

Polio eradication

Update on global and local situation

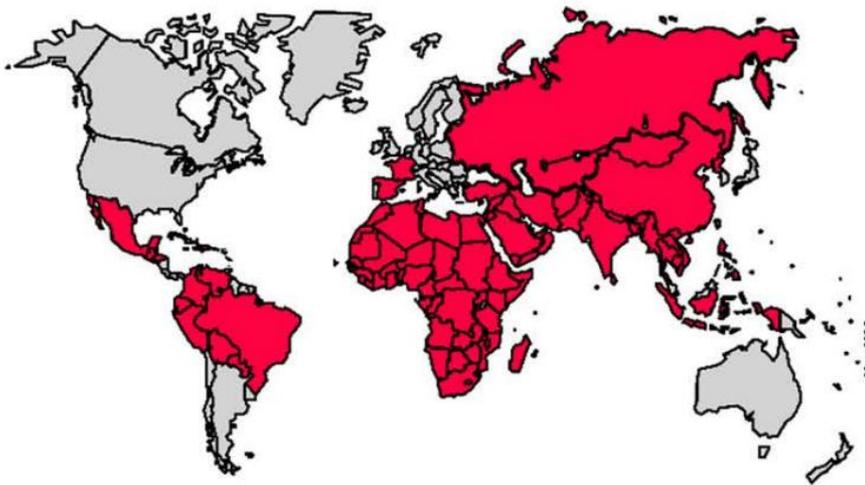
Jane FAN

Medical and Health Officer, Communicable Disease Branch, CHP



Polio: Towards Global Eradication

By 2022, only 2 polio-endemic countries remain: Afghanistan and Pakistan



1988

- 350,000 cases
- 125 endemic countries
- World Health Assembly resolved to eradicate polio



2018

- 29 cases reported (total 2018)
- 3 endemic countries



Eradication of wild poliovirus

- **WPV2:** last case reported in 1999 and eradication was declared in September 2015
- **WPV3:** The last case was reported in November 2012 in Nigeria and declared as globally eradicated in October 2019



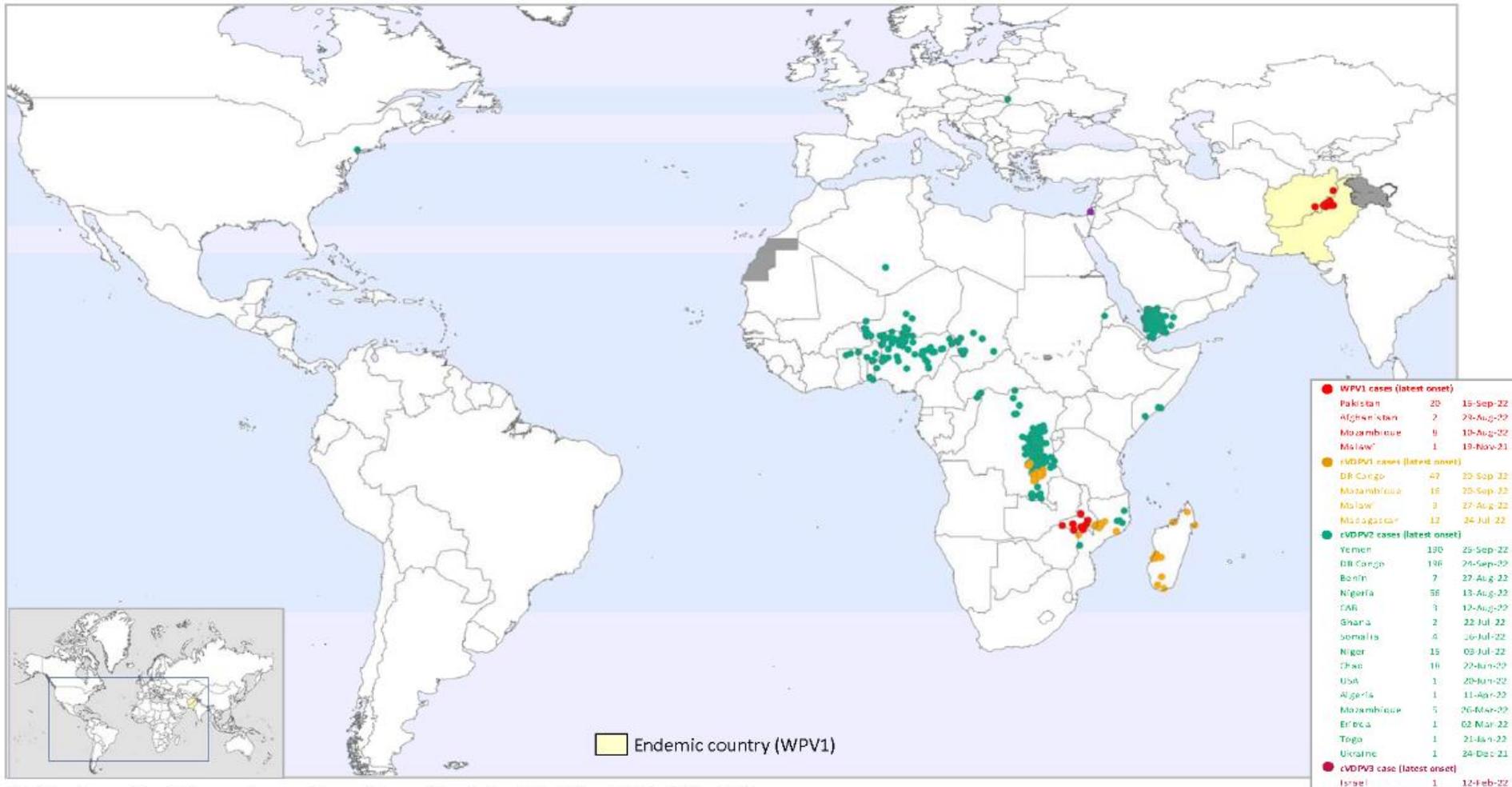
Certification

Region	Year certified wild polio-free
WHO African Region	2020
WHO Region of the Americas	1994
WHO South-East Asia Region	2014
WHO European Region	2002
WHO Eastern Mediterranean Region *	
WHO Western Pacific Region	2000

*Two countries, Afghanistan and Pakistan, in the Eastern Mediterranean region are still endemic with WPV1

Wild Polioviruses (WPV) & Circulating Vaccine-derived Polioviruses (cVDPV) Cases

Global WPV1 & cVDPV Cases¹, Previous 12 Months²



¹Excludes viruses detected from environmental surveillance; ²Onset of paralysis 16 Nov. 2021 to 15 Nov. 2022

States infected with different strains

(As of 15.11.2022)

WPV1	cVDPV2		
Afghanistan*	Algeria	Egypt	Nigeria
Pakistan*	Benin	Eritrea	Senegal
Malawi	Burkina Faso	Ethiopia	Somalia
Mozambique	Cameroon	Gambia	Togo
cVDPV1	Central African Republic	Ghana	Uganda
Democratic Republic of the Congo	Chad	Israel	Ukraine
Madagascar	Côte d'Ivoire	Mauritania	United Kingdom of Great Britain and Northern Ireland
Malawi	Democratic Republic of the Congo	Mozambique	United States of America
Mozambique	Djibouti	Niger	Yemen
cVDPV3			
Israel			

*Endemic countries



States no longer infected with WPV1 or cVDPV, but remain vulnerable to cVDPV re-infection: China, Congo, Guinea, Guinea-Bissau, Iran, Liberia, Kenya, Mali, Sierra Leone, Sudan, South Sudan, Tajikistan

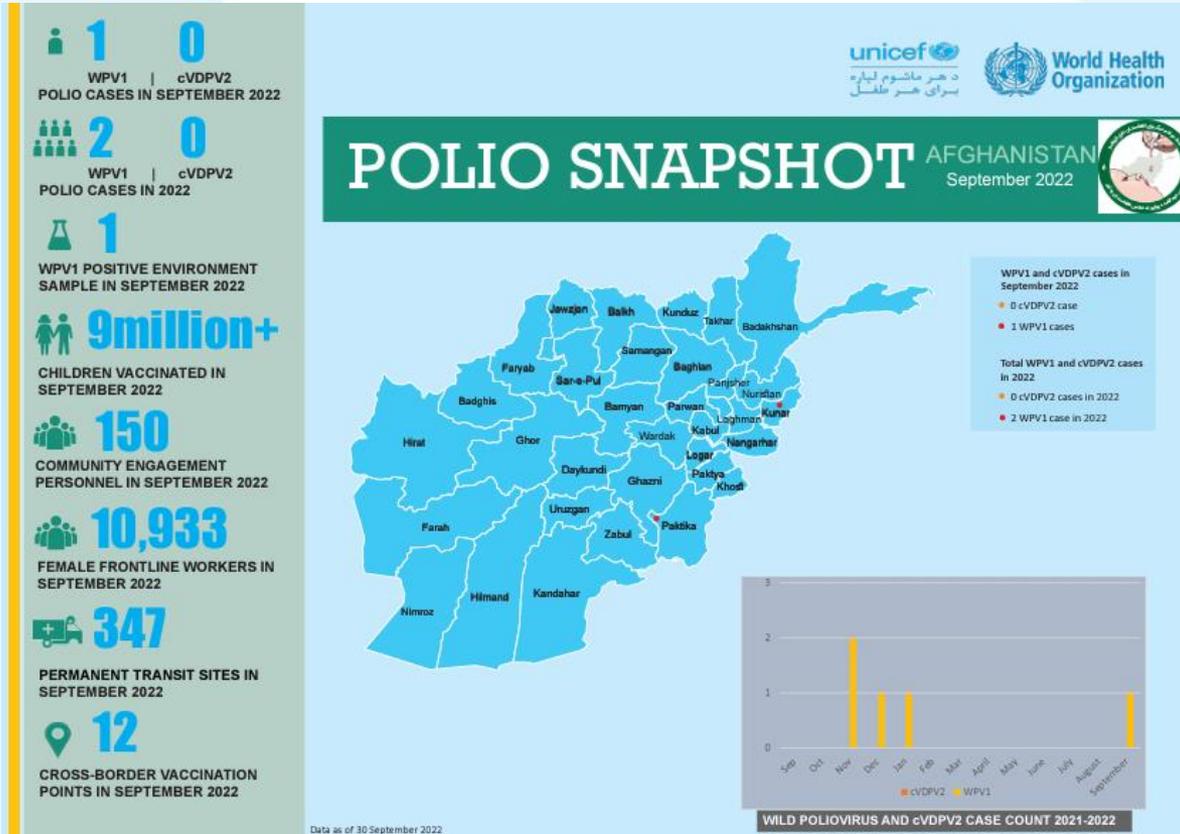
Afghanistan – WPV1, cVDPV2

	2016	2017	2018	2019	2020	2021	2022	Date of most recent case
WPV1	13	14	21	29	56	4	2	29 Aug 2022
cVDPV2	-	-	-	-	308	43	-	09 Jul 2021

As of 15 Nov 2022

- Strategic interventions
 - Supplementary immunization
 - Focus on high risk provinces and districts
 - Improve data analysis and monitoring
 - Better arrangements and training capacity for frontline workers
 - Focus on newborns and infants
 - Address vaccine acceptance issues

Afghanistan – WPV1, cVDPV2



- Two WPV1 cases reported in 2022, four cases in 2021
- cVDPV2 cases: 0 in 2022, 43 in 2021
- 4th vaccination campaign in 2022 aims at vaccinating 9.9 million children under 5 years old

Polio Immunization Coverage Among 1 year olds (%)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
66	68	67	64	62	67	71	71	76	75	75	71

Pakistan – WPV1, cVDPV2

	2016	2017	2018	2019	2020	2021	2022	Date of most recent case
WPV1	20	8	12	147	84	1	20	15 Sep 2022
cVDPV2	1	-	-	22	135	8	-	23 Apr 2021

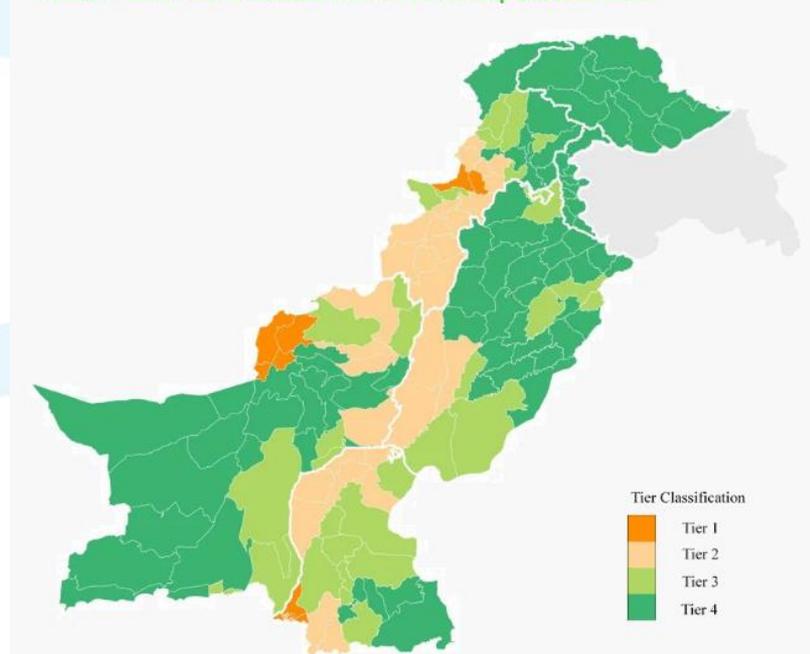
As of 15 Nov 2022

- Response strategy
 - Switch to the use of monovalent OPV and IPV
 - Accelerate catch-up vaccination using IPV
 - Increase communication
 - Surveillance

Pakistan – WPV1, cVDPV2

- 2nd nationwide polio campaign
 - Started in May 2022
 - 43.3 million children under 5yrs
 - 340,000 frontline workers
 - Refusal to vaccination is common

The tier classification of districts is shown on the map and table below:



Polio Immunization Coverage Among 1 year olds (%)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
52	63	64	65	69	72	75	75	75	84	83	83

Malawi – WPV1, cVDPV1

- 1 case of wild poliovirus type 1 (WPV1) in November 2021, first case from the continent of Africa in over five years
- 3 year old child from Lilongwe, virus is genetically linked to WPV1 detected in Pakistan’s in October 2019
- Imported case from Pakistan, did not affect the region’s certification status
- 3 cases of cVDPV1 in 2022
- Vaccination campaign against WPV1 using bivalent OPV, targeting children under 5 years old



● WPV1 case

Polio Immunization Coverage Among 1 year olds (%)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
86	97	95	89	87	88	83	87	91	94	93	89

Ongoing risk of WPV1 international spread

- Based on the following factors, the risk of international spread of WPV1 remains:
 - High-risk mobile populations and current outbreak in Pakistan
 - Unpredictable situation in Afghanistan
 - Sub-optimal immunization coverage
 - Inadequate surveillance
 - COVID-19 pandemic



Multi-country response to WPV1 outbreak

- 4 immunization rounds in Malawi, Mozambique, Tanzania, Zambia and Zimbabwe
- Unreliable population data, unreliable estimates for coverage



Global Circulating Vaccine-derived Poliovirus (cVDPV)

Acute Flaccid Paralysis Cases

	2016	2017	2018	2019	2020	2021	2022
cVDPV1	3	0	27	12	35	16	76
cVDPV2	2	96	71	366	1081	682	433
cVDPV3	0	0	8	0	0	0	1

Number of countries with cVDPV

	2016	2017	2018	2019	2020	2021	2022
cVDPV1	1	0	2	4	4	2	4
cVDPV2	2	2	5	16	24	22	14
cVDPV3	0	0	1	0	0	0	1

As of 15 Nov 2022

United states of America – VDPV2

- On 21 July 2022, a case of paralytic poliomyelitis was identified in an **unvaccinated adult** in Rockland County of New York, who had **no recent travel history**
 - Presented to an emergency department with **respiratory symptoms, fever, neck stiffness, and back pain**. The symptoms progressed to include **paralysis**.
 - A **stool sample** tested positive for **type 2 VDPV**, genetically linked to environmental samples in New York, UK and Israel in June 2022
- As of Oct 28, 2022, **89** positive poliovirus samples were detected in waste water
 - 82 samples genetically linked to paralytic polio case in Rockland county
 - 43 samples from Rockland County
 - 24 samples from Orange County
 - 13 samples from Sullivan County
 - 1 sample from Nassau County
 - 1 sample from New York City from Brooklyn



United states of America – VDPV2

- Polio vaccination rate (3 polio immunizations) among 2 year olds
 - New York State average: 79.0%
 - Rockland: 60.3%,
- Routine childhood immunization 4 doses Inactivated polio vaccine (IPV)
4 in 1 (DTaP-IPV) or 5 in 1 (DTaP-HepB-IPV or DTaP-IPV/Hib) or 6 in 1 (DTaP-IPV-HibHepB)
 - Dose 1 – 6 to 8 months
 - Dose 2 – 4 months
 - Dose 3 – 6 months to 18 months
 - Dose 4 – 4-5 years
- Catch up IPV vaccination
[Age >4 years old, unvaccinated or unsure vaccination status]
 - 1st dose anytime, 2nd dose 1-2 months after, 3rd dose 6-12 months after
- Booster dose IPV in high risk groups age >18 years

Polio Immunization Coverage Among 1 year olds (%) in USA

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
93	94	93	93	93	93	94	92	93	93	92	92

cVDPV2 international spread

- Risk of international spread remains high due to:
 - Ongoing cross border spread
 - Explosive outbreak of cVDPV2 in northern Yemen and DR Congo
 - High transmission in Democratic Republic of the Congo and Nigeria
 - Lack of timely high quality responses
 - Widening gap in population intestinal mucosal immunity
 - COVID-19 pandemic
 - Weak routine immunization
 - Lack of access to the unvaccinated population



Summary

- Ongoing transmission of Wild Poliovirus Type I (WPV1) in Afghanistan, Pakistan, Malawi and Mozambique
- Circulating vaccine-derived poliovirus (cVDPV) outbreaks continue to affect high risk areas and countries



COVID-19 pandemic's impact on global poliovirus eradication

- Remote visits, training and audits
- Reported AFP cases declined by 33% from January to September of 2020 compared with the same period in 2019
- The COVID-19-related pause on polio campaigns, resulting in a drop of polio vaccination

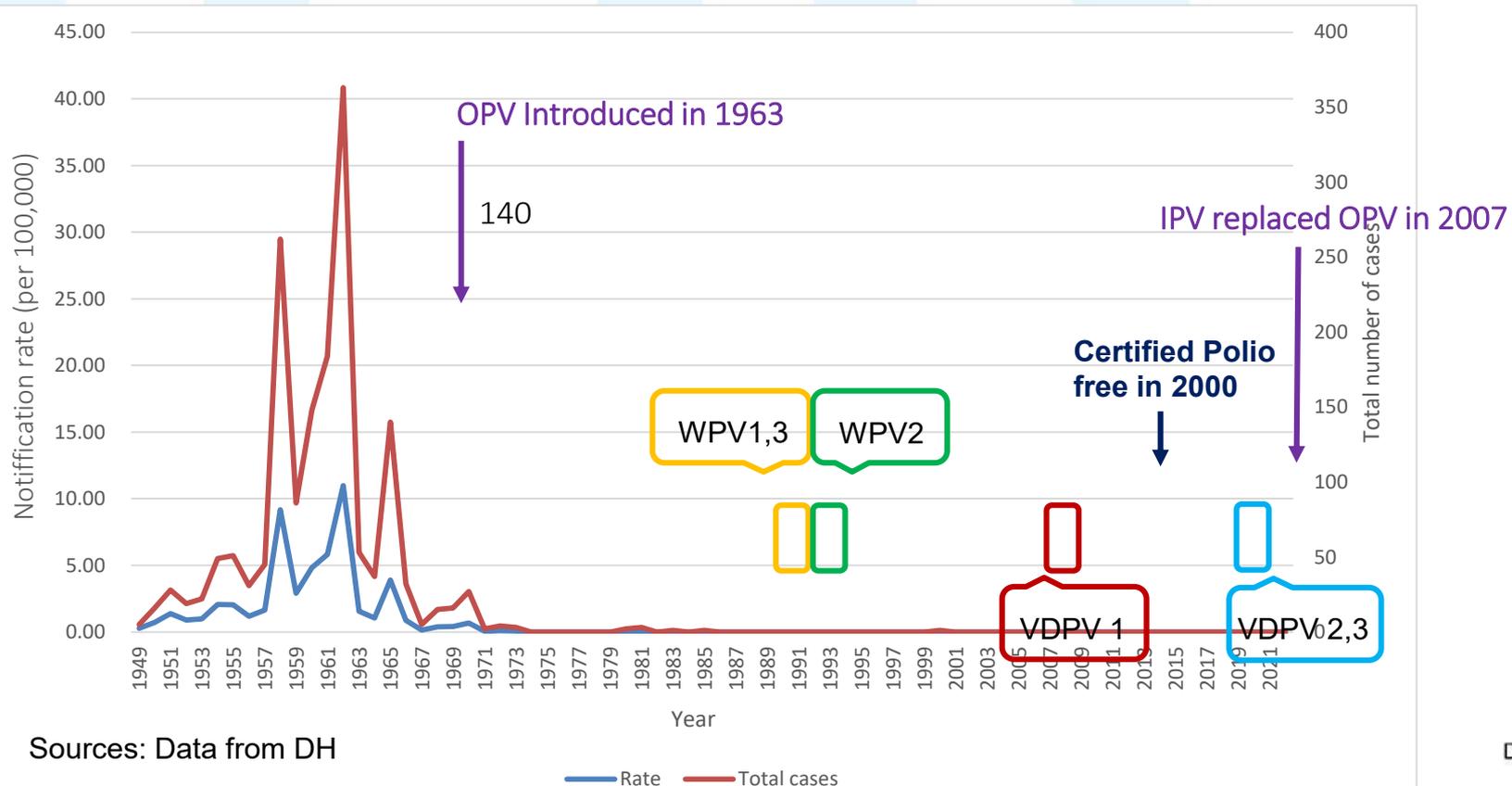


SITUATION IN HONG KONG



Polio cases in Hong Kong

363



History

Inactivated polio vaccine was licensed

1955

Oral Polio vaccine was introduced in childhood immunisation programme in Hong Kong

1963

1961

Oral polio vaccine came into commercial use

1983

Last wild type Polio case in Hong Kong



Situation in Hong Kong

- Statutory notifiable infectious disease since July 1948
- Last wild type Polio case recorded in Hong Kong in 1983 which was WPV2
- Certified Polio free with other countries/ areas in Western Pacific Region in October 2000
- Inactivated Polio vaccine has been used in Hong Kong childhood immunisation programme since 2007
- Last detection of
 - VDPV 1 in 1995 (AFP surveillance)
 - VDPV 2,3 in 2005 (Enterovirus surveillance)



Thank you

