New Vaccine Introduction

‘Polio Vaccine switch (tOPV to bOPV), IPV and MR vaccine introduction in Kenya’

Dr Collins Tabu
National Vaccines and Immunization Program,
Ministry of Health, Kenya
Evolution of the Immunization program

- Established in 1980 with the main aim of providing immunization against six killer diseases of childhood, before then, provided on an ad-hoc basis through schools and the larger health facilities.

- Therefore concentrated initially on establishing and strengthening the health service delivery.

- Later, targeted Universal Child Immunization goals of immunizing at least 80% of the target population.

- Program focus has since shifted to Disease Elimination and Eradication, with the Goals of: Polio Eradication and Measles, Rubella and Maternal Neonatal Tetanus Elimination.

- Shift with to universal access to immunization with SDGs and Universal Health Coverage as guiding principles.
Vaccination strategies

- Routine immunization serves 80% of population
- Venues: Clinics, schools, outreach facilities

- Done in collaboration with other activities
- Time limited approach
- Expensive service strategy
- Useful to reach both hard to reach populations

- Not a time limited strategy
- Clients present to receive immunization services

- Offer rapid scale up of immunization services.
- Time limited interventions
- Very expensive strategy
- Important for disease control
- Service is taken to clients
......So,... Why Immunize?
Immunization & Disease

• Once your immune system is trained to resist a disease, you are said to be immune to it

• Before vaccines, the only way to become immune to a disease was to actually get it and.......with luck, survive it

• You may be contagious and pass the disease to family members, friends, or others who come into contact with you

• Diseases have been able to circumvent drugs through development of resistance but this is yet to be reported for vaccination

• Vaccine Efficacy in individuals and population effectiveness differ- basis for prevention programs
Polio: A Paralyzing Disease for Life

Delhi, 2002

Freetown, Sierra Leone, 2001

Delhi, 2002
......IPV Introduction &
tOPV to bOPV Switch
Immunization efforts have reduced the number of polio cases globally by more than 99% over the last two decades.

The transition from trivalent OPV (tOPV) to bivalent OPV (bOPV) is part of the polio endgame strategy.

There are three types of polio viruses: 1, 2, and 3. The last type 2 wild poliovirus was detected in 1999.

Together, we can finish the job of eradicating polio.
Polio Eradication: Significant decline in number of persons paralyzed by wild polioviruses, 1988-2014*

Last case of type 2 polio

Polio cases (thousands)
As wild polioviruses are eradicated, number of circulating vaccine-derived (cVDPV) cases exceeds wild poliovirus cases.

Estimated VDPV cases compared to reported cases of wild poliovirus (as of 31 December, 2014):
In 2013, the Polio Eradication and Endgame Strategic Plan 2013-2018 was endorsed by the World Health Assembly.

This global plan recommends the:

• Withdrawal of all OPV worldwide, beginning with the type 2 component in April 2016 (“the switch” from tOPV to bOPV)

• Introduction of IPV into routine immunization before the switch from tOPV to bOPV to maintain protection against all 3 types of poliovirus
The Plan addresses the Endgame through three distinct stages:

**Introduce**
- at least one dose of IPV into routine immunization

**Switch**
- tOPV to bOPV

**Withdraw**
- bOPV & routine OPV use

Ongoing STRENGTHENING of routine immunization services
The switch from tOPV to bOPV

- tOPV and IPV protect against poliovirus types 1, 2 and 3.
- The type 2 component of tOPV causes the majority of cVDPV cases.

In April 2016, withdraw type 2

- bOPV and IPV protect against poliovirus types 1, 2 and 3.
- bOPV has a lower risk of cVDPVs.
Both OPV and IPV are needed at this stage of polio eradication

After April 2016

- IPV will provide protection against polio type 2 after the type 2 component of OPV is removed.
- IPV also provides additional protection against types 1 and 3.
- IPV is not a 'live' vaccine, therefore carries no risk of VAPP or cVDPV

Used together, OPV and IPV provide the best form of protection in the final stages of polio eradication.
The switch is occurring simultaneously in all countries during 2 weeks in April 2016

- All 156 OPV countries must switch from tOPV to bOPV in routine immunization and SIAs
  - Manufacturers will not supply tOPV for use after the switch
- WHY April 2016?
  - To coincide with the “low” season for poliovirus transmission in countries with endemic polio or recent polio cases
- WHY globally synchronize during 2 weeks?
  - To ensure that no country is put at risk of importing a cVDPV2 from another country
  - Regions with continued tOPV use after the switch may generate type 2 cVDPVs, which could spread elsewhere
Measles Rubella Vaccine Introduction
Measles & Rubella

- Highly infectious, humans are the only reservoir
- In 2000, measles was leading cause of vaccine preventable pediatric deaths, now 3rd after Pneumococcal and Rotavirus
- Rubella is a leading cause of congenital defects, 100,000 cases in developing countries annually (Year 2000)
- Primary objective of rubella vaccination is to prevent this
- Deaths and Disabilities from Measles and Rubella are completely preventable
Measles- Rubella Introduction & SIAs, Rationale

- 95% population immunity not achievable with only 1 dose (routine) even at very high vaccination coverage
- Only 85% of children vaccinated against measles develop immunity from the first dose
- Accumulation of susceptible children occurs over time (i.e. children with no immunity)
- High risk of outbreak when number of susceptible ≥ annual birth cohort
- Second opportunity for vaccination against measles needed to achieve & sustain high population immunity
- Need to conduct wide age range SIAs prior to Introduction of Rubella vaccine to reduce Risk of paradoxical increase in CRS Cases
# Measles Coverage by year, Kenya, 2013-2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Measles Cov.</th>
<th>Un-vaccinated</th>
<th>Non Immune</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,082,420 (75%)</td>
<td>360,832 (25%)</td>
<td>162,363</td>
</tr>
<tr>
<td>2014</td>
<td>1,129,057 (78%)</td>
<td>322,587 (22%)</td>
<td>169,358</td>
</tr>
<tr>
<td>2015</td>
<td>1,178,281 (81%)</td>
<td>276,386 (19%)</td>
<td>176,742</td>
</tr>
<tr>
<td>Year</td>
<td>Missing Vaccination Status</td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>2011</td>
<td>3%</td>
<td>6%</td>
<td>27%</td>
</tr>
<tr>
<td>2012</td>
<td>1%</td>
<td>10%</td>
<td>22%</td>
</tr>
<tr>
<td>2013</td>
<td>0%</td>
<td>11%</td>
<td>30%</td>
</tr>
<tr>
<td>2014</td>
<td>1%</td>
<td>1%</td>
<td>23%</td>
</tr>
<tr>
<td>2015</td>
<td>9%</td>
<td>0%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Legend (# of Vaccine doses):
- Missing Vaccination Status
- One
- Two
- Zero
- Unknown
- >=3
Distribution of measles and Rubella Cases in Kenya, 2011-2015
Measles & Rubella control strategies

- Strengthening routine immunization (RI)- at 9 & 18 months
- Providing a second opportunity for vaccination with measles vaccine:
  - Supplemental immunization (catch up and follow up)
  - Introduction of second dose of measles vaccine in RI
- Strengthening of case-based measles surveillance
- Strengthening of measles Case Management (including Vita A supplementation)
Next for Measles Rubella?, Kenya

- MR SIAs planned for 16th to 24th May 2016, target 18.9 million children 9months – 14 years
- Plans to introduce Measles Rubella vaccine into Routine immunization after SIAs
- Plans to integrate with Tetanus Toxoid sNIDs (in some high risk sub-counties)
- Logistics Required:
  - 21.8 million doses of MR vaccine, 23.5 million syringes
  - 42,000 health workers and 24,000 Volunteers
  - 20,000 vaccination centers, 2,100 vehicles
  - Total expenditure: KShs. 2.3 Billion
Immunization Key Issues,

- Understandably, vaccine safety gets more public attention than vaccination effectiveness, but vaccines are far safer than therapeutic medicines.

- Did Jenner have it easy compelling people to comply?

- Most of the time the games played are according to rules that are not generally those of science.

- The number of deaths & disabilities caused by traditional vaccine-preventable has Reduced dramatically over the years.
Key issues...Considerations in introducing Immunization Interventions

- Is the magnitude of public health problem conclusively determined?
- Are the risk groups clearly identified?
- Ensured availability of an effective vaccine?
- Ability of vaccination services to cover > 80% of at-risk-population in order to break transmission
- Political Goodwill
- Cost Implications/ Cost effectiveness
A world free of Vaccine preventable diseases means NO child gets paralysed, BETTER quality of life, COST SAVINGS on resources spent on rehabilitation, treatment & time from work, and MORE resources available for other priority health needs.

Immunization is all our responsibility

EVERY CHILD COUNTS!
Thank you