Global Polio Eradication: Reaching Every Last Child
Polio Eradication in the Emergency Phase

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*Chief, Polio Eradication Branch, Global Immunization Division*

*Center for Global Health*
Polio Eradication—Terminology

- **Viruses**
  - WPV: wild poliovirus
  - VDPV: vaccine-derived poliovirus

- **Vaccines**
  - OPV: oral poliovirus vaccine
  - IPV: inactivated poliovirus vaccine

- **Vaccination Strategies**
  - RI: routine immunization, also called “EPI”
  - SIA: supplemental immunization activity, or “vaccination campaign”
    - NIDs: national immunization days
    - SNIDs: sub-national immunization days

- **Surveillance Terms**
  - Case surveillance: acute flaccid paralysis (AFP) in persons
  - Environmental surveillance: sewage testing for poliovirus in community
Other Important Issues

- **The polio “endgame”**
  - Inactivated poliovirus vaccine now being introduced globally
  - Type 2 component to be removed from oral polio vaccine in 2016
  - All oral polio vaccine to be removed after certification (3 years after last wild poliovirus case)
  - Containment of live poliovirus stocks

- **Vaccine-derived polioviruses (VDPVs)**
  - Phenotypic reversions of oral polio vaccine viruses
  - Cause paralysis as severe as that of WPV
  - Indicator of low vaccine coverage
  - Increasingly important to eradication efforts

WPV: Wild poliovirus
The Global Polio Eradication Initiative (GPEI)

- Extensive, global partnership
- Headed by national governments with five leading partners
  - Rotary International
  - World Health Organization (WHO)
  - United Nations Children’s Fund (UNICEF)
  - Centers for Disease Control and Prevention
  - Bill & Melinda Gates Foundation
What is Poliomyelitis?

- Caused by one of three human enterovirus types – poliovirus 1, 2 and 3
- Highly infectious – virus found in oral secretions and stool
- Global distribution
- Clinical presentation and sequelae
  - Most infections are asymptomatic or not recognizable as polio
  - At most 1 in 200 infections present as limb weakness, also called “acute flaccid paralysis”
  - Result is lifelong paralysis
  - Severe form: bulbar polio
Wild Polio Cases, Worldwide, 1985-2014

By 2000, over 99% decrease in cases of polio

1988 – WHA resolution to eradicate polio by 2000
1991 – Western Hemisphere polio free
1999 – Wild poliovirus, type 2 (WPV2) eradicated

Number of Cases (Estimated)

WHA: World Health Assembly

2000-2010: Decade of Innovations
Technical: e.g., monovalent & bivalent vaccines
Programmatic: e.g., reaching chronically missed children
January 2011 – Polio eliminated from India, demonstrating that eradication was possible

Polio cases increased in three remaining endemic countries, Pakistan, Afghanistan and Nigeria

October 2011 – IMB report issued

“… The Programme needs greater global priority and further funding. Failure would be a disaster. … Our major findings are clear and unambiguous. … We are convinced that polio can – and must – be eradicated. We are equally convinced that it will not be eradicated on the current trajectory.”

IMB: Independent Monitoring Board
The Emergency Phase of Polio Eradication 2012 to Present

- For Global Polio Eradication Initiative
  - Revision of strategic plan
  - Scale-up of resources, including staffing

- For CDC
  - Polio eradication program moved to Emergency Operations Center (EOC)
  - EOC activated in December 2011
Wild Poliovirus Cases by Country, 12 Aug 2014 through 11 Feb 2015

$12 billion so far
$1 billion per year

Nigeria
most recent case: 24 Jul 2014

Middle East Outbreak
no cases in >9 months

Afghanistan
mostly importation from Pakistan; some endemic transmission

Pakistan
uncontrolled outbreak

Horn of Africa Outbreak
no cases in >6 months

Wild poliovirus Type 1 case
Wild poliovirus Type 3 – Last known case Nov 2012

Country with endemic wild poliovirus, Type 1
Failure Is Not An Option

Global Re-emergence After Temporary Boycott of Polio Vaccination in Nigeria, 2003

- By end of 2003, spread to 8 previously polio-free countries
- By end of 2004, 14 countries infected, with re-established transmission in 6
- By end of 2006, 20 countries infected

Global Wild Virus Distribution and Spread, 2003-2014
What Would Failure of Eradication Mean?

- Poliovirus would quickly spread, causing large, disruptive outbreaks
- These outbreaks would require substantial resources to contain
- Wild poliovirus would eventually find its way back to every country without an effective immunization system, causing ~200,000 cases per year

Cost and Benefits of Polio Eradication

- **From 1988 through 2012**
  - ~4 to 6 million cases prevented
  - ~$1700 to $2500 per case prevented
    - Estimate does not include medical costs prevented or indirect savings

- **Once eradication is complete**
  - 2 million cases prevented in first decade
  - Within few decades, tens of billions of dollars in savings after covering costs of the program

Effects of polio eradication are forever and equitable

- Smallpox as an example
- Last year, the number of smallpox cases in Somalia, Syria and all the world was exactly the same….

zero.

polioeradication.org
The Global Polio Laboratory Network—Continuous Innovation and Quality Control

M. Steven Oberste, PhD
Chief, Polio and Picornavirus Laboratory Branch
Division of Viral Diseases
National Center for Immunization and Respiratory Diseases
Polio Surveillance

- Detect polio cases (WPV or VDPV) to direct immunization campaigns
- Acute flaccid paralysis (AFP)
  - Stool specimen is collected from case to confirm polio
  - WHO-accredited laboratory tests specimens
- Environmental surveillance (sewage)
  - Supplements AFP surveillance
  - Collects and tests samples
- Enterovirus surveillance (clinical)
  - Mainly in developed countries with advanced health care system

WPV: Wild poliovirus
VDPV: Vaccine-derived poliovirus
Laboratory Testing Algorithm

- **Fecal specimen**
  - Stool extract or environmental sample

- **Virus isolation in cell culture**
  - Is there a virus in the stool?

- **“Intratypic differentiation” (ITD)**
  - If there is a virus, is it polio?
  - If poliovirus, PCR used to determine which kind is present
    - Wild poliovirus, vaccine-like, vaccine-derived?

- **Partial genome sequencing**
  - If wild or vaccine-derived, which genotype or lineage (molecular epidemiology)
Global Polio Laboratory Network – 146 Laboratories Worldwide

- Virus Isolation Laboratory (43)
- ITD Laboratory (70*)
- Sequencing Laboratory (26)
- Global Specialized Laboratory (7)

*Includes 16 in process of implementation
AFR: African Region
AMR: Americas Region
EUR: European Region
ITD: Intratypic differentiation
SEAR: South Eastern Asia Region
EMR: Eastern Mediterranean Region
WPR: Western Pacific Region

World Health Organization
Challenges

- Geographically dispersed network
  - Laboratories in resource-limited settings
  - Specimen and reagent shipping
- Training, staff turnover
- Turnaround times
- Dramatic increase in workload
  - Over 200,000 stools specimens tested in 2013
Constant Innovations and New Technologies

- **New diagnostic algorithms**
  - Streamline testing without sacrificing sensitivity or quality

- **Reconfigure molecular assays to improve sensitivity and specificity**
  - WPV-specific molecular assays
  - New assay chemistries

- **FTA cards to facilitate sample transport**
  - Stable at ambient temperature
  - Considered noninfectious
  - Decreased shipping costs tenfold
  - Expanded which labs could ship samples

WPV: Wild poliovirus
FTA: Fast Technology Analysis for Nucleic Acid
## Faster Testing Reduced Laboratory Wait Time

<table>
<thead>
<tr>
<th>Laboratory Processing Steps</th>
<th>Standard Number of Laboratory Processing Days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-2003</td>
</tr>
<tr>
<td>Virus Isolation</td>
<td>28 days</td>
</tr>
<tr>
<td>Referral to second lab</td>
<td>7 days</td>
</tr>
<tr>
<td>Intratypic Differentiation</td>
<td>28 days</td>
</tr>
<tr>
<td>Referral to third lab</td>
<td>7 days</td>
</tr>
<tr>
<td>Sequencing</td>
<td>No standard</td>
</tr>
<tr>
<td>Total Reporting Time</td>
<td>70+ days</td>
</tr>
</tbody>
</table>
Areas for Future Innovations

- Improved sewage concentration methods
- Deeper sequencing to improve viral transmission tracking
- Direct detection of poliovirus genome in stool and sewage, without the need for cell culture isolation
Accreditation: Periodic Review of Laboratories

- Annual accreditation checklist and data review
- On-site review every three years
- Laboratory infrastructure
  - Staff and facilities are sufficient for the workload
  - Equipment is adequate and well maintained
  - Necessary reagents are routinely available
- Laboratory management

http://www.who.int/ihr/training/laboratory_quality/11_cd_rom_ab_network_national_polio_labs_checklist.pdf
Accreditation: Key Quality Indicators

- **Workload**: Minimum number of samples must be tested annually to maintain proficiency
- **Timeliness**: Results are reported to WHO and national program according to established timelines
- **Accuracy**: Results are consistently confirmed for referred samples
- **Proficiency programs for each laboratory method**
  - Coded specimen panels sent annually to each site
  - Score of 90% to pass
  - Remediation for failing scores
Legacy of the Global Polio Laboratory Network

- Laboratory infrastructure
- Culture of quality
- History of innovation
- Quality standards are already being applied to laboratory networks
  - Measles and rubella
  - Rotavirus
  - Japanese encephalitis
- Global capacity for biosafety and biosecurity
Progress on Polio Eradication: Strategies and Innovations in Nigeria

Faisal Shuaib, MD, DrPH
Deputy Incident Manager,
Polio Emergency Operations Centre,
Abuja, Nigeria
Nigeria Polio Program Before 2012 Was Poor Performing

- In 2003, boycott of vaccinations in Kano state
  - Led to polio spread throughout Northern region, exportations
- Since 2006, only country in Africa never to have interrupted polio transmission
- Numerous, multifaceted challenges
  - Poorly performing routine immunization system
  - Poor quality vaccination campaigns
  - Inefficiency and lack of accountability
Progress in 2012
Review Conducted and Steps Taken

- **Structural weaknesses in polio program identified**
  - Inadequate engagement and ownership by government
  - Poor coordination of international development partners
  - Poor oversight of field teams
  - Lack of shared sense of “emergency”

- **Government and partners reached consensus and took action**
  - Established Polio Emergency Operations Center in Nigeria
  - Improved government leadership and oversight
  - Jointly developed National Emergency Action Plan
  - Improved partner coordination and government engagement
Emergency Operations Center (EOC) in Nigeria

- **Strong commitment and collaboration between Nigerian federal government and development partners**
  - Incident Managers from Nigeria’s public sector
  - EOC reports to Chairman of Presidential Task Force on Polio Eradication and CEO National Primary Health Care Agency

- **EOC identifies and addresses problems using a war-room approach**
  - Government and development partners co-located at facility
  - Weekly meetings with various work groups and partners
Emergency Operations Center in Nigeria

- **Uses data-driven approach**
  - Data used for tracking, assessment and decision-making
  - Data accuracy and quality improved

- **Demonstrates constant innovation**
  - Identifying specific challenges
  - Proffering innovative solutions
EOC Identified and Characterized Gaps in the Program

- **Poor quality of SIAs due to poor monitoring**
  - Inadequate preparations and execution of campaigns
  - Many children were persistently missed by vaccinators

- **Inadequate access to underserved populations**
  - Nomadic populations, hard-to-reach settlements were missed
  - Populations living between states and LGAs perennially missed
  - Mapping of WPV cases showed a clustering around borders

- **Low community participation and demand**
  - Communities were not adequately engaged, low demand
  - Noncompliance and anti-OPV campaigns

- **Poor accountability, inadequate supervision**
  - Vaccinators showed poor discipline, failed to cover areas of deployment

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SIA: Supplemental immunization activities  
WPV: Wild polio virus  
LGA: Local government area  
OPV: Oral polio vaccine
Innovations to Overcome Gaps

- **Poor quality of SIAs due to poor monitoring**
  - Use “dashboard indicators” to assess readiness for campaigns
  - After campaigns, use LQAs to assess quality of campaigns

- **Inadequate access to underserved populations**
  - Outreach to enumerate underserved populations
  - Use of National Stop Transmission of Polio (NSTOP) officers

- **Low community participation and demand**
  - Engagement of traditional and religious leaders
  - Addressing “felt needs” using health camps
  - Use of volunteer community mobilizers, IEC materials

- **Poor accountability, inadequate supervision**
  - Engagement of Management Support Teams
  - Directly Observed Polio Vaccination

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SIA: Supplemental immunization activities  
LGA: Local government area  
LQAS: Lot quality assurance sampling  
IEC: Information, Education and Communication
Example 1: Pre-campaign “Dashboard Indicators”
Ensure Districts Prepared for Campaigns

- Assesses readiness of each local government area (e.g., district) to implement campaign
  - Planning & coordination, logistics, security, social mobilization

- Displayed in “dashboard” format for easy visualization
  - Uses “stoplight” colors for quick interpretation

- Indicators reviewed at state and national level
  - 3 weeks, 2 weeks, 1 week, 3 days, 2 days and 1 day pre-implementation

- “Dashboard” data used for decision-making
  - Campaign implementation
  - Real-time adjustments and interventions
## Dashboard Indicators: Bauchi State, 3-weeks Pre-campaign Implementation, Jan 2015

<table>
<thead>
<tr>
<th>LGA</th>
<th>Due 3 Weeks before campaign</th>
<th>Due 2 Weeks before campaign</th>
<th>Due 1 Week before campaign</th>
<th>Due 3 Days before Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LGA</strong></td>
<td>Social mobilization Plan</td>
<td>High risk</td>
<td>Evidence of task force</td>
<td>Meeting of Ward selection</td>
</tr>
<tr>
<td>Alkaleri</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Bauchi</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Bogoro</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Damban</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Darazo</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Dass</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Gamawa</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Ganjuwa</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Glade</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>100%</td>
</tr>
</tbody>
</table>

**LGA**: Local government area  
**IPD**: Immunization Plus Days (type of vaccination campaign)
Example 2: National Stop Transmission of Polio (NSTOP) Increased Effectiveness of Campaigns

- Locally trained field epidemiologists provide technical expertise at state and national level
- Capacity for rapid deployment and flexibility
- Responsibilities include
  - Capacity building for routine immunization activity at district level
  - Technical support for polio campaign planning, management, and supervision
  - Outbreak response
  - Operational research to inform decision making at national program level
    - Conducted in partnership with the Nigerian Field Epidemiology and Laboratory Training Program (FELTP)
Example 3: Identifying Underserved Populations in High-Risk Areas

- Identifying nomadic populations became a priority
  - Potential reservoir for poliovirus

- CDC/NSTOP conducted census activities among underserved populations in high-risk districts
  - Identified children missed in previous SIAs
  - Ensured underserved settlements are included in future SIAs

- From August 2012 to May 2014
  - Identified 63,333 underserved settlements across 19 states

- Nearly 1.5 million children identified and vaccinated

NSTOP: National Stop Transmission of Polio
LGAs: Local government areas
SIA: Supplemental immunization activities
Example 4: Health Camps Build on Community Need

- Reduce noncompliance and missed children by addressing unmet health needs
- Set up “fixed posts” in a high-traffic area in high-risk communities

- Offer routine immunizations, health screenings, common medications and OPV

OPV: Oral polio vaccine

Photo: Lisa Esapa
Example 5: Management Support Teams

- Provide additional support to poorly performing districts since May 2013
- Provide guidance and technical support to resolve management challenges
- Coordinate field work in the face of resource constraints
- Provide advocacy messaging to local leaders

Photo credits: Lisa Esapa, Samra Ashenafi
Example 6: Borno/Yobe Strategy to Address Insecurity

Deteriorating Access to Children in Borno, 2014

May
17% Inaccessible
Or 251,162 children

Sept
38% Inaccessible
Or 629,348 children

Dec
60% Inaccessible
Or 848,901 children

Accessibility:  
- >80%-100%
- 60%-80%
- <60%
- Did not implement
Innovations of the Bono/Yobe Strategy

Despite security challenges, 26,315 children received their first OPV dose and over 2.5 million OPV doses administered in Yobe and Borno

Borno and Yobe, May-December 2014

<table>
<thead>
<tr>
<th>Strategic Intervention</th>
<th>Total Doses</th>
<th>Total First Dose Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid SIA</td>
<td>1,851,249</td>
<td>10,429</td>
</tr>
<tr>
<td>Interstate Border Posts</td>
<td>180,863</td>
<td>3,816</td>
</tr>
<tr>
<td>Market Transit Points</td>
<td>51,830</td>
<td>960</td>
</tr>
<tr>
<td>International Border Transit</td>
<td>27,311</td>
<td>90</td>
</tr>
<tr>
<td>Permanent Health Teams</td>
<td>462,299</td>
<td>7,640</td>
</tr>
<tr>
<td>Newborns by VCM</td>
<td>3,380</td>
<td>3,380</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,576,932</strong></td>
<td><strong>26,315</strong></td>
</tr>
</tbody>
</table>

OPV: Oral polio vaccine  
SIA: Supplemental immunizations activities  
VCM: Volunteer Community Mobilizer
RESULTS AND IMPACT OF INTERVENTIONS

Partners at Update Meeting in Nigeria Emergency Operations Center
After-Campaign Assessment
Lot Quality Assurance Sampling (LQAS)

- Clustered LQAS methodology to assess SIA penetration
- Verify immunization of children in sample of target community to assess overall quality of campaign
- Document finger marking indicative of OPV receipt
- Assessment of the local government areas is based on the number of unmarked (missed) children found

| High Pass: Over 90% of children had finger marked |
| Pass: 80%–90% of children had finger marked       |
| Unacceptable: 60%–80% of children had finger marked |
| Fail: Fewer than 60% of children had finger marked |

SIA: supplementary immunization activities
OPV: Oral polio vaccine
LQAS Results Over Time Show Improved Coverage of SIAs

High-risk states in 2013 and 2014: % of LGAs in vaccination bands

SIA: Supplemental immunization activities
Lot Quality Assurance Sampling (LQAS) data, Polio Emergency Operations Center, data not published.
Impact of Innovative Strategies in Nigeria

Trend of Poliovirus by Month, 2008–2015

WPV1: Wild poliovirus, type 1
WPV2: Wild poliovirus, type 2
Impact of Polio Program Beyond Polio Eradication Efforts

- Strengthened public health infrastructure and increased trained personnel
  - Nigerian EOC during Ebola outbreak pivotal to containment

- Benefits of immunization efforts not limited to polio
  - Strengthening routine immunization services/coverage
  - Improved Cold Chain inventory a legacy of polio eradication efforts

- Using data to drive program efforts
  - “Dashboard indicators” and LQAS

- Coalition building is strengthened
  - Social mobilization has increased community linkages
  - Improved trust between health workers and community members

EOC: Emergency operations center
LQAS: Lot quality assurance sampling
Despite Progress, Challenges Remain

- Increasing insecurity in northeast
  - Large numbers of IDP
  - Gaps in surveillance

- Circulating VDPV

- Closing immunity gap in high-risk areas

- Improving quality of suboptimal campaigns

- Concerns about diversion of attention to elections

IDP: Internal displaced persons  
VDPV: Vaccine-derived poliovirus  
LGA: Local government areas

Photo credits: Lisa Esapa, Samra Ashenafi
Moving Forward in 2015

- **Stop transmission of WPV1**
  - Security compromised states
  - IDP camps

- **Stop transmission of VDPV**

- **Strengthen routine immunizations**

- **IPV introduction with priority to high-risk states**

- **Monitoring polio incidence**
  - Ensure quality surveillance
  - Environmental sample
  - Weekly reporting and update

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WPV1: Wild poliovirus, type1
VDPV: Vaccine-derived poliovirus
IDP: Internally displaced persons
IPV: Inactivated poliomyelitis vaccine

Photo credits: Lisa Esapa
Thank you to all the staff in Nigeria!
Public Health Amidst Insecurity: Pakistan’s Polio Eradication Initiative

Elias Durry MD, MPH

Senior Emergency Coordinator for Polio Eradication in Pakistan, Eastern Mediterranean Regional Office, World Health Organization
Historical Perspective of Polio Eradication in Pakistan

NIDs started (fixed posts)

AFP Surveillance

House-to-house campaigns


Cases

*Wild cases for 1994-1996 are estimated
NID: National immunization drives
AFP: Acute flaccid paralysis

mOPV1: Monovalent oral polio vaccine wild polio type 1
mOPV3: Monovalent oral polio vaccine wild polio type 3
bOPV: Bivalent oral polio vaccine

* Data as of 09-Feb-2015
Polio Eradication Efforts in Pakistan for the Past Decade

- **December 2011**: Augmented National Emergency Action Plan
- **June 2012**: Ban in North and South Waziristan
- **December 2012**: Serial attacks on polio workers

- **Graph details**:
  - Year range: 2005 to 2014
  - Polio Cases range: 0 to 350
  - Key events:
    - 2008: Increase in polio cases due to serial attacks
    - 2011: Decrease in cases following the August 2011 ban
    - 2012: Another increase due to serial attacks
    - 2013-2014: Steady increase in cases
Lack of Government Ownership and Accountability Overarching Problem

- **No mechanism for appraisal or accountability**
- **Financial misappropriations**
  - Funds disbursed at district health department level
  - Disbursement to front-line workers was by hand
  - Resulting in ghost or inappropriate teams, underage workers
- **Security problems in FATA**
  - Esp., North and South Waziristan

**Geographic Distribution Polio Cases in 2011, N=198**

FATA: Federally Administered Tribal Areas
KP: Khyber-Pakhtunkhwa
Source: World Health Organization
Results of National Emergency Action Plan, 2011

- **Enhanced oversight at all levels**
  - National – the Prime Minister
  - Provincial – Chief Ministers and Chief Secretaries
  - District – Deputy Commissioners
  - Sub-district – Union Council (UC)
    - Achieved uniform high coverage rates

- **Intensive program reviews**
  - Regular reviews and after each supplemental immunization activity
  - Comprehensive “dashboard” metrics

- Prioritized districts based on risk
- Staff surge supported by partners
- Innovations implemented
  - Short Interval Additional Doses (SIADS)
    - Reduced viral life span
  - Direct Disbursement Mechanism to front-line workers
    - Payment through bank
    - With valid official ID
    - Recipient must be 18 years or older

Priority 1: Reservoirs and core endemic areas
Priority 2: High Risk Districts (Other than the Reservoirs)
Priority 3: Other areas infected during last six months
Priority 4: Rest of the Country
Status of Polio Eradication by the end of 2012

- Reduced polio cases by 71%
  - In 2011, 198 cases
  - In 2012, 58 cases

- Significant reduction in indigenous circulation in two reservoirs
  - In Quetta, one case in 2012
  - In Karachi, none in 2012

- Circulation restricted to FATA and KP

FATA: Federally Administered Tribal Areas
KP: Khyber-Pakhtunkhwa
Source: World Health Organization
Interruption of WPV3 Transmission in Asia, April 2012

WPV3 cases by month in Pakistan

Last WPV3 Case in Asia 18-Apr-2012

WPV3: Wild poliovirus, type 3
Source: World Health Organization
Events That Derailed the Momentum of 2012

June 2012: Taliban bans vaccination in North and South Waziristan

FATA: Federally Administered Tribal Areas
KP: Khyber-Pakhtunkhwa
Source: World Health Organization
Events That Derailed the Momentum of 2012

- **June 2012**: Taliban bans vaccination in North and South Waziristan

- **July 2012**: Targeted attacks started on frontline workers

**Graph Details:**

- **Y-axis**: Workers & Security Personnel Killed
- **X-axis**: Months from July 2012 to February 2015
- **Legends**:
  - FATA: Federally Administered Tribal Areas
  - KP: Khyber-Pakhtunkhwa
  - Karachi
  - Balochistan

**Source**: World Health Organization
Events That Derailed the Momentum of 2012

June 2012: Taliban bans vaccination in North and South Waziristan

July 2012: Targeted attacks started on frontline workers

Dec 2012: Start of full-blown serial attacks

Workers & Security Personnel Killed

FATA: Federally Administered Tribal Areas
KP: Khyber-Pakhtunkhwa
Source: World Health Organization
Events That Derailed the Momentum of 2012

- June 2012: Taliban bans vaccination in North and South Waziristan
- July 2012: Targeted attacks started on frontline workers
- Dec 2012: Start of full-blown serial attacks

... and the attacks continue with more than 60 polio workers & security personnel killed

FATA: Federally Administered Tribal Areas
KP: Khyber-Pakhtunkhwa
Source: World Health Organization
Effects of Violence and Security Challenges in 2013

- Overall decline in scope, quantity and quality of critical campaigns due to security concerns
- Demotivated and scared vaccinators
- Strategies attempted with SIAs not effective
  - SIAs staggered but only held for up to three weeks
- Missing multiple campaigns
  - Mostly in key reservoir and outbreak areas
- Reversal of gains made in 2012
Most Polio Cases Reported in Areas with Insecurity and Barriers to Vaccination, 2014

- 25% of polio cases
  Insecurity and barrier – Military operation and active insurgency

- 31% of polio cases
  Insecurity and barrier – Ban by the Taliban

- 21% of polio cases
  Insecurity and barrier – Direct threat to front-line workers and the police

Of the 306 cases, 77% came from areas with three security problems

Areas with insecurity and barriers shown in red

* Data as of 17-Jan-2015
Dealing with Insecurity through Increased Security Planning

- Security planning became an essential component of campaigns
  - Special Operational and Security guidelines developed
  - Police, army and paramilitary forces worked alongside vaccinators
Special Peshawar Initiative, SEHAT KA INSAF
“Justice for Health”

- **Substantial joint effort by**
  - Provincial political and administrative leadership
  - Law enforcement agencies
  - Global Polio Eradication Initiative partnership

- **Operation**
  - Rebranded the program *(Sehat ka Insaf in KP)*
  - Integrated health care package
    - Routine immunization, health education, medical camps
  - One-day campaigns over 12 weeks to minimize exposure

EPI: Routine immunizations
KP: Khyber-Pakhtunkhwa
Special Peshawar Initiative, SEHAT KA INSAF “Justice for Health”

- **Communication**
  - Extensive communication and mass media
  - Reverse misconception

- **Security**
  - Ensured vaccinator safety

Flyers

Mass communication
Security Measures Implemented

- Provided safe working environment by *cordonning* an area rather than police accompanying vaccinators
  - Setting up security zone
  - Conducting reconnaissance and targeted operations before campaign
  - Cordonning of neighborhoods during the campaign
  - Setting up plugging points, check points
  - Mobile patrolling
  - Banning motorbike riding and limiting mobile phone services

- Required large number of police and security personnel
  - Peshawar (4,792), Charsada (1,900), Mardan (3,000), Swabi (1,220), Karachi (3500)
Impact of Special Drive in Peshawar, 2014

- More than 8 million OPV doses administered during the 12 weekly campaigns without any security incident
- Reduction in polio cases genetically linked to polio viruses circulating in Peshawar

Genetic linkage of polio cases in Peshawar, 2014

Source: WHO

Wazir-N: North Waziristan
Capitalizing on Opportunities to Reach the Unvaccinated

- Military operation in North Waziristan caused internal displacement and provided opportunities to vaccinate
  - Intensive vaccination efforts at transit points across the country
  - Included all ages to boost population immunity
  - Over 1.3 million vaccinated at these fixed posts since June 2014

Opportunistic ongoing vaccination inside North Waziristan; about 7000 vaccinated in Razmak and Ghulam Khan in November round and about 28,000 in Shewa, Razmak & Ghulam Khan in December rounds
Military Operation in North Waziristan Allows for First SIAs in South Waziristan since June 2012

For the first time in two years, South Waziristan was reached and more than 70,000 children were vaccinated

Pre-ban period

Ban on vaccination; June 2012 to November 2014

Post-ban period

Military Operation in North Waziristan begins

2012 and 2013

2014

2015

Thousands of doses given

Door to Door Campaign
Vaccination in Hujra
Medical camps
Health Facilities
Self-vaccination

SIA: Supplemental immunization activities
Confirmed Polio Cases in North and South Waziristan, Jan 2013–Jan 2015

North Waziristan, n=105 cases
- 87% cases reported with 0 dose
- 99% cases reported with <4 doses

South Waziristan, n=26 cases
- 92% cases reported with 0 dose
- 100% cases reported with <4 doses

Source: World Health Organizations
Negotiated Access through Religious Leaders and Community Engagement

- Engagement of global and national religious scholars
- Working with the community to provide female volunteers as permanent vaccinators

Islamic Advisory Group Meeting, Jeddah, Saudi Arabia
National Islamic Advisory Group Meeting, Islamabad, Pakistan
Training of Female Community Volunteers, Karachi, Pakistan
National Plan for 2015 Low Transmission Season

- Considers the 2015 Low Transmission Season (January–April) as the best and critical opportunity
- Congruent with National Eradication Action Plan
- Outlines key strategies and actions based on lessons learnt
- Requires close cooperation among all arms of government & agencies
How Close Are the Regions to Reaching Every Last Child?

- **Peshawar**
  - Continues with one-day SIAs
  - Efforts underway to improve consistency of reaching all children

- **North and South Waziristan**
  - Recently initiated low-profile SIAs

- **Karachi**
  - Security incidents continue, thus unable to achieve quality campaigns

- **Khyber Agency (region in FATA)**
  - Ongoing military operation is still compromising access

SIA: Supplemental immunization activities
FATA: Federally administered tribal areas
Source: World Health Organization

Number of cases by month, 2013 – 2015*

*Data as of 13-Feb-2015
In 2015, it is likely that Pakistan and Afghanistan will be the only countries in the world with polio.

Polio workers continue to be targets of extremists.

- Polio, not caught in crossfire, but it is at the forefront!

Currently, the most challenging and complicated public health initiative in the world.

Standard public health approach will not be enough to overcome the challenges.

Supported by global community, the country strives to join the rest of the world to be polio free!
Saluting the Brave Vaccinators!!

Despite security risks, they have administered more than **600 million** doses of OPV since the December 2012 killings.

OPV: Oral polio vaccine
every last child.