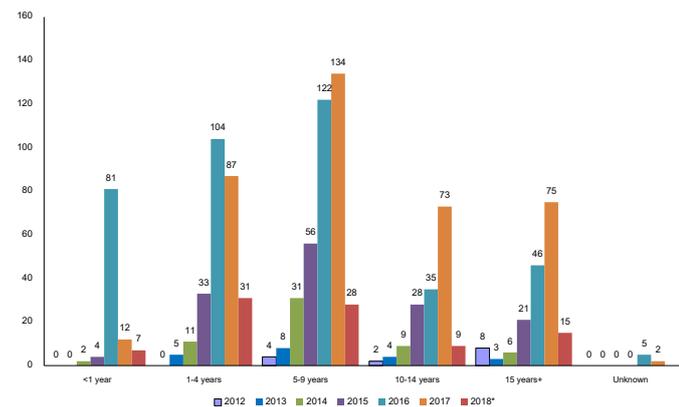
1 Dot = 1 Case

2012	2013	2014	2015	2016	2017	2018
● JE 14	● JE 17	● JE 24	● JE 151	● JE 393	● JE 383	● JE 90
● AES 176	● AES 226	● AES 152	● AES 645	● AES 1911	● AES 2089	● AES 1262

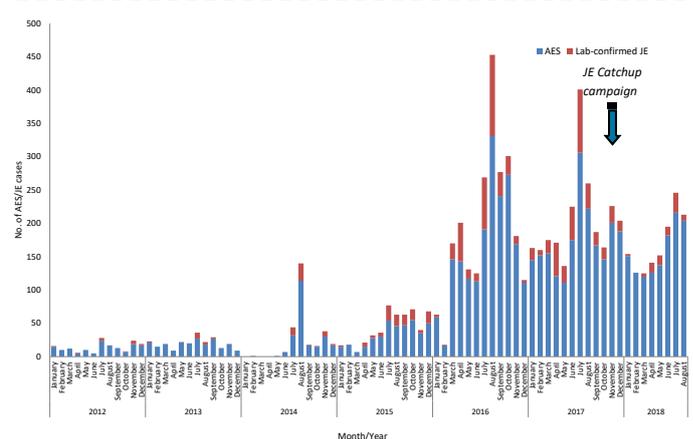
Region/State-wise Occurrences of JE 2012-2018*

Region/State	2012		2013		2014		2015		2016		2017		2018*	
	AES	Lab+ive JE	AES	Lab+ive JE	AES	Lab+ive JE	AES	Lab+ive JE						
Ayeyawady	7	0	21	1	12	4	90	21	231	45	259	51	127	14
Bogo	9	0	23	0	16	7	86	28	213	53	256	49	135	7
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	7	3
Kayah	0	0	0	0	0	0	0	0	1	1	15	6	8	1
Kayin	0	0	2	0	0	0	6	1	136	37	165	65	30	7
Magway	4	0	1	0	1	1	10	4	30	4	58	6	64	12
Mandalay	1	0	0	0	5	3	2	0	122	19	6	1	81	2
Mon	2	1	10	2	5	0	29	5	60	8	61	13	35	1
Naypyitaw	0	0	0	0	0	0	1	0	5	2	12	1	14	1
Rakhine	6	1	9	1	47	2	126	46	120	26	88	17	28	3
Sagaing	0	0	0	0	0	0	6	1	52	9	18	2	48	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	57	13
Shan South	0	0	0	0	0	0	0	0	14	2	60	16	52	2
Tanintharyi	61	5	8	0	1	0	6	3	18	4	45	11	11	0
Yangon	84	7	145	9	55	6	265	36	771	155	889	92	544	16
Unknown State/Region											55	6	13	0
Total	176	14	226	17	152	24	645	151	1911	393	2089	383	1262	90

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



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



* Data as of week no. 35, 31 August 2018

Incidence of Vaccine preventable diseases (VPD)

	2013	2014	2015	2016	2017	2018*
Diphtheria	38	29	87	136	68	114
Measles	1010	122	6	266	1293	335
Pertussis	14	5	5	2	4	21
Polio*	0	0	0	0	0	0
Rubella	23	30	34	10	6	8
Neonatal tetanus	39	32	30	21	20	12
Japanese encephalitis	3	50	113	393	442	90

* Data as of week no. 35, 31 August 2018

Incidence of Vaccine preventable diseases (VPD) by State and Region, 2018*

State/Region	Diphtheria	Pertussis	Neonatal tetanus	Japanese encephalitis
Ayeyarwady	18	0	1	14
Bago	5	2	1	7
Chin	0	0	0	1
Kachin	3	0	1	3
Kayah	0	0	0	1
Kayin	0	7	0	7
Magway	1	0	2	12
Mandalay	4	0	1	2
Mon	0	0	0	1
Nay Pyi Taw	2	1	0	1
Rakhine	2	0	1	3
Sagaing	0	5	1	5
Shan East	0	1	0	2
Shan North	16	0	0	13
Shan South	36	0	0	2
Tanintharyi	0	1	1	0
Yangon	27	4	3	16
National	114	21	12	90

* Data as of week no. 35, 31 August 2018

Myanmar influenza surveillance report

Influenza Data 2018*(Hospital Distribution)

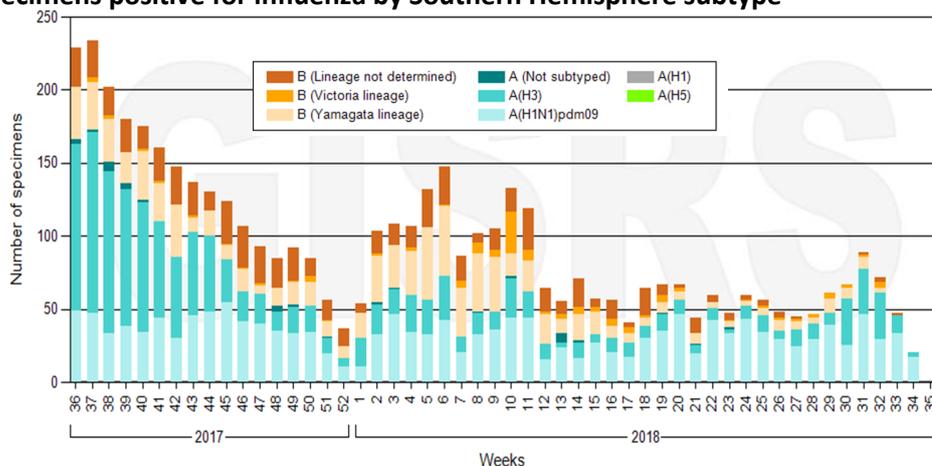
Name of Hospitals	No. of Samples receipt	No. of Samples Positive	Type of Influenza
Sentinal Hospital			
Yangon General Hospital	20	2	Influenza B
Naypyitaw 1000 bedded Hospital	2	1	Influenza A/H3
Thingangyun Sanpya General Hospital	15	4	Influenza B
Mandalay General Hospital	1	0	
Myitkyina General Hospital	61	4	Influenza B
Sittwe General Hospital	2	0	
Myawaddy District Hospital	20	0	
Muse Township Hospital	16	6	Influenza B, Influenza A/H1N1 pdm 09
Others			
North Okkalapa General Hospital	1	0	
Taunggyi	5	3	Influenza A/H3
Others	12	2	Influenza A/H3
Total	155	22	

ILI/SARI sentinel surveillance sites

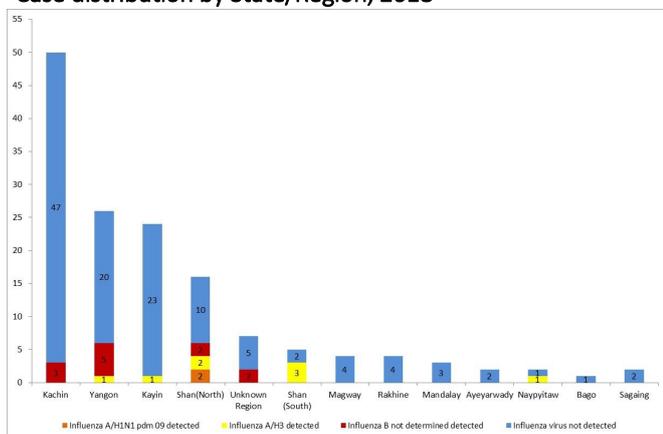
- ◆ Naypyidaw 1000 bedded hospital
- ◆ Yangon general hospital
- ◆ Yangon Thingyangyun hospital
- ◆ Mandalay general hospital
- ◆ Myitkyina general hospital
- ◆ Sittwe general hospital
- ◆ Myawaddy township hospital
- ◆ Muse township hospital



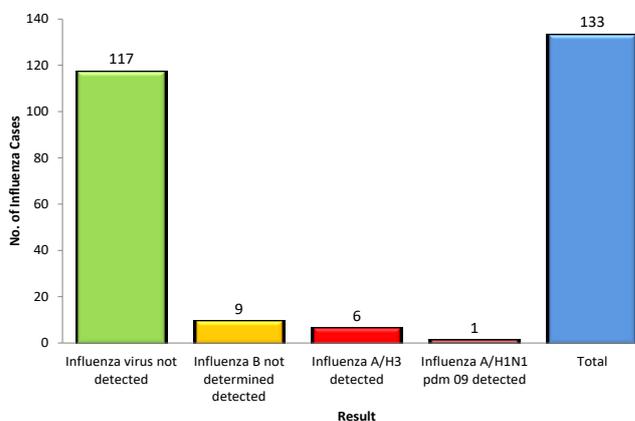
Number of specimens positive for influenza by Southern Hemisphere subtype



Case distribution by State/Region, 2018*



Influenza Data, 2018*



DISEASE OUTBREAK 2018*

No.	Disease	Events	Cases	Deaths
1.	Measles	17	232	1
2.	Diphtheria	71	114	18
3.	Food Poisoning	43	1472	1
4.	Diarrhoea	14	567	11
5.	Meningitis	13	13	9
6.	Chicken pox	5	48	0
7.	Anthrax	3	19	0
8.	Mumps	3	329	1

* Data as of week no. 35, 31 August 2018

Evaluation of Acute Flaccid Paralysis (AFP), other Vaccine Preventable Diseases (VPDs) & Influenza Like Illness (ILI) surveillance

Acute Flaccid Paralysis Surveillance

Myanmar was certified polio-free on 27 March 2014 together with all countries in the South East Asian Region of WHO. As of August 2018, AFP surveillance performance indicators meet the standard criteria at national level with the annualized non-polio AFP rate of 1.44 and percentage of adequate stool collection of 96%. However, some of the areas such as Ayeyarwady, Mon, Sagaing, Shan (South) and Yangon are not achieving the target for annualized non-polio AFP rate. In order to achieve the standard performance at those areas, Regional Surveillance Officers of those States and Regions are setting up their work plan focused on clinical advocacy meetings with physicians and pediatricians and awareness raising about AFP surveillance among Basic Health Staffs and Voluntary Health Workers with the support of the respective State and Region Public Health Departments.

Fever with Rash Surveillance

On reviewing the case-based measles surveillance performance indicators for achieving measles elimination (2020), proportion of reported fever with rash cases from whom blood sample have been collected is more than 80% (476 out of 608). However, more than 78.2 % of reported cases are found to be laboratory confirmed measles cases. That exceed the target of less than 10%. Therefore, awareness of fever with rash surveillance among the health staff should be raised. Although the reported number of fever with rash cases per 100 000 population is lower than the expected number of non-measles suspected measles cases (608 vs1047) up to August 2018, it can be achieved at the end of the year by strengthening fever with rash surveillance at all States and Regions especially at Mandalay, Sagaing and Kayah.

Overall annualized incidence of measles cases at national level is 6.4 which is greater than the elimination target of less than one per one million population. And there were 17 measles outbreaks were reported nationally in 2018. The highest number of measles confirmed cases were detected among 5-9 years age group. On assessment of the immunization status of the confirmed measles cases reported in 2018, 70 % of the cases were unimmunized. Therefore, in order to achieve the measles elimination in 2020, Myanmar has to strengthen surveillance performance as well as routine immunization.

Diphtheria case-based surveillance

Out of 114 reported cases of diphtheria with 14 deaths reported from the whole country as of July 2018, only 18 cases were laboratory confirmed diphtheria. Yangon Region, Shan (South) State, Ayeyarwady Region and Shan (North) State reported the highest number of cases. Reported diphtheria cases were most common in 10-14 years age group and more than half of the these diphtheria cases were unimmunized children.

Pertussis

21 cases of whooping cough were reported from 7 States/Regions in 2018 (as of August 31). On immunization assessment, more than 80% of the cases were unimmunized and most of them are age between 10-14 years.

Neonatal Tetanus

Maternal and Neonatal Tetanus Elimination has been achieved in Myanmar since 10 May 2010. That status is maintained by strengthening surveillance and routine immunization. On reviewing the neonatal tetanus surveillance system, number of reported cases at national and subnational level still maintains the elimination status of 1/1000 population. More than 80% of the neonatal tetanus babies were born by home delivery and 67% of their mothers were unimmunized during the pregnancy.

Acute Encephalitis Syndrome (AES) /Japanese Encephalitis (JE) Surveillance

With the efforts on strengthening of AES surveillance in Myanmar, the reported AES cases were found to be increased from 2015 to 2017. In 2017, 383 out of 2089 reported cases of AES were JE antibody positive. After Mass Vaccination Campaign of Japanese Encephalitis at the end of 2017, JE positive cases were dramatically reduced. In 2018, 7.1% of reported AES cases were confirmed as Japanese Encephalitis (90 out of 1262).

Congenital Rubella Syndrome (CRS) Surveillance

For the CRS surveillance, only 7 cases were reported for Congenital Rubella Syndrome Surveillance in 2018. Therefore, CRS surveillance system has to be strengthened with greater efforts.

Influenza Like Illness (ILI) surveillance

With the aims of monitoring changes in antigenicity of the influenza viruses, guiding the selection of strains for the annual influenza vaccine and sharing information with other countries through WHO Global Influenza Surveillance and Response System (GISRS) for pandemic preparedness, Influenza Like Illness (ILI) surveillance has been started in Myanmar after the 2009 pandemic. Based on the ILI/SARI surveillance at National Influenza Center (NIC) at National Health Laboratory and eight sentinel hospitals, from week 1 to week 35, 133 specimens were tested for influenza and out of which 0.8%, 4.4% and 6.8% of the specimens were tested as Influenza A/H1N1 pdm09, A/H3 and Influenza B respectively. The rest of the specimens were influenza virus negative. It is aware that more specimens were required to be collected and tested for early detection of circulation of new strain in the country which could help pandemic influenza preparedness and response.

ILI/SARI surveillance has been strengthened by sending out the instructions to all states and regions and also by enhancing clinical advocacy at the sentinel sites. The clinical advocacy has been focused on the importance of influenza virus sharing conducted by the WHO Global Influenza Surveillance and Response System (GISRS) which is vital to global pandemic preparedness. The sharing of viruses facilitates pandemic risk assessment, the development of candidate vaccine viruses, updating of diagnostic reagents and test kits, and surveillance for resistance to antiviral medicines.

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.

CRS Surveillance

Congenital Rubella Syndrome (CRS) 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%)	$\frac{\text{No of AFP cases with 2 specimens collected within 14 days of paralysis onset}}{\text{Total number of children < 15 years of age}} \times 100$

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)

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