

Abstract

Surveillance of Acute Flaccid Paralysis in the Republic of Korea, 2019

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Korea Centers for Diseases Control and Prevention (KCDC) participated in Global Eradication of Poliomyelitis Program. As Polio National-Laboratory by World Health Organization (WHO), KCDC has conducted acute flaccid paralysis (AFP) surveillance system to monitor the progress of poliomyelitis eradication since 1998.

The AFP surveillance was conducted through reporting and laboratory testing according to WHO recommendations. Conventional tube cell culture method was used for virus isolation and the isolates were identified by ITD (Intratypic differentiation) kit. For viral detection, clinical specimens were tested, using both real-time reverse transcription polymerase reaction (Real-time RT-PCR) and conventional RT-PCR to amplify part of 5'-NCR and VP1 gene respectively.

Non-polio AFP rate (WHO-recommended surveillance standard of poliomyelitis is 1.0) was 1.2 in 2019. Eighty one cases were reported from fourteen provinces in 2019. Only 10 of the 17 provinces satisfied the target as 1.0 or higher for WHO's annual non-polio AFP rate. A total of 161 clinical specimens were collected from 81 patients, 16 cases (19.8%) were positive for non-polio *Enterovirus* (NPEV). In 2019, among the total of 81 cases, Guillain-Barré Syndrome (25.9%, 21/81) was the major leading cause of AFP.

Non-polio AFP rate in 2019 was 1.2 which was higher than previous year non-polio AFP rate (1.0). But the rate of adequate specimen collection from AFP cases in 2019 decreased to 86.0% compared to 90% in 2018. Since the non-polio AFP rate is below the standard 1.0 in some province. The further cooperate with regional participating hospitals is necessary to improve the sensitivity of AFP surveillance. This nationwide AFP surveillance could provide evidence that Republic of Korea continues to maintain Polio-free status.

Keywords : Acute Flaccid Paralysis, Poliovirus, *Enterovirus*, Poliomyelitis

Table 1. Global wild/circulating vaccine-derived poliovirus (WPV/ cVDPV) [10]

Continent	Country	2019	2020
Asia	Afghanistan*	WPV1 29	WPV1 34 cVDPV2 29
	Pakistan*	WPV1 147 cVDPV2 22	WPV1 63 cVDPV2 52
	China	cVDPV2 1	–
	Philippines	cVDPV1 1 cVDPV2 12	cVDPV2 1
	Malaysia	cVDPV1 3	cVDPV1 1
	Myanmar	cVDPV1 6	–
Africa	Nigeria*	cVDPV2 18	cVDPV2 1
	Benin	cVDPV2 8	cVDPV2 1
	Burkina Faso	cVDPV2 1	cVDPV2 9
	Chad	cVDPV2 11	cVDPV2 51
	Republic of cote d'Ivoire	–	cVDPV2 19
	Ghana	cVDPV2 18	cVDPV2 11
	Guinea	–	cVDPV2 8
	Togo	cVDPV2 8	cVDPV2 9
	Zambia	cVDPV2 2	–
	Mali	–	cVDPV2 1
	Niger*	cVDPV2 1	cVDPV2 4
	Angola*	cVDPV2 130	cVDPV2 3
	Central African Republic*	cVDPV2 21	cVDPV2 1
	DR Congo*	cVDPV2 88	cVDPV2 22
	Cameroon	–	cVDPV2 4
	Ethiopia	cVDPV2 13	cVDPV2 14
	Somalia*	cVDPV2 3	–
Oceania	Papua New guinea*	–	–
Total		WPV1 176 cVDPV1 11 cVDPV2 357	WPV1 97 cVDPV1 1 cVDPV2 240

* Quarantinable Diseases Risk Areas – polio (9)

Table 2. Annual incidence rate of non-polio AFP [10]

Year	Population (< 15 years)	Expected non-polio AFP cases	Non-polio AFP cases	Non-polio AFP rate*	AFP cases with adequate stool samples (%)
2012	7,559,063	76	94	1.2	89.0
2013	7,370,118	74	84	1.1	93.0
2014	7,198,984	72	88	1.2	86.0
2015	7,039,594	70	83	1.2	86.0
2016	6,899,128	69	70	1.0	93.0
2017	6,840,263	68	68	1.0	94.0
2018	6,680,843	67	70	1.0	90.0
2019	6,611,944	66	81	1.2	86.0

* Mean annual incidence rate per 100,000: In order to estimate the mean annual incidence rate of non-polio AFP per 100,000 individuals, the cases of non-polio AFP were considered as the numerator and the relevant population as the denominator.

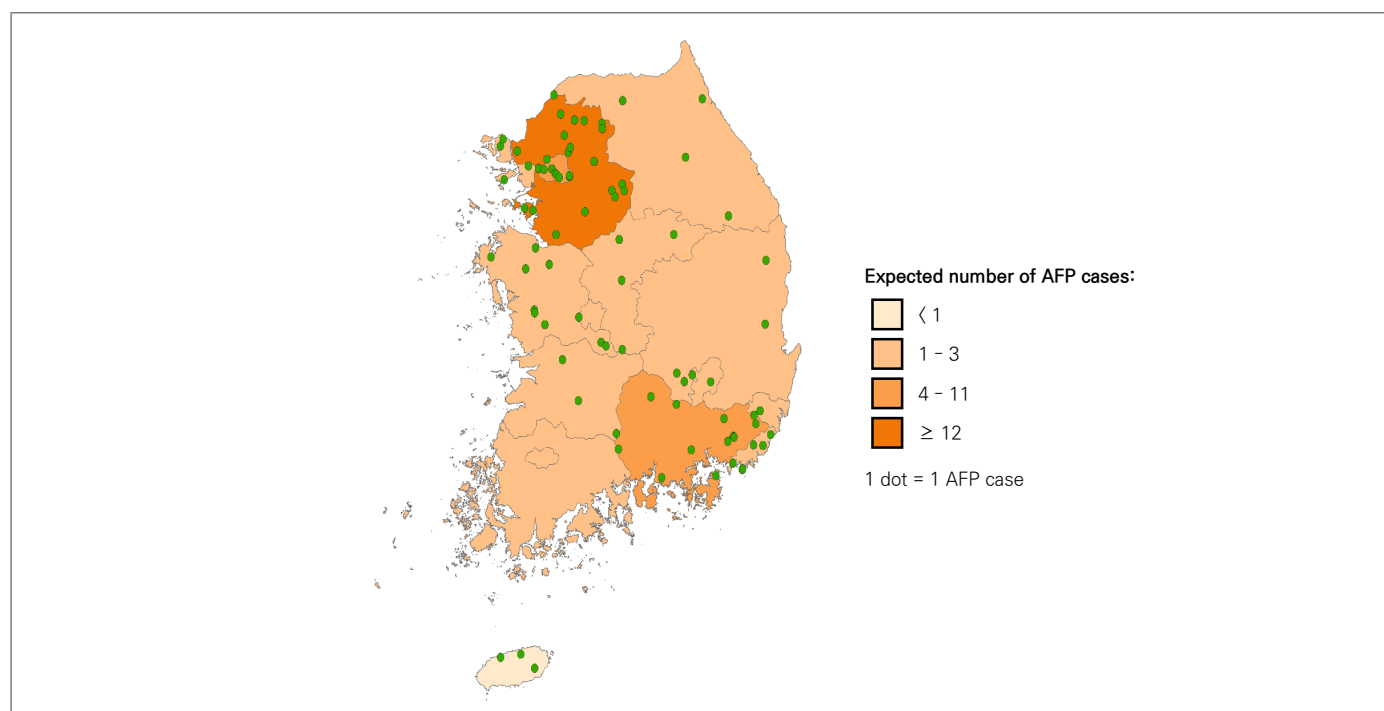


Figure 1. Distribution of AFP cases by province in 2019

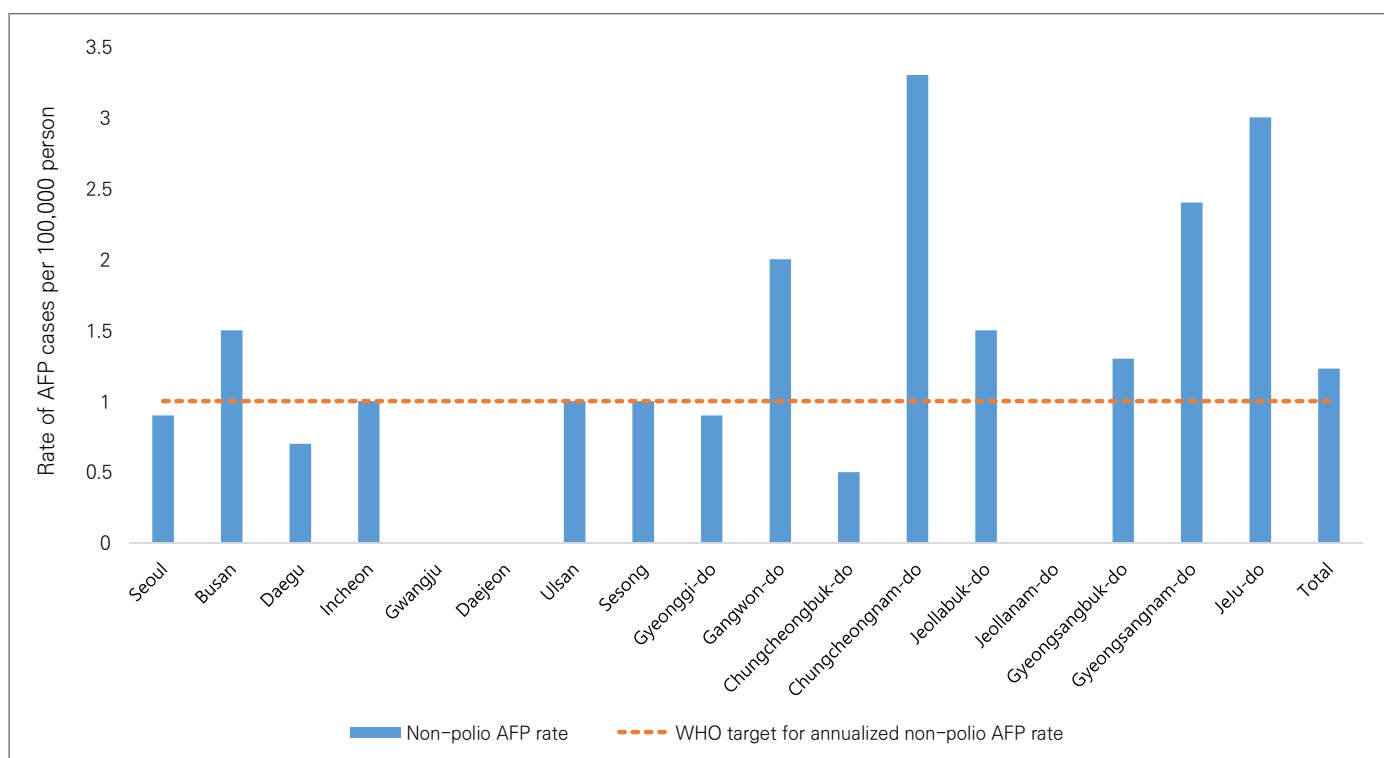


Figure 2. Non-polio AFP rate by province in 2019

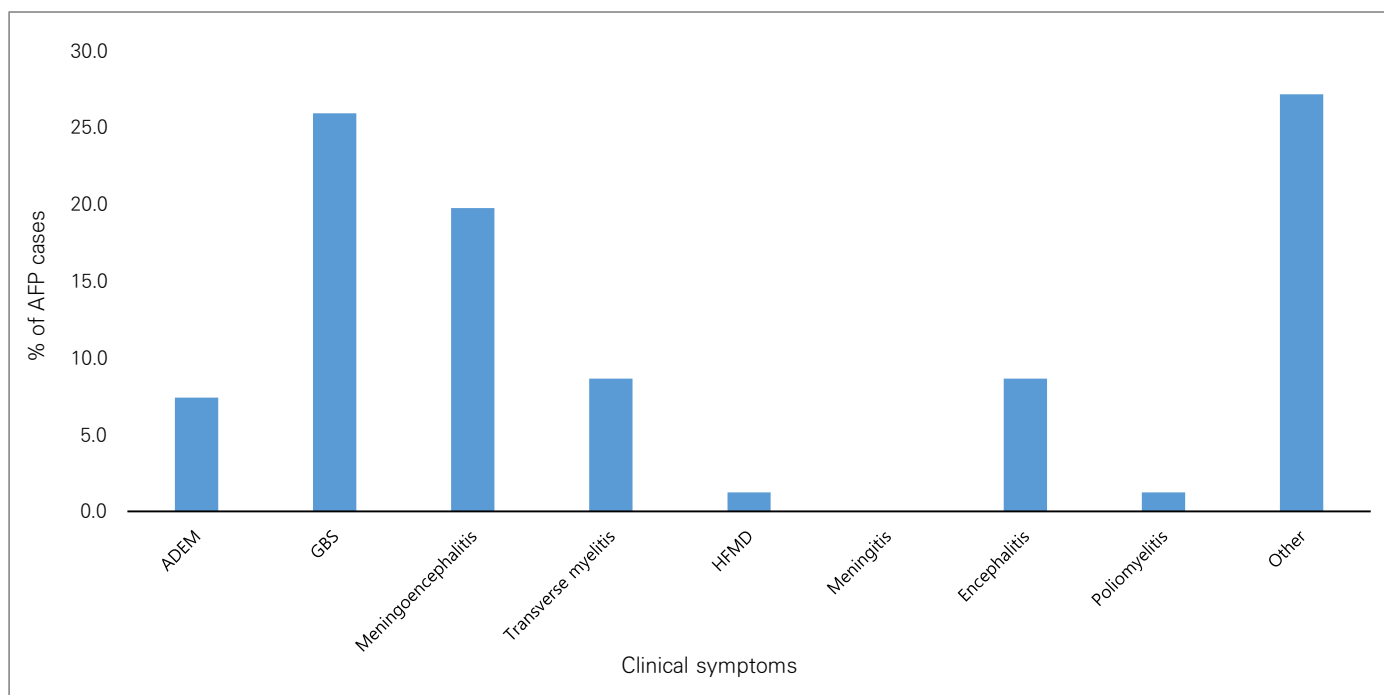


Figure 3. Rate of AFP cases by clinical symptoms in 2019