

(iVDPVs) during prolonged infection in persons with primary immunodeficiency disorders seems to be one probable source of poliovirus infection and these individuals are a potential reservoir for infection in which the virus can evolve into neurovirulent forms and become transmissible circulating vaccine-derived PV.

### 3.10

doi: 10.15789/2220-7619-2018-4-3.10

#### EPIDEMIOLOGICAL CHARACTERISTICS OF MEASLES

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Tremendous progress has been made to decrease childhood death caused by measles. Before the introduction of measles vaccine in 1963 major epidemics occurred every 2–3 years and caused 2.6 million deaths per year. In 2012 the WHO endorsed a plan to eliminate measles by 2020. The aim of this study was to reveal epidemiological characteristics and trends of measles.

Measles is a highly contagious airborne infectious disease caused by the measles virus. Although the impressive achievements in eliminating measles with a low record in 2016 with 5273 cases in Europe region it affected 21 315 people and caused 35 deaths in 2017. There were reported about 4400 cases in Italy from January to August 2017 with median age 27 years, 88% of the cases were unvaccinated. Over 41 000 people in Europe have been infected in 2018 with at least 37 deaths. Over 23 000 people affected in Ukraine but the highest number of deaths 14 was reported by Serbia. Also a large number of cases were registered in Italy, France, and Georgia, Serbia and Moldova. There were 5004 confirmed measles cases, including 68 deaths, reported in the American region this year with 3545 cases and 62 deaths in Venezuela and 1237 cases, 6 deaths in Brazil.

Russian Federation reported about 1717 infections in children and adults this year (127 cases for the same time in 2017). Overall, there were increasing from 178 cases in 2016 to 721 last year. The most affected areas were the Republic of Dagestan (3.3 cases per 100 000), Moscow (2.7 cases per 100 000) and the Chechen Republic (2.3 cases per 100 000). Almost 9 of 10 of the affected people were not vaccinated. Ratio adults to children about 6:4. The majority of cases were caused by genotype “Dublin B-3” that is endemic for the Europe. There were several household outbreaks of measles as a recent case in Chita with 15 members of one family infected.

This situation caused by declining vaccination rates. To prevent outbreaks, at least 95% immunization coverage in every country; timely detection of all suspected cases and provide laboratory conformation; strengthen epidemiological surveillance in border areas and vaccination one month ahead of a trip to any of the European countries the WHO list; adequate intra-hospital management to avoid nosocomial transmission.

### 3.11

doi: 10.15789/2220-7619-2018-4-3.11

#### INTRATYPIC DIFFERENTIATION OF POLIOVIRUSES IN THE INTER-POLIO LABORATORY OF THE INSTITUT PASTEUR OF COTE D'IVOIRE IN 2002–2017: WHAT EVOLUTION?

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Laboratory analysis of cases of acute flaccid paralysis is one component of the four polio eradication strategies. This analysis consisted in isolating the viruses and charac-

terizing them by the technique of intra-typical differentiation (ITD). This study proposed to take stock of the evolution of the different techniques of ITD used from 2002 to 2011.

The stools are treated with chloroform and inoculated to L20B and RD cells. The identification of isolated viruses and their characterization was carried out by evolutionary methods: seroneutralization typing with an antibody pool, conventional RT-PCR coupled with an enzyme-linked immunosorbent assay (Elisa) and finally real-time PCR. From 2002 to 2006, the identification of 370 strains of poliovirus was made by serum neutralization. It identified 258 polio type 1, 102 polio type 2 and 206 type 3. The wild or vaccine nature was determined in South Africa. From 2007 to 2010: 492 strains identified by conventional RT-PCR/ELISA were given: 256 wild polio (241 PV1, 15 PV3) and 259 poliovirus type vaccines, with dual reactions limiting the separation of virus mixtures of different type. From 2011 to 2016, 1034 strains of poliovirus tested by real-time PCR showed 300 wild-type PV3, 02 VDPV2 and many vaccine strains type 1, 2, and 3 or mixed serotypes with readily available results and The possibility of processing several samples especially with the advent of version 5.0 since October 2016.

The evolution of the techniques of differentiation allowed the increase of the capacities of the laboratory and the reliability of the results. Adaptation to new techniques (sequencing) is essential to continue to offer better services.

### 3.12

doi: 10.15789/2220-7619-2018-4-3.12

#### EPIDEMIOLOGICAL MONITORING OF POLIOMYELITIS IN THE CENTRAL AFRICAN REPUBLIC FROM 2004 TO 2017 AND IMPLEMENTATION OF POLIOVIRUS ENVIRONMENTAL SURVEILLANCE IN BANGUI IN 2017

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Central African Republic (CAR) joined the Polio Eradication Initiative (PEI) in 1996. Despite the fact that the last autochthonous wild poliovirus was isolated in 2000, the country experienced several episodes of wild poliovirus importations between 2003–2011. Nevertheless, since 2003 CAR is ongoing numerous political-military crisis that affects the health system including the PEI performance.

The aims of the study were the analysis of key performance indicators of active acute flaccid paralysis (AFP) surveillance in CAR from 2004 to 2017 (14 years period) and to describe the introduction of Poliovirus Environmental Surveillance (ES) in Bangui, the capital of CAR.

We conducted a retrospective analysis of data available at the Institut Pasteur de Bangui, the Department of Health and Population and WHO to evaluate the polio eradication program in CAR from 2004 to 2017. The rationale, steps and first results of Poliovirus Environmental Surveillance implementation are described.