Polio Eradication
From Emergency to 'Endgame'

27 June 2012
Recent developments

The 'polio emergency' 2012-13

The 'polio endgame' 2014-18

Vaccine implications & risks
Recent developments
"WHO has removed India from the list of countries with active endemic wild poliovirus transmission"

Dr Margaret Chan, Director-General
World Health Organization
25 February 2012
Polio cases, last 6 months of 2011

All re-infected countries: steep decline in cases
Polio, type 3 cases

Only Nigeria & Pakistan had type 3 in the last 11 months

* at 27June 2012
Polio paralyzed children, last 6 months
The Polio Emergency
2012-13
Polio cases, last 6 months of 2011

Nigeria

Pakistan & Afghanistan

Polio types 1 & 3
cVDPV2 (Nigeria)
International spread
Recent Polio Outbreaks

2010 & 2011
World Health Assembly

"DECLARES polio eradication....emergency for global public health"

25 May 2012
Polio Emergency Action Plan: faster, focused & fully accountable
Polio Emergency Goals

- Help *Nigeria, Pakistan, Afghanistan* reach necessary coverage levels by end-2012
- Sustain momentum in *Chad, DR Congo, Angola* to finish in 2012
- Heighten *polio partner* accountability & coordination and close the *funding gap*
Focus: chronically missed children
Focus: 'worst performing' states/provs/districts

- surge of >7500 technical/socmob assistance to sub-district levels
- multiple strategies to reach missed children
- real-time oversight of OPV campaign preps/performance
- new national/local accountability structures
Direct Head of State Oversight
Activation of emergency centres/procedures

Emergency Operation Center (CDC)

Strategic Health Operations Centre (WHO)
The Polio Endgame
2014-18
Evolution of the 'Post-Eradication' Timeline

- Last polio case
- OPV cessation

Years: 0, 2, 4, 6, 8, 10, 12

- Certification Commission '95
  - Wild virus eradication
  - Certification

- World Health Assembly (2008)
  - Wild virus eradication
  - Certification & containment
  - VDPV elimination & validation
  - Post-OPV surveillance

The 'endgame' period
Recent developments leading to a major 'rethink' of the endgame

- **New bivalent vaccine (bOPV):** outperforms tOPV.

- **New diagnostics:** type 2 Sabin is the main problem.

- **New, low cost 'IPV options'** allow all countries to continue type 2 immunization if they want/need to.
circulating Vaccine-Derived Poliovirus Outbreaks (cVDPVs), 2000-2010

Type 2 (450 cases)
Type 1 (79 cases)
Type 3 (9 cases)
Affordable IPV options in the near-term

1/5th of 1 dose of IPV can induce a response in >90% of children

Response* after 1 dose
(%, intradermal IPV, Cuba)

<table>
<thead>
<tr>
<th>P1</th>
<th>P2</th>
<th>P3</th>
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<tr>
<td>100</td>
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IPV price
($ per dose)

- Full-dose: $3
- 1/5th fractional dose: $0.6
- Expected price (high volume**): <$0.4

Current price (low volume)

* includes seroconversion & priming

** assumes full dose price of < US$1.5/dose at high volume
New Polio Endgame: Guiding Principles

- phased removal of Sabin/OPV viruses, beginning with highest-risk (type 2).
- elimination of type 2 in parallel by switching from tOPV to bOPV for routine EPI & campaigns.
- promotion of 1 IPV dose to boost immunity prior to a tOPV-bOPV switch & provide type 2 'priming'.
New 'Endgame' strategy: parallel risk management

<table>
<thead>
<tr>
<th>Years</th>
<th>Last wild polio case</th>
<th>trivalent OPV cessation</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>Wild virus eradication</td>
<td>Certification &amp; containment</td>
</tr>
<tr>
<td>2</td>
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<td>6</td>
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</tr>
<tr>
<td>8</td>
<td>VDPV elimination &amp; validation</td>
<td>Post-OPV surveillance</td>
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<tr>
<td>10</td>
<td>OPV2 cessation &amp; IPV introduction</td>
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</tr>
<tr>
<td>12</td>
<td><em>bivalent OPV 1&amp;3 (bOPV) cessation</em></td>
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SAGE, April 2012

- recommended 1 IPV dose in routine immunization schedules prior to tOPV-bOPV switch.

- promoted universal IPV, but recognized (& accepted) high probability of low uptake in low coverage countries.

- requested 'low-cost IM & ID options' within 1 year.

- decided 2014 was too early for tOPV-bOPV switch (urgent issue, but not an emergency)
World Health Assembly, May 2012

- endorsed tOPV-bOPV switch
- expressed alarm over current IPV price, lack of medium & longterm IPV price(s), limited supply options, cost-benefit.
- requested WHO to work with partners & manufacturers to enhance IPV affordability & availability.
- requested *Polio Endgame Strategy & Budget 2014-18*
Next steps (by Nov 2012)

Further cost-effectiveness analysis

Consultations with:

a) regional & nat’l authorities on IPV policy & program implications (esp. ID vs IM use),

b) regulators & manufacturers on IPV licensing, supply & pricing.

Draft Polio Endgame Plan & Budget 2014-18
Vaccine Implications
Current global OPV demand, 2013-2018

(scenario: tOPV-bOPV switch in mid-2015)
Polio 'Emergency':
Implications for OPV demand

- overall OPV demand will further *increase*.
- demand will increase particularly for the period 2013-2015, with substantial quantities required through at least 2018.
- mix of vaccines from 2015 onwards will depend on timing of the polio 'endgame'.
**Polio Emergency & Endgame: Potential Implications for IPV**

<table>
<thead>
<tr>
<th>Activity/Phase</th>
<th>Wild Virus Eradication</th>
<th>tOPV-bOPV Switch</th>
<th>Post-bOPV Cessation</th>
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<tbody>
<tr>
<td><strong>Timing</strong></td>
<td>12-24 months</td>
<td>3-4 years</td>
<td>&gt;6 years</td>
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<tr>
<td><strong>Product</strong></td>
<td>Whole dose IPV</td>
<td>'Low cost' IM or ID IPV</td>
<td>'Low cost' IM or ID IPV or hexavalent</td>
</tr>
<tr>
<td><strong>Quantity</strong></td>
<td>Limited (10-20 million)</td>
<td>Substantial (100+ million)</td>
<td>Large-scale (200+ million)</td>
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Potential Global IPV demand, 2012-2018

Scenario: tOPV-bOPV switch in 2015

- Est'd current IPV use
- Current + 1 IM IPV dose
- Current + 1 IM/ID (50/50)
- GAVI ID & RoW IM
Polio 'Endgame':
Emerging implications for IPV demand

• routine IPV use will be more extensive & earlier than originally anticipated.

• availability of 'low cost' approaches (eg. ID) will determine extent of routine IPV uptake.

• some countries may prefer access to an IPV 'stockpile' over routine use.

• availability of 'affordable' IPV-hexavalent could be main determinant of longterm use in low-income settings.
Risks
Current Gap: US$ 945 m
Firm Prospects: US$ 344 m
Best Case Gap: US$ 601 m
Emerging Risks

Int'l spread from northwest Nigeria (to Mali) & northeast Nigeria (to Chad)

Deterioration of access in southern Afghanistan with increase in conflict

Political change in Pakistan

Extremely tight OPV supply through 2013
OPV Supply & Demand for Countries with Procurement by UNICEF, 2013
Summary
Polio paralyzed children, 2012

Only 4 countries & 84 cases...

...but huge risks in virus reservoirs, financing & vaccine
The 'Polio Emergency & Endgame' is evolving rapidly, with substantial implications for OPV & IPV demand, both of which increase from the near-term.