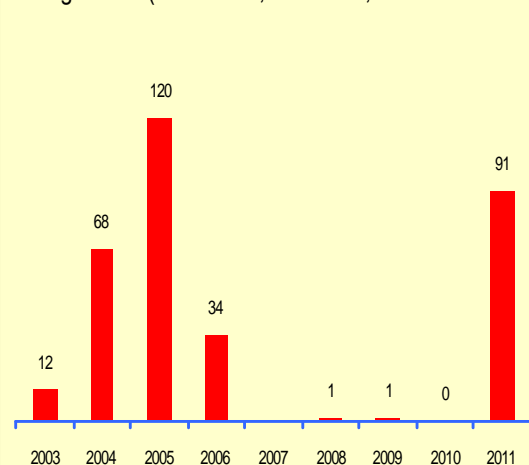


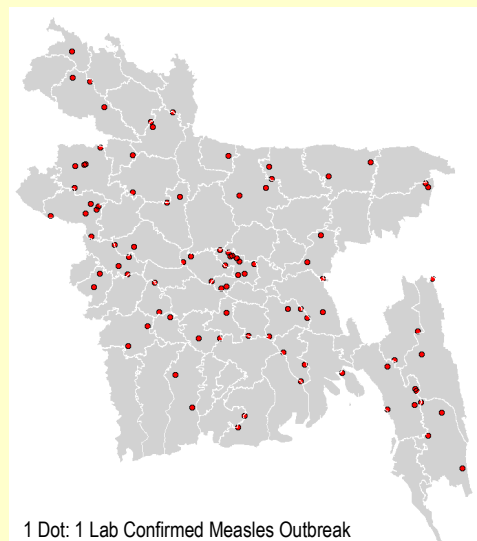


Measles Surveillance and outbreak response immunization in Bangladesh

In 1984, before routine EPI was intensified in Bangladesh, an estimated 2.6 million children developed measles every year (1984–EPI study). Following the intensification of EPI program, measles vaccine is available for the children. In 2003 Measles surveillance was incorporated in active surveillance and passive surveillance as a part of integrated vaccine preventable diseases surveillance. Bangladesh conducted Measles Catch-Up campaign in 2005-2006 for 9 months to under 10 years children, as a key strategy for sustainable measles mortality reduction. In 2008, Bangladesh introduced measles case based surveillance in passive surveillance facilities with laboratory support. Since 2003, all suspected measles outbreaks in Bangladesh are investigated with laboratory testing of a serum sample from 5-10 suspected measles cases. Bangladesh conducted measles follow-up campaign in 2010 for 9 months to under 5 years children in order to provide 2nd opportunity for the children who born after the catch up campaign. The number of lab confirmed measles outbreak reduced from 2006 through 2010 (34 in 2006, 1 in 2008, 1 in 2009 and 0 in 2010). However in 2011 Bangladesh identified 333 suspected measles outbreaks of which 91 were lab confirmed measles outbreak that is alarming. EPI-HQ initiated post outbreak response immunization in outbreak areas from May 2011 in order to prevent the transmission of diseases as well as to promote the vaccination coverage where the measles vaccination coverage for 9 months to 5 years children is below 80%. It was found that in 8 wards/areas measles vaccination coverage among 9 months to 5 years children was below 80% out of confirmed 91 measles outbreaks areas in 2011. So, it indicates that there are may be several wards/areas where measles vaccination coverage below 80%. Government of Bangladesh endorsed measles elimination plan 2011-2016 in comprehensive multi year plan of immunization 2011-2016. Hence we need to identify the low coverage wards/areas to provide special focus for ensuring improvement of coverage in order to reach measles elimination in Bangladesh.



Graph: Measles outbreaks reported, 2003-2011



1 Dot: 1 Lab Confirmed Measles Outbreak

Figure: Spot map of lab confirmed measles outbreak 2011

Government of Bangladesh endorsed measles elimination plan 2011-2016 in comprehensive multi year plan of immunization 2011-2016. Hence we need to identify the low coverage wards/areas to provide special focus for ensuring improvement of coverage in order to reach measles elimination in Bangladesh.

Surveillance Summary												
Description	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 ¹	
Number of AFP cases	1287	1365	1128	1301	1458	1619	1844	1790	1502	1537	1553	
No. of compatible cases according to virologic classification system	36	0	0	2	0	2	0	0	0	0	0	
No. of cases with isolation of wild poliovirus	0	0	0	0	0	18	0	0	0	0	0	
No. of discarded polio cases (i.e., non-polio AFP)	1251	1365	1128	1299	1458	1599	1844	1790	1502	1537	1501	
No. of cases pending classification	0	0	0	0	0	0	0	0	0	0	52	
Expected annual number of non-polio AFP cases (2/100,000 children <15 yr)*	533	549	556	563	1094	1114	1135	1153	1151	1203	1220	
AFP Surveillance Performance Indicators												
Indicators	Target	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 ¹
01 Annual Non-Polio AFP rate in children < 15 years old	≥ 2.0	2.34	2.49	2.03	2.31	2.66	2.87	3.25	3.10	2.61	2.63	2.54
02 Completeness of passive reporting from facilities	≥ 90%	65%	62%	67%	82%	91%	89%	90%	93%	91%	91%	94%
03 Timeliness of passive reporting from facilities	≥ 80%	38%	36%	62%	75%	84%	83%	85%	87%	86%	84%	87%
04 Suspected AFP cases investigated within 48 hours of notification	≥ 80%	96%	96%	98%	98%	99%	100%	99%	99%	99%	99%	99%
05 Confirmed AFP cases with 2 stool specimens collected within 14 days after paralysis onset	≥ 80%	80%	89%	90%	90%	92%	93%	92%	92%	94%	95%	95%
06 Stool specimens arriving at laboratory within 3 days after collection	≥ 80%	97%	98%	99%	99%	98%	99%	100%	100%	100%	100%	100%
07 Stool specimens arriving at laboratory in "good" condition "good" = 1. Presence of unmelted ice or temperature <8°C 2. Adequate volume (≥ 8 grams or size of ½ thumb) 3. No evidence of leakage 4. No evidence of desiccation (drying)	≥ 90%	100%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%
08 Confirmed AFP cases receiving a follow-up exam at least 60 days after paralysis onset	≥ 80%	93%	99%	100%	98%	99%	100%	100%	99%	99%	99%	97% ²
09 Stool specimens with laboratory results:												
- Within 28 days after specimen receipt (old algorithm)	≥ 80%	99%	100%	100%	100%	100%	98%	100%	-	-	-	-
- Within 14 days after specimen receipt (new algorithm)	≥ 80%							80%	93%	95%	96%	91%
10 Stool specimens from which non-polio enterovirus (NPEV) was isolated	≥ 10%	29%	28%	23%	20%	20%	15%	15%	23%	19%	19%	18%

¹ Data as of December 31, 2011; ² among cases occurring up to October 16, 2011; * Prior to 2005 NPAFP rate calculated as 1/100,000 under 15 children

AFP Surveillance Performance Indicators, 2010 - 2011

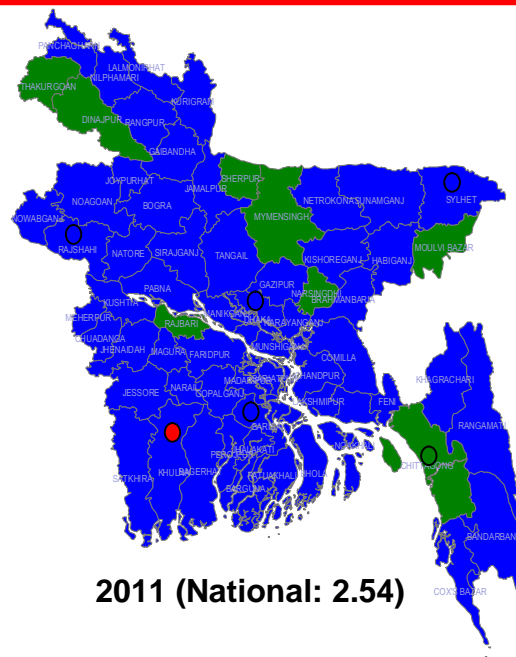
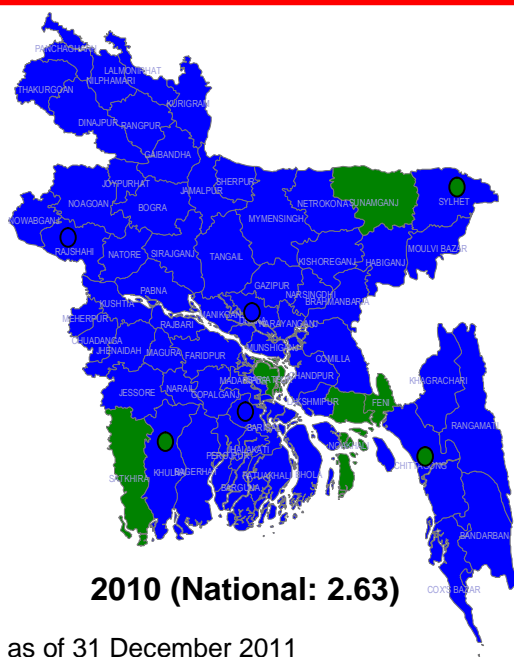
District	Minimum operational target of non-polio AFP		Total # AFP ¹		Wild polio-virus isolated		# Compatible cases		Non- Polio AFP cases ¹		Pending final classif. ¹		Annualized Non-polio AFP Rate ¹		Notification within 10 d after paralysis onset ¹		Investigation within 48 h after notification ¹		% with 2 stools within 14 days ¹		Stool sample arriving to lab within 72 hrs ¹		% with 60-day follow-up ²	
	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011
Barisal Division																								
Barguna	8	9	8	9					8	9	0	0	2.01	2.23	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Barisal (non BCC)	21	21	29	24					29	24	0	0	2.90	2.36	100%	100%	100%	100%	97%	100%	100%	100%	100%	80%
BCC only	3	3	4	3					4	3	0	0	3.78	2.79	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA
Bhola	17	17	25	32					25	32	0	0	3.12	3.93	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jhalakati	7	7	11	10					11	10	0	0	3.37	3.02	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Patuakhali	14	15	15	19					15	19	0	0	2.17	2.71	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Perojpur	11	11	19	21					19	19	0	2	3.67	3.61	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total-BAR	81	83	111	118	0	0	0	0	111	116	0	2	2.89	2.98	99%	100%	100%	100%	99%	100%	100%	100%	100%	96%
Chittagong Division																								
Bandarban	3	3	5	5					5	5	0	0	3.53	3.48	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Brahmanbaria	23	23	30	30					30	29	0	1	2.68	2.55	100%	100%	100%	100%	97%	100%	98%	97%	100%	100%
Chandpur	22	22	23	31					23	27	0	4	2.18	2.52	91%	94%	100%	100%	91%	87%	100%	100%	100%	100%
Chittagong (non CCC)	42	42	42	40					42	40	0	0	2.04	1.91	83%	98%	100%	98%	83%	93%	100%	100%	100%	100%
CCC only	21	21	18	18					18	17	0	1	1.76	1.64	94%	100%	100%	100%	94%	89%	100%	100%	100%	100%
Comilla	44	44	63	61					63	60	0	1	2.91	2.73	97%	98%	100%	98%	97%	97%	100%	100%	100%	100%
Cox's Bazar	17	17	20	26					20	26	0	0	2.41	3.09	95%	100%	100%	100%	95%	100%	100%	100%	100%	100%
Feni	12	12	7	19					7	18	0	1	1.23	3.12	100%	100%	86%	100%	100%	100%	100%	100%	100%	100%
Khagrachari	5	5	8	6					8	6	0	0	3.29	2.43	88%	83%	100%	100%	88%	83%	100%	100%	100%	100%
Lakshmipur	15	15	17	18					17	16	0	2	2.43	2.25	94%	100%	100%	100%	94%	100%	100%	100%	100%	100%
Noakhali	25	25	17	41					17	41	0	0	1.40	3.34	100%	95%	71%	98%	100%	98%	100%	100%	100%	100%
Rangamati	5	6	7	7					7	7	0	0	2.83	2.79	100%	100%	100%	100%	100%	100%	100%	100%	NA	50%
Total-CTG	234	235	257	302	0	0	0	0	257	292	0	10	2.26	2.53	94%	98%	98%	99%	94%	96%	100%	100%	100%	99%
Dhaka Division																								
Dhaka (non DCC)	24	24	45	44					45	43	0	1	3.84	3.62	93%	93%	100%	98%	98%	93%	99%	100%	100%	78%
DCC only	58	59	70	62					70	60	0	2	2.42	2.05	96%	95%	100%	100%	94%	97%	100%	98%	100%	88%
Faridpur	17	17	17	17					17	17	0	0	2.07	2.04	94%	82%	100%	100%	94%	100%	100%	100%	100%	100%
Gazipur	20	20	27	24					27	23	0	1	2.83	2.38	100%	92%	100%	100%	96%	92%	100%	100%	80%	100%
Gopalganj	11	12	16	15					16	15	0	0	2.95	2.72	88%	100%	100%	100%	88%	100%	100%	100%	100%	100%
Jamalpur	20	21	36	32					36	31	0	1	3.63	3.08	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Kishoreganj	25	25	42	34					42	33	0	1	3.49	2.70	90%	88%	95%	100%	93%	79%	100%	100%	92%	100%
Madaripur	11	11	12	14					12	14	0	0	2.25	2.59	100%	86%	92%	100%	100%	100%	100%	100%	100%	100%
Manikganj	13	13	23	18					23	18	0	0	3.75	2.89	100%	100%	100%	100%	100%	94%	98%	97%	100%	100%
Munshiganj	13	13	20	16					20	15	0	1	3.29	2.43	100%	94%	100%	100%	95%	94%	100%	97%	100%	67%
Mymensingh	43	43	48	42					48	42	0	0	2.28	1.97	88%	90%	100%	100%	96%	93%	100%	100%	100%	100%
Narayanganj	21	21	24	30					24	27	0	3	2.35	2.60	100%	90%	100%	100%	96%	90%	100%	100%	100%	100%
Narsingdhi	18	19	25	19					25	18	0	1	2.79	1.98	92%	95%	100%	100%	100%	84%	100%	100%	100%	100%
Netrokona	19	19	31	21					31	21	0	0	3.34	2.23	87%	90%	100%	100%	94%	90%	100%	100%	100%	100%
Rajbari	9	10	11	9					11	9	0	0	2.45	1.98	91%	100%	100%	100%	91%	89%	100%	100%	100%	100%
Sariatpur	11	11	10	12					10	12	0	0	1.96	2.32	90%	100%	100%	100%	90%	100%	100%	100%	100%	100%
Sherpur	12	13	15	12					15	12	0	0	2.51	1.98	87%	92%	100%	100%	93%	100%	100%	96%	100%	100%
Tangail	31	32	35	42					35	42	0	0	2.28	2.69	97%	90%	100%	100%	91%	98%	100%	100%	100%	89%
Total-DHAKA	376	383	507	463	0	0	0	0	507	452	0	11	2.76	2.43	94%	93%	99%	100%	95%	94%	100%	99%	98%	94%
Khulna Division																								
Bagerhat	15	15	16	22					16	20	0	2	2.24	2.76	100%	91%	100%	91%	100%	86%	100%	100%	100%	100%
Chuadanga	10	10	20	20					20	20	0	0	4.22	4.16	100%	100%	90%	100%	85%	95%	100%	100%	100%	100%
Jessore	24	24	33	28					33	28	0	0	2.84	2.37	94%	93%	100%	100%	97%	96%	100%	100%	100%	100%
Jhenaidah	15	15	18	27					18	24	0	3	2.44	3.20	89%	100%	100%	100%	89%	100%	100%	98%	100%	100%
Khulna (non KCC)	14	15	22	16					22	15	0	1	3.18	2.14	100%	81%	100%	100%	100%	81%	100%	100%	100%	67%
KCC only	9	9	8	2					8	2	0	0	1.91	0.47	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Kusthia	17	17	17	25					17	24	0	1	2.08	2.89	100%	96%	88%	100%	88%	92%	100%	100%	100%	100%
Magura	8	8	10	12					10	11	0	1	2.58	2.80	100%	83%	100%	100%	100%	92%	100%	100%	100%	100%
Meherpur	6	6	10	10					10	10	0	0	3.61	3.56	90%	100%	100%	100%	70%	100%	100%	100%	100%	100%
Narail	7	7	7	12					7	12	0	0	2.14	3.61	86%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Satkhira	18	18	17	21					17	21	0	0	1.96	2.38	100%	95%	100%	100%	94%	90%	100%	100%	100%	100%
Total-KHU	143	144	178	195	0	0	0	0	178	187	0	8	2.59	2.68	97%	94%	98%	99%	93%	93%	100%	100%	100%	98%
Rajshahi Division																								
Bogra	29	29	29	32					29	31	0	1	2.04	2.15	100%	91%	100%	100%	100%	97%	100%	100%	100%	83%
Joypurhat	9	9	11	10					11	10	0	0	2.73	2.44	91%	100%	91%	100%	91%	100%	100%	100%	100%	100%
Natore	15	15	31	20					31	19	0	1	4.34	2.62	97%	95%	100%	100%	97%	100%	100%	100%	100%	100%
Noagoan	23	23	30	38					30	33	0	5	2.67	2.89	97%	97%	100%	100%	97%	92%	100%	100%	100%	100%
Nowabganj	14	14	31	22					31	21	0	1	4.63	3.09	97%	91%	100%	100%	97%	95%	100%	100%	100%	100%
Pabna	21	21	26	28					26	26	0	2	2.55	2.51	92%	100%	100%	100%	88%	96%	100%	100%	100%	100%
Rajshahi (non RCC)	18	19	26	23					26	21	0	2	2.93	2.33	96%	91%	100%	100%	92%	83%	98%	100%	100%	100%
RCC only	4	4	6	7					6	7	0	0	3.28	3.77	100%	100%</								

Disease Surveillance, 2010 - 2011

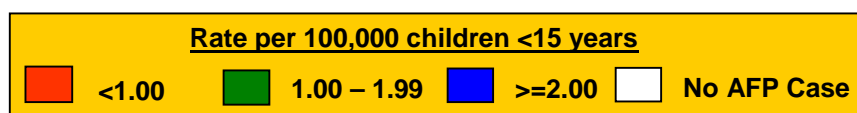
District	Neonatal Tetanus						Measles								AEFI	
	# of case reported by Active Surveillance		# of case reported by Passive Surveillance		# of case Investigated		# of case reported by Active Surveillance		# of case reported by Passive Surveillance		Outbreak*				# of case Reported	
	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	Number of Outbreak Investigated		# of cases		2010	2011
Barisal Division																
Barguna			1				1	28	8	37					10	1
Barisal (non BCC)	2	1	3	1		1	5	4	14						65	40
BCC only							2	2	2	3					4	
Bhola	2	2	4	2	3	2	10	2	24						3	2
Jhalakhati							1	12	1	14					30	15
Patuakhali	4	1	3	1	4	1	1	40	7	36		2		67	1	2
Pirojpur		1		1		1	1	17	13	23					13	14
Total-Barisal	8	5	11	5	7	5	6	114	37	151	0	2	0	67	126	74
CTG Division																
Bandarban								1	1	2		3		109	2	5
Brahmanbaria	4	1	2	1	1		1	11	34		3			69	13	9
Chandpur	2		1		2	2	3	5	44	19	4			49	16	68
Chittagong (non CCC)			1	1		1	2	8	9	20	2			53	11	7
CCC only	6	1	5	1	6	1	9	24	3	21	5			201	1	
Comilla	4	1		1	5	1	1	2	29	23	1			29	13	28
Cox's Bazar	1	1	1	1	1	1	1	5	7	9					2	2
Feni	4		3		4			9	2	22					6	7
Khagrachari							2	17	10	28		2		57	3	3
Laxmipur	5	4	11	5	6	4	2	11	47	51		3		53	16	24
Noakhali	4	5	4	6	5	6		15	5	46					9	8
Rangamati							5	11	15	19		2		40	6	2
Total-Chittagong	30	13	28	16	30	16	25	109	183	294	0	25	0	660	98	163
Dhaka Division																
Dhaka (non DCC)	3	1	1		4	2	1	103	39	106					31	33
DCC only	4	2	2		3		19	375	230	494		13		355	36	20
Faridpur	4	2	7	3	3	2		4	6	25					59	26
Gazipur	1	2	1		1	2	6	33	28	58					21	22
Gopalganj		3		5		1	2	6	1	17		2		70	18	4
Jamalpur	2	1	1		1			4	109	81					19	14
Kishoreganj	5	6	8	9	5	4	1	4	56	43					22	14
Madaripur		4		8		1	2	3	6	13		1		12	52	32
Manikganj								3	15	52		2		67	24	12
Munshiganj		1		1		1	2	11	91	36					28	13
Mymensingh	4	6	9	5	3	6	4	21	45	90		2		77	52	28
Narayanganj	1	1			1	1	1	9	23	14					27	18
Narsingdhi		1						4	15	40					41	34
Netrokona	1	1	4	3		1			36	28		2		37	3	2
Rajbari	1		1		1			1	10	23		1		74	30	32
Shariatpur		1	1					2	21	25		1		126	22	22
Sherpur		1	3	1				4	22	32		1		23	12	5
Tangail	4	2	3		4	2	11	24	20	52					58	53
Total-Dhaka	30	35	41	35	26	23	49	611	773	1,229	0	25	0	841	555	384
Khulna Division																
Bagerhat	2	3	3	3	2	1		1	7	21		2		42	97	56
Chuadanga	2		2		1			4	3	24		2		57	10	10
Jessore	2	1	2	2	2	2	5	25	21	123		2		38	32	18
Jhenaidah	1		1		1		2	52	7	56		1		13	9	9
Khulna (non KCC)		3		5		2		4	19	27					43	42
KCC only	1		1		1			2	1	11					24	11
Kushtia	1	2		2	1	2	2	17	16	27		2		52	10	7
Magura		3		2		2		12	10	37		1		11	21	17
Meherpur		1		1			2	6	20	15					2	3
Narail	1	2	3	3	1	1	1	37	15	47		1		20	6	11
Satkhira	1		1		1		2	8	10	25					28	20
Total-Khulna	11	15	13	18	10	10	14	168	129	413	0	11	0	233	282	204
Rajshahi Division																
Bogra	2	4	1	3	2	5	3	6	36	62		1		7	126	48
Joypurhat								19	1	25		1		24	27	20
Natore	1	1	1	1	1	1	1	1	39	42					28	25
Noagoan		1				1	11	38	41	79		5		128	52	30
Nowabganj	1	2	1	2	1	3	2	1	20	24					7	18
Pabna	1	1	1		1	1	3	2	113	156		2		38	24	21
Rajshahi (non RCC)	2		1		2		3	1	14	30		1		13	37	38
RCC only							4	28	22	41		5		115	42	11
Sirajganj	1	1				1	1		1	7		2		48	9	4
Total-Rajshahi	8	10	5	6	7	12	28	96	287	466	0	17	0	373	352	215
Rangpur Division																
Dinajpur	1	1	2	1	1		1	14	25	114		3		45	51	22
Gaibandha	1	3	1	3	1	5		5	4	16		3		99	28	25
Kurigram	2	1			2	2	1	14	1	12					12	5
Lalmonirhat								10	1	13					24	16
Nilphamari					1		1	3	1	5					32	10
Panchagarh							1	3	3	3		1		9	17	16
Rangpur	1		1		1			2		11					7	18
Thakurgaon		1				1	4	2	16	44					22	13
Total-Rangpur	5	6	4	4	6	8	8	53	51	218	0	7	0	153	193	125
Sylhet Division																
Habiganj	7	6	7	8	2	5	5	18	9	27					6	3
Maulvibazar	2	1	3	2	1	2	18	34	24	69		2		156	4	2
Sunamganj	5		4	2	5	2	6	23	6	46		2		319	21	3
Sylhet (non SCC)		2		2		2	19	9	29	51					2	2
SCC only							16	4	9	10						1
Total-Sylhet	14	9	14	14	8	11	64	88	77	203	0	4	0	475	33	11
National	106	93	116	98	94	85	194	1,239	1,537	2,974	0	91	0	2,802	1,639	1,176

Data as of 31 December 2011, * Only Lab Confirmed Measles

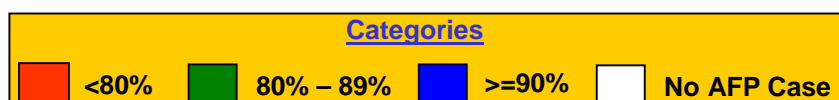
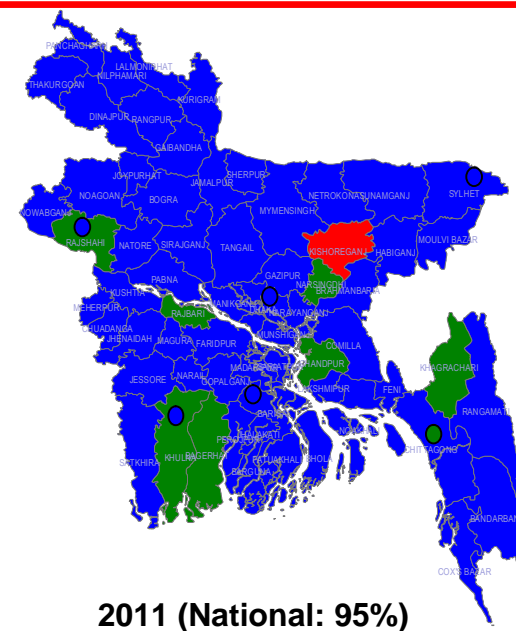
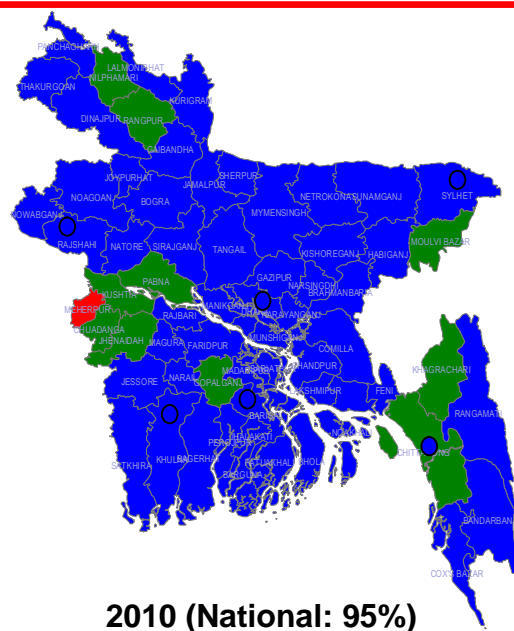
Annualized Non-Polio AFP Rate, by District, Bangladesh 2010-2011*



*Data as of 31 December 2011



Percentage of AFP Cases with Two Stool Samples Collected within 14 days of Paralysis Onset, by District, Bangladesh 2010-2011*



*Data as of 31 December 2011

International Developmental Partners for Polio Eradication in Bangladesh include Centers for Disease Control and Prevention, Atlanta, Governments of Japan, the Netherlands, USAID, Rotary International, U.K. DFID, UN Foundation, UNICEF and WHO