Professor David Salisbury
Chair, WHO Global Commission for the Certification of Poliomyelitis Eradication
The Global Eradication of Polio – Successes and Remaining Challenges

Professor David Salisbury CB FRCP FRCPCH FFPH FMedSci
Centre on Global Health Security, Chatham House, London

DMS has no conflicts.
There are three strains of wild polioviruses (P1, P2, P3).

- P2 has been certified as eradicated;
- Trivalent oral polio vaccine (OPV3) has been replaced with bivalent vaccine (bOPV).
- P3 could be certified now (last case > 6 years ago).
- P1 polio occurs in just two countries.
1988
World Health Assembly resolution to eradicate polio
More than 125 polio-endemic countries
Oral polio vaccination mass campaigns – the strategy that worked.
Polio Eradication and Endgame Strategy

1. Poliovirus detection & interruption

2. OPV2 withdrawal, IPV introduction, immunization system strengthening

3. Containment & Global Certification

4. Legacy/Transition Planning
Global WPV1 & cVDPV Cases¹, Previous 12 Months²

WPV1 cases (latest onset)
- Afghanistan: 20 (03 Apr 2019)
- Pakistan: 28 (05 May 2019)

cVDPV1 cases (latest onset)
- Indonesia: 1 (27 Nov 2018)
- PNG: 25 (18 Oct 2018)

cVDPV2 cases (latest onset)
- DRC: 13 (08 Feb 2019)
- Niger: 10 (05 Dec 2018)
- Nigeria: 40 (29 Mar 2019)
- Somalia²: 6 (21 Apr 2019)

cVDPV3 cases (latest onset)
- Somalia²: 4 (07 Sep 2018)

¹Excludes viruses detected from environmental surveillance; ²Onset of paralysis 29 May 2018 – 28 May 2019; ³Include one case of co-infection with Type 2 and 3

Data in WHO HQ as of 28 May 2019
Nigeria
Nigeria - Strategies to reach children

RES: Reach Every Settlement (civilian vaccinators with security support)
- Over 95% of targeted settlements reached (272,000 children vaccinated)

RIC: Reach Inaccessible Children (security forces as vaccinators)
- More complex strategy, started in March 2017;
- so far 36% targeted settlements reached (>50,000 children vaccinated)

Inaccessible population Sep 17-Dec 17

- Declining number of unreached or trapped population in Borno
- Strategies like RIC, RES & vaccination and profiling at transit points have contributed to the reduction in trapped population
Key risk: unreached children in Borno

- No WPV circulation detected in 2.5 years (27 September 2016)
- In August 2016, over 600,000 children across over 10,000 communities were not unreached
- As of September 2018, only 70,541 children remained unreached thanks to innovative strategies:
Pakistan and Afghanistan
Pak AFG polio transmission corridors
WPV1 (AFP and ENV) past 12 months

**Northern Corridor**
Torkham border used for population movement between Peshawar and Khyber in Pakistan to Nangarhar, Kunar and Laghman in east Afghanistan.

**Central Corridor**
Southern Khyber Pakhtunkhwa and the FATA in Pakistan travelling across rugged, smaller borders crossings to Paktika, Paktia and Khost provinces in the south east of Afghanistan.

**Southern Corridor**
Friendship Gate (Chaman) border crossing from Pakistan’s Quetta Block to the Greater Kandahar area in south Afghanistan.

Total 2600 KM border shared between PAK and AFP.
Remaining risk: sensitive security situation

Bolochistan and FATA - remain high priority

Type of Incident by Province

<table>
<thead>
<tr>
<th>Province</th>
<th>Others</th>
<th>Attack against a person</th>
<th>Crime</th>
<th>Intimidation</th>
<th>Suspicious Activity</th>
<th>Threat Information Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FATA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islamabad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolochistan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sindh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punjab</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Polio-related incidents and fatalities 2012-2018

- **Polio-incident**
  - 2012: 46
  - 2013: 92
  - 2014: 55
  - 2015: 52
  - 2016: 102
  - 2017: 132
  - 2018: 62

- **Polio related fatal**
  - 2012: 10
  - 2013: 12
  - 2014: 9
  - 2015: 8
  - 2016: 2
  - 2017: 1
  - 2018: 2

EVENT LAST CHILD
Problems can arise wherever routine immunisation programmes are weak.
Papua New Guinea

20 cVDPV1 cases since 25 April 2018
  • Last case 8 September 2018
  • 8 of 20 provinces affected
  • Two sub-national vaccination rounds targeting children < 5 y (Jul & Aug 2018) and one NID Targeting children <15 y implemented
  • One more nationwide round planned targeting children < 15y (Nov 2018)

• Key Risks
  – Extremely weak heath care system
  – Very low population immunity
  – Significant population movement
  – Low to no human resource capacity & limited literacy
  – Insecurity / volatile law & order (unpredictable violence)
Indonesia : cVDPV1 outbreak

- Onset : 27 Nov 2018 in District Yahukimo district, Papua province
  - NT Change : 61 nt change from Sabin
- 3 year old healthy child in Dekai, Yahukimo, Papua, Indonesia has tested positive for VDPV1 with 58 nt changes from sabin 1
- Sequencing in Bandung Biofarma indicates genetic linkage to the case.
- No direct contact with case indicates community spread
- The two viruses can be classified as cVDPV1.
Polio Eradication and Endgame Strategy

1. Poliovirus detection & interruption
2. OPV2 withdrawal, IPV introduction, immunization system strengthening
3. Containment & Global Certification
4. Transition Planning
Containment of polio viruses – Wild and Sabin-like
Containment of polioviruses (wild and Sabin strains)

**GAPIII objective**

Only those facilities that serve critical functions would be expected to continue to operate, thereby reducing the number of Poliovirus-Essential Facilities (PEFs) worldwide and minimizing the risk of release of poliovirus post eradication to as close as possible to zero.
Nature & type of facilities addressed by CCS

- Poliovirus vaccine production facilities, including associated QC laboratories, animal houses, filling lines, packaging areas, vaccine/seed storage areas and other relevant functions
- QC laboratories of NRAs, involved in the control and release of poliomyelitis vaccines
- Facilities that conduct basic and biomedical applications/research/clinical trials with poliovirus
- Facilities using polio material for quality control, testing and/or validation purposes, and those producing diagnostic kits and/or materials for reference or other form of testing
- Repositories, culture collections and other specialized and dedicated forms of storage
- Sites used to dispose of and/or destroy stocks (e.g. incinerators, landfill)
- Collections of stool or other materials where the presence of poliovirus may be reasonably expected
26 countries plan to retain PV2 in 78 facilities

Number in parenthesis represents the number of countries with facilities planning to retain PV2 materials

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

NACs:
- 24 of 26 NACs established

PEFs:
- Applications submitted to GCC via NAC: 10
  - CPs endorsed by GCC: 4
  - CPs under review: 6
Can we finish the job?

- WPV1 transmission has not interrupted in Pakistan and Afghanistan.
- Too many cVDPV outbreaks.
- Concerning cVDPV2 outbreak in Nigeria and DRC

However
- Nigeria and Africa likely WPV free
- WPV3 eradicated
- cVDPV2 outbreaks can be interrupted with good quality mOPV2 SIAs, including in challenging areas (Syria)