Polio Eradication Plan: SA End Game

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KZN POLIO SYMPOSIUM
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UNIVERSITY OF KWAZULU-NATAL
“complete the eradication and containment of all wild, vaccine-related, and Sabin polioviruses such that no child ever again suffers paralytic poliomyelitis.”
End of Game: SA Polio Eradication Plan

• Poliomyelitis- the basics
• Global Polio Eradication End Game
• Polio Eradication Committees
• EPI
• AFP surveillance
• Polio Stakeholder symposium
Poliomyelitis

• The polioviruses are three related enteroviruses: types 1, 2 and 3 (serotypes).

• Polio type 1 major cause of paralysis: <1% infections

• Faecal-oral transmission- highest viral excretion 1st 2 weeks: risk factor poor sanitation

• Infection to onset of paralysis = 21 days

• 80-90% infection children < 5yrs old

• **Clinical**: asymmetric limb paralysis, bulbar, inapparent

• Immunity lifelong after infection or immunisation
Symptoms of Acute Flaccid Paralysis

- Paralysis - sudden onset
- Weakness
- Floppy limb
- Can’t move leg, arm
- Can’t walk
- Can’t sit-up
Differential Diagnoses for AFP

- Guillain-Barré Syndrome
- Traumatic neuritis
- Other enteroviruses
- Transverse myelitis
- Echovirus
- Coxsackie virus
- Poliovirus

Legend:
- Clinical diagnoses
- Lab diagnoses

Department of Health
REPUBLIC OF SOUTH AFRICA
MUSCLES COMMONLY WEAKENED BY POLIO

- shoulder muscles
- muscles behind arm (weakness straightening arm)
- back muscles (either side of backbone)
- thumb muscles
- muscles that straighten knee
- muscles that straighten or bend hip, or that spread or close legs

THE UNTREATED POLIO PATIENT

- THE QUADRIPLEGIC PATIENT
- SEVERE PARALYSIS
- PATIENT DRAGGING FLAIL LOWER LIMBS
- CRAWLING
- ALL FOURS
- CROUCHING GAIT

contractures causing tight cords

muscles that lift foot

Fig. 2(a)
The Plan differs from previous eradication plans because it addresses paralytic cases associated with both wild polioviruses and vaccine-derived poliovirus/VAPP.

**Eradication**
- refers to *wild virus*

**Endgame**
- refers to management of VDPVs and VAPP
Objectives of End Game = RSA

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
‘If You Fail to Plan, You Plan to Fail’
RSA Progress on Polio Eradication

- **1989**: Last confirmed wild polio virus case reported in SA.
- **1995/1996-2013**: mass SIA campaigns every 3-4 years
- **1997**: Active case based AFP surveillance introduced.
- **2003**: High quality AFP surveillance has met the required surveillance performance indicators at national level.
- **2006**: SA via NCC presented country report accepted ARCC – SA free WPV
- **2012-2015**: WHO / RSA regional Symposia – training and update
- **2016**: Implementation of the Switch from tOPV to bOPV
South African Plan

• NDoH- EPI Directorate/ MoH

• There are 3 polio Eradication Committees
  o National Polio Expert Committee (NPEC) since 97
  o National Certification Committee (NCC)
  o National Task Force (NTF) – lab containment

• Longest standing Polio Eradication Committee

• WHO AFRO Region
SA/WHO Pillars of Polio Eradication

- Attaining high routine immunisation coverage
  - 80% with at least 3 doses of Oral Polio Vaccine (OPV)
  - 80% OPV3/Penta3 coverage at district and 95% coverage at national level

- Conducting National Immunization Days (NIDS)

- Attaining and sustaining high level Acute Flaccid Paralysis (AFP) surveillance indicators

- Conducting “Mopping up” Campaign in case of importation of wild poliovirus or high risk.
VACCINATOR'S MANUAL
“Immunisation That Works”

Expanded Programme on Immunisation in South Africa (EPI-SA)

Love them, Protect them, Immunise them

Population Demographics

South Africa population STATS

• Total population: 53.701 million
• < 1 yr 1.059 million
• < 5 yr 5.259 million
• <15 15.453 million

2014 : RSA budget for vaccines = R 1.4 billion
RSA EPI Initiatives 2015

• Highest Priority: EPI target for elimination: measles, polio, tetanus

• Epi monitored through DHIS

• Introduced IPV, limited OPV birth and 6wks

• RTHC booklet cornerstone for monitoring

• Maintain cold chain for polio vaccine

• RED or REC strategy – promote sustainable immunisation
### RSA Vaccination Coverage %

<table>
<thead>
<tr>
<th>Indicator (annualized)</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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</thead>
<tbody>
<tr>
<td>DTaP-IPV//Hib 1</td>
<td>69.1</td>
<td>89.0</td>
<td>83.3</td>
<td>92.5</td>
<td>96.0</td>
</tr>
<tr>
<td>DTaP-IPV//Hib 3</td>
<td>62.8</td>
<td>87.0</td>
<td>82.9</td>
<td>90.6</td>
<td>95.0</td>
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<tr>
<td>DTaP-IPV//HIB 1 - 3DOR</td>
<td>9.1</td>
<td>2.3</td>
<td>0.5</td>
<td>2.0</td>
<td>1.0</td>
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<tr>
<td>Measles (MCV) 1st dose</td>
<td>84.8</td>
<td>88.5</td>
<td>89.1</td>
<td>87.3</td>
<td>91.0</td>
</tr>
<tr>
<td>DTaP-IPV//Hib 1- MCV 1DOR</td>
<td>-35.0</td>
<td>-1.8</td>
<td>-7.6</td>
<td>3.6</td>
<td>5.2</td>
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<tr>
<td>Measles 2nd dose</td>
<td>75.8</td>
<td>75.4</td>
<td>76.9</td>
<td>74.7</td>
<td>81.0</td>
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<tr>
<td>MCV 1- MCV 2</td>
<td>12.5</td>
<td>16.6</td>
<td>15.3</td>
<td>15.7</td>
<td>11.0</td>
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<tr>
<td>Rotavirus 2nd dose</td>
<td>60.4</td>
<td>85.5</td>
<td>89.3</td>
<td>89.5</td>
<td>94.0</td>
</tr>
<tr>
<td>PCV 3rd dose</td>
<td>58.5</td>
<td>80.2</td>
<td>87.9</td>
<td>87.1</td>
<td>90.0</td>
</tr>
<tr>
<td>Fully Immunized Child (FIC)</td>
<td>79.9</td>
<td>82.9</td>
<td>84.0</td>
<td>84.1</td>
<td>87.4</td>
</tr>
</tbody>
</table>

16 /52 districts in 2011 Target < 80%
### EPI SIA in South Africa

#### National and Sub-National Polio Immunisation Campaigns & Coverage: 1995-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>First round %</th>
<th>Second Round %</th>
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<tbody>
<tr>
<td>1995</td>
<td>90</td>
<td>78</td>
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<tr>
<td><strong>1996</strong></td>
<td><strong>Namibia polio outbreak</strong></td>
<td>90</td>
</tr>
<tr>
<td>1997</td>
<td>82</td>
<td>66</td>
</tr>
<tr>
<td>2000</td>
<td>97</td>
<td>72</td>
</tr>
<tr>
<td>2002 Western Cape <strong>mop-up</strong></td>
<td>85</td>
<td>84</td>
</tr>
<tr>
<td>2004</td>
<td>81</td>
<td>65</td>
</tr>
<tr>
<td>2007</td>
<td>90</td>
<td>86</td>
</tr>
<tr>
<td><strong>2010</strong></td>
<td><strong>Measles outbreak vit A, deworm</strong></td>
<td>100</td>
</tr>
<tr>
<td>2013</td>
<td>86</td>
<td></td>
</tr>
</tbody>
</table>
RSA 2010 Mass Campaign Oral Immunisation OPV coverage 0-59 months (target = 90%)
Introduce
• at least one dose of IPV
• into routine immunization

Switch
• tOPV to bOPV

Withdraw
• of bOPV & routine OPV use

RSA READY !!
April-2016

Before end 2015

2016

2019-2020

Ongoing STRENGTHENING of routine immunization services

SA Current EPI schedule OPV at birth + 6 weeks
RSA - AFP Surveillance Milestones

• **1989** – Last WPV lab confirmed case
• **1995**: AFP notifiable disease
• **1997**: Active AFP surveillance implemented
• **1997**: PEC constituted
• **2001**: Switch to virological classification
• **2006**: Polio Free Certification Report accepted
• **2015**: Laboratory Containment : NTF
• Any child under 15 years of age with Acute (sudden onset) **Flaccid Paralysis** (weakness of the limb – arm, leg or both),

• or any person of any age when paralytic illness of Polio is suspected by a clinician.
Differential Diagnoses for AFP

- Guillain-Barré Syndrome
- Traumatic neuritis
- Other enteroviruses
- Transverse myelitis
- Echovirus
- Coxsackie virus
- Poliovirus

Legend:
- Yellow: Clinical diagnoses
- Green: Lab diagnoses
## AFP Indicators

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Target</th>
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<tbody>
<tr>
<td>Non-Polio AFP rate per 100,000 of the ≤15 Yr old target population</td>
<td>4.0/100,000</td>
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<tr>
<td>Stool adequacy: cases with 2 adequate stools collected 24 to 48 hours apart within 14 days of onset of paralysis</td>
<td>80%</td>
</tr>
<tr>
<td>Specimens arriving at lab ≤3 days of being collected</td>
<td>80%</td>
</tr>
<tr>
<td>Specimens arriving at lab in good condition (± 5g, on ice, not leaking)</td>
<td>90%</td>
</tr>
<tr>
<td>Non-polio Enterovirus isolation rate</td>
<td>10%</td>
</tr>
<tr>
<td>Lab results available within 14 days of receipt</td>
<td>80%</td>
</tr>
</tbody>
</table>
There are 3 polio Eradication Committees

- National Polio Expert Committee (NPEC) since 97
- National Certification Committee (NCC)
- National Task Force (NTF) – lab containment

- Longest standing Polio Eradication Committee
- Surveillance Officers
- Secretariat – EPI Directorate
AFP Indicators analysis as of week 46, data source 2015 NDoH AFP database

<table>
<thead>
<tr>
<th>Legend</th>
<th>Non Polio AFP detection Rate</th>
<th>Stool Adequacy %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>0.0-1.99</td>
<td>0.00-59.99</td>
</tr>
<tr>
<td>Yellow</td>
<td>2.00-3.99</td>
<td>60.00-79.99</td>
</tr>
<tr>
<td>Green</td>
<td>&gt;=4.0</td>
<td>&gt;=80</td>
</tr>
</tbody>
</table>

NPAFP Rate as of week 1-46, 2015

Non Polio AFP Rate by Province

- Eastern Cape: 3.6
- Free State: 2.6
- Gauteng: 2.5
- KwaZulu-Natal: 2.2
- Limpopo: 3.9
- Mpumalanga: 4.5
- North West: 1.0
- Northern Cape: 1.3
- Western Cape: 2.1
- SOA: 2.8
KZN: Non Polio AFP Rate week 1-52, 2015
KZN: Stool adequacy week 1-52, 2015
<table>
<thead>
<tr>
<th>Province</th>
<th>Districts</th>
<th>Total Population</th>
<th>&lt;15 yrs Population</th>
<th>Target AFP Cases</th>
<th>Total AFP Cases reported</th>
<th>Non-Polio AFP Cases Detected(&lt;15Yrs of Age)</th>
<th>Non-Polio AFP Detection Rate(&lt;15 Yrs of Age)</th>
<th>AFP cases with two adequate stools 24-48 hrs apart within 14 days</th>
<th>AFP Stool Adequacy (%)</th>
</tr>
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<tbody>
<tr>
<td></td>
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<tr>
<td>KwaZulu-Natal</td>
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<tr>
<td></td>
<td>Amajuba DM</td>
<td>522 638</td>
<td>174 586</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>2.9</td>
<td>5</td>
<td>83</td>
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<tr>
<td></td>
<td>eThekwini MM</td>
<td>3 520 558</td>
<td>963 624</td>
<td>39</td>
<td>19</td>
<td>18</td>
<td>1.9</td>
<td>17</td>
<td>89</td>
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<tr>
<td></td>
<td>iLembe DM</td>
<td>485 309</td>
<td>178 497</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>3.9</td>
<td>6</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>Harry Gwala DM</td>
<td>651 445</td>
<td>196 118</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>3.6</td>
<td>6</td>
<td>86</td>
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<tr>
<td></td>
<td>Ugu DM</td>
<td>750 215</td>
<td>264 219</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>3.4</td>
<td>7</td>
<td>70</td>
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<tr>
<td></td>
<td>uMgungundlovu DM</td>
<td>1 087 086</td>
<td>321 593</td>
<td>13</td>
<td>11</td>
<td>11</td>
<td>3.4</td>
<td>10</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Umkhanyakude DM</td>
<td>649 644</td>
<td>243 945</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>3.7</td>
<td>8</td>
<td>80</td>
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<tr>
<td></td>
<td>Umzinyathi DM</td>
<td>522 804</td>
<td>186 532</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>2.1</td>
<td>4</td>
<td>100</td>
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<tr>
<td></td>
<td>Uthukela DM</td>
<td>695 671</td>
<td>240 302</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>3.3</td>
<td>6</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Uthungulu DM</td>
<td>958 267</td>
<td>354 331</td>
<td>14</td>
<td>9</td>
<td>8</td>
<td>2.3</td>
<td>5</td>
<td>56</td>
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<tr>
<td></td>
<td>Zululand DM</td>
<td>844 531</td>
<td>301 261</td>
<td>12</td>
<td>11</td>
<td>9</td>
<td>3.0</td>
<td>8</td>
<td>73</td>
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<td></td>
<td>10 688 168 008</td>
<td>3 425</td>
<td>137</td>
<td>102</td>
<td>95</td>
<td>2.8</td>
<td>82</td>
<td>80</td>
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<td>Mpumalanga</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Ehlanzeni DM</td>
<td>1 751 531</td>
<td>620 876</td>
<td>25</td>
<td>28</td>
<td>28</td>
<td>4.5</td>
<td>24</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>G Sibande DM</td>
<td>1 076 612</td>
<td>300 467</td>
<td>12</td>
<td>16</td>
<td>16</td>
<td>5.3</td>
<td>13</td>
<td>81</td>
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<tr>
<td></td>
<td>Nkangala DM</td>
<td>1 407 465</td>
<td>364 056</td>
<td>15</td>
<td>23</td>
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<td>5.8</td>
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<td>91</td>
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<td>4 235 608 399</td>
<td>1 285</td>
<td>51</td>
<td>67</td>
<td>65</td>
<td>5.1</td>
<td>58</td>
<td>87</td>
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<tr>
<td>South Africa</td>
<td></td>
<td>54 432</td>
<td>15 454</td>
<td>618</td>
<td>505</td>
<td>487</td>
<td>3.2</td>
<td>399</td>
<td>79</td>
</tr>
</tbody>
</table>

31
Wild Poliovirus Cases\(^1\), Previous 6 Months\(^2\)

<table>
<thead>
<tr>
<th>Country</th>
<th>Onset of most recent case</th>
<th>Number of infected districts</th>
<th>Total WPV (All type1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakistan</td>
<td>21-Nov-15</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>03-Nov-15</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>EMR</td>
<td>21-Nov-15</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>Global</td>
<td>21-Nov-15</td>
<td>19</td>
<td>34</td>
</tr>
</tbody>
</table>

\(^1\) Excludes viruses detected from environmental surveillance.
\(^2\) Onset of Paralysis: 09 June – 08 December 2015

Data in WHO HQ as of 08 December 2015
Role of the clinician

- Case detection and notification
- Comprehensive examination and clinical notes
- Legal mandate to notify cases and provide clinical notes if requested
- Follow up of indicated cases
- CME, curriculum, Supportive to EPI
KEY CHALLENGES TO PEI

- Real threat of regional polio importations
- Declining population immunity to sub-optimal routine immunization services
- Sub-national AFP surveillance gaps manpower shortage - surveillance officers
- Gaps in the quality of polio SIAs and other child survival interventions to which OPV is added (measles)
Polio Stakeholder Symposium

• Commitment to transition from TOPV to bOPV
• NDoH to improve AFP surveillance, sensitise and train clinicians= CPD activities
• Coordinate PEI with regulatory bodies HPCSA
• Undergraduate relevant curriculum change
• Engage with private sector and NGO
• Continuous Laboratory update status and database
South Africa

- RSA is a REAL success Story
- Planned not FAIL
- No Complacency!
• Thank You