Polio eradication and Endgame Strategic plan: Global perspective

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Paed Infectious disease
Addington/UKZN
KZN Polio symposium 2016
Outline

• Historical perspective

• Polio as a candidate for eradication

• The polio endgame

• Last vestiges of disease in 2016
Historical perspective

- Egyptian carvings
- 1789 – First clinical account by British physician Dr. Michael Underwood
- First polio epidemic in the U.S. in 1894
- 1900s widespread epidemics in Europe
- Peak – paralyzed and killed up to 500,000 per year
- March of Dimes – 1938
Patients in the iron lungs were only let out to eat.
Timeline | Important events in poliovirus eradication

1909 | IPV licensed
1955 | OPV licensed, USA
1960 | Expanded programme of immunization (EPI) set up by the WHO
1974 | Smallpox eradicated
1979 | WHO commits to global eradication of polio (caused by wild-type virus) by 2000
1985 | PAHO commits to the eradication of polio (caused by wild-type poliovirus) in the Americas by 1988
1988 | Last case of poliomyelitis in the Americas (in Peru)
1991 | Last case in Western Pacific region (including China, Cambodia, and the Philippines) in Cambodia
1997 | Proposed end of wild-type poliovirus
1998 | Last case in European region (including Eastern Bloc countries and much of Russia) in Turkey
2005 | Poliovirus shown to be transmissible to animals

IPV, inactivated polio vaccine; OPV, oral polio vaccine; PAHO, Pan American Health Organization; WHO, World Health Organization.
Global eradication

• “the worldwide absence of a specific disease agent in nature as a result of deliberate control efforts that may be discontinued where the agent is judged no longer to present a significant risk from extrinsic sources.”
POLIO AS A CANDIDATE FOR ERADICATION

• 4 key criteria
• Humans are required to maintain the pathogen.
• Sensitive and specific diagnostic tools are available.
• Effective intervention to terminate human-to-human transmission.
• Proof of principle (ie, elimination of transmission in a large geographic area).
Global Polio Eradication Initiative

- Eradication efforts 1988
  - 350,000 persons paralyzed
  - Targeted 2000

- More than 99% reduction
  - 3/6 WHO regions polio free
  - One of the 3 WPV serotypes been eradicated
  - Still a few hundred cases of WPV-related paralysis each year
  - Endemic countries and countries re-infected via importations
Three major deadlines missed

• Interruption of transmission by 2000

• Certification of eradication in 2005

• Interruption of transmission by 2012
STRATEGIES THUS FAR

• Ongoing strengthening of routine immunization coverage
• Continued supplementary immunization activities (SIAs)
• Extensive surveillance to find the virus
• Mopping up efforts in areas with continued transmission
The POLIO endgame

WHO, UNICEF, Rotary International and the CDC + others

Global Polio Eradication Initiative (GPEI)

AIMS TO WIPE OUT THE LAST CASES OF POLIO FROM ALL CAUSES BY 2018
The Polio Eradication & Endgame Strategic Plan 2013-2018

The Plan differs from previous eradication plans

“complete the eradication and containment of all **wild, vaccine-related**, and **Sabin polioviruses** such that no child ever again suffers paralytic poliomyelitis.”
What does it mean for the world to be polio-free?

• Complete interruption of transmission and elimination of all polio disease
  – Wild polioviruses
  – Vaccine-derived polioviruses (VDPVs)
  – Vaccine-associated paralytic poliomyelitis (VAPP)

• Eradication & Endgame Strategic Plan 2013-2018 refers to both wild and vaccine-derived polioviruses

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<tr>
<th>Eradication</th>
<th>Endgame</th>
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<td>• Plan refers to wild virus</td>
<td>• Plan refers to management of VDPVs and VAPP</td>
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The Plan has four objectives

1. Detect and interrupt all poliovirus transmission
2. Strengthen immunization systems, withdraw oral polio vaccines (OPV), and introduce inactivated polio vaccine (IPV)
3. Contain poliovirus and certify interruption of transmission
4. Plan polio’s legacy
**Endgame Major Objectives**

### Virus detection & interruption
- Wild virus interruption
- Outbreak response (esp. cVDPVs)

### RI strengthening & OPV withdrawal
- RI strengthening OPV2 pre-requisites
- Introduce IPV
- OPV2 withdrawal

### Containment & certification
- Finalize long-term containment plans
- Complete containment & certification globally

### Legacy Planning
- Consultation & strategic plan
- Initiate implementation of legacy plan

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**Timeline**

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Wild virus interruption

- Stop all wild poliovirus transmission by the end of 2014

- Stop new outbreaks due to a cVDPV within 120 days of confirmation of the index case
• Geographic focus

– Endemic countries
– Countries at highest risk of importation in Africa
– Countries with persistent cVDPV or a history of cVDPV emergence
Activities

• Enhancing global poliovirus surveillance

• Improving OPV campaign quality to reach children in the remaining endemic and persistent cVDPV countries

• Rapid outbreak response
### Endgame Major Objectives

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#### Virus detection & interruption
- **2014**: Wild virus interruption
- **2015**: Outbreak response (esp. cVDPVs)

#### RI strengthening & OPV withdrawal
- **2015**: RI strengthening OPV2 pre-requisites
- **2016**: Introduce IPV
- **2017**: OPV2 withdrawal

#### Containment & certification
- **2015**: Finalize long-term containment plans
- **2016**: Complete containment & certification globally

#### Legacy Planning
- **2016**: Consultation & strategic plan
- **2017**: Initiate implementation of legacy plan

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**Major Objectives**

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**Last OPV2 use**

- **2018**: Complete containment & certification globally

**Summary**

- **2013**: Virus detection & interruption
- **2014**: Wild virus interruption
- **2015**: Outbreak response (esp. cVDPVs)
- **2016**: RI strengthening OPV2 pre-requisites
- **2017**: Introduce IPV
- **2018**: OPV2 withdrawal
Immunization systems strengthening and OPV withdrawal

• Hasten the interruption of all poliovirus transmission
• Build a stronger system for the delivery of other lifesaving vaccines.
• All 145 countries that currently use OPV in EPIs, as well as the GAVI Alliance and immunization partners
  – 3 polio endemic countries plus 7 high risk of WPV outbreaks and recurrent cVDPV emergence
  – Angola, Chad, DRC, Ethiopia, India, Somalia and South Sudan
## Endgame Major Objectives

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### Timeline

- **Last wild polio case**: 2013
- **Last OPV2 use**: 2016
- **Certification**: 2018

- **Legacy Planning**: Complete containment & certification globally
- **Consultation & strategic plan**: 2018
Containment and certification

- Certify all regions of the world polio-free

- Ensure that all poliovirus stocks are safely contained by 2018

- International consensus on long-term biocontainment requirements for polioviruses.
### Endgame Major Objectives

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Legacy planning

• World remains permanently polio-free
• Investment in polio eradication provides public health dividends for years to come.
• Mainstreaming long-term polio functions
• Leveraging lessons for other major health initiatives
• Transitioning the polio infrastructure as appropriate
1988

Polio-endemic countries

Source: World Health Organisation/Global Polio Eradication Initiative
2015

Source: World Health Organisation/Global Polio Eradication Initiative
2015

1994

2000

Polio-endemic countries

Source: World Health Organisation/Global Polio Eradication Initiative
Source: World Health Organisation/Global Polio Eradication Initiative
The battle against polio in Pakistan

Efforts to stamp out the crippling disease have been badly affected by deadly attacks against health workers

Vaccination workers killed since December 2012
Vaccinators: at least 30
Police and security: nearly 30

350,000 young Pakistanis have missed out on vaccinations this year

Source: EndPolioPakistan

Infected districts 2014

Khyber agency
Peshawar

North and South Waziristan
Taliban have banned vaccinations

Tribal Areas

Rebound of cases

More than 18,000 cases in 1993

2005 2012 2013 2014

28 58 93 220
‘global public good’

• GPEI personnel and its infrastructure
  – Other priority health interventions
  – Surveillance of epidemic-prone diseases
  – Humanitarian response to natural disasters and other crises.

• Beyond ending polio
  – Transition lessons of the polio programme
  – Delivering additional public health dividends
Polio still cripples thousands of children around the world. With your help, we can wipe this disease off the face of the earth forever. Visit rotary.org/endpolio to help.

END POLIO NOW

We Are This Close to Ending Polio.

Archbishop Desmond Tutu