40 YEARS OF IMMUNIZATION PROGRAM IN TANZANIA

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Presentation outline

• Background
• Vaccine & Cold chain
• Routine immunization
• Disease control and elimination
• New development and innovations
DEDICATION

• TO ALL THE HEALTH WORKERS IN TANZANIA PAST AND PRESENT WHO MADE IT WORK AND ARE MAKING IT WORK

• TO THE GOVERNMENT OF TANZANIA FOR THE HIGH POLITICAL COMMITMENT

• TO WHO AND UNICEF

• TO THE DEVELOPMENT PARTNERS – DANIDA, USAID, JICA, IRISH AID, CIDA, DFID

• TO PARTNERS - JSI, MCSP/ CHAI/PATH, ROTARY INTERNATIONAL, LIONS CLUB, RED CROSS
Background

- EPI was established in 1974 through the resolution WHA27.57 to build on the success of the global smallpox eradication programme.
- EPI in Tanzania was established in 1975 (Since 2011 known as IVD)
- EPI focuses on building sustainable immunization systems to protect children against common vaccine-preventable diseases:
  - Initially 6 vaccines: diphtheria, tetanus, pertussis, poliomyelitis, TB, and measles.
  - Other vaccines have since been integrated: Yellow fever, hepatitis B, Hib, PCV, Rotavirus vaccines, HPV, MenA, MCV2, etc.
Background

- Immunization of pregnant women and WCBA aimed at preventing maternal tetanus and newborn infants from neonatal tetanus.
- Introduction of new vaccines currently used as a catalyst to scale up complementary interventions: (Pneumonia & diarrhoeal control, Cervical cancer prevention & control, etc.)
- Currently in Tanzania, 7 vaccines are provided by IVD: BCG, OPV, Pentavalent, PCV13, Rota, Measles Rubella and Tetanus Toxoid
- It also focuses on vaccine preventable disease surveillance
1975-1980 INITIAL STAGE

- Very low acceptance
- A lot of myths and rumours.
- Just for the elite and educated in a few towns
- Initial coverage 8% rose to 50% by 1980
- What was available was the political commitment.
- The Government had put child health and prevention of infants death as one of the priority public health intervention with the initiation of Primary Health Care.
- Most of the time the program was just responding to Outbreaks and under the Epidemiology unit
Issues

- Lack of public and governmental awareness of the scope and seriousness of the target diseases;
- Ineffective programme management;
- Inadequate equipment and skills for vaccine storage and handling;
- Insufficient means for monitoring programme impact as reflected by increasing immunization coverage levels and decreasing incidence of the target diseases
Other issues

- Transportation and distribution
- Vaccines need special temperatures how do we maintain in tropical Tanzania and other countries
- The country was big and had a lot of infrastructure problems.
The vaccine cold chain...

A system of equipment and staff to ensure the proper storage and transport of vaccines at adequate temperatures, from the manufacturer to the point of administration.
COLD CHAIN EQUIPMENT

HEALTH FACILITY LEVEL

Absorption refrigerators

1975

Compression refrigerators

1996

Fortum AES

2000 - 2015

Dometic RCW50E
Cold chain equipments
TEMPERATURE MONITORING DEVICES

1975

Thermometers

Freeze Watch

1996

Cold chain monitoring cards

Vaccine Vial Monitors (VVM)
Temperature monitoring

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Symbol" /></td>
<td>The inner square is lighter than the outer circle. If the expiry date has not passed, <strong>USE</strong> the vaccine.</td>
<td>I</td>
</tr>
<tr>
<td><img src="image2" alt="Symbol" /></td>
<td>As time passes the inner square is still lighter than the outer circle. If the expiry date has not passed, <strong>USE</strong> the vaccine.</td>
<td>II</td>
</tr>
<tr>
<td><img src="image3" alt="Symbol" /></td>
<td><strong>Discard point</strong>: the color of the inner square matches that of the outer circle. <strong>DO NOT USE</strong> the vaccine.</td>
<td>III</td>
</tr>
<tr>
<td><img src="image4" alt="Symbol" /></td>
<td>Beyond the discard point: inner square is darker than the outer circle. <strong>DO NOT USE</strong> the vaccine.</td>
<td>IV</td>
</tr>
</tbody>
</table>

From WHO (www.who.int).
TEMPERATURE MONITORING DEVICES

2000

Fridge tags
Freeze tags
TEMPERATURE MONITORING DEVICES

Installed at CVS and regions

2013

Remote Temperature Monitoring Devices

**DETECTION**
- Timely Recognise and record all excursions that occurred through SMS and e-mails

**PROTECTION**
- Ensure that (a) vaccine damage is minimized, and (b) if damage occurred, vaccine are removed from the system

**PREVENTION**
- Determine the cause and prevent/reduce that problem in future

Beyond wireless Fringfone™
Vaccine Stock and cold chain inventory management system

Use of Paper works (1975 - 1999)
- The paper based tools managed information for stock and cold chain equipment inventory

Excel based SMT & CCIT (2000 - 2013)
- These tools were excel based tools for managing stock and cold chain equipment inventory

Web based SMT and CCIT (2014)
- To improve visibility and real time reporting web based SMT and CCIT were introduced in www.ivdvaccinesmt.go.tz/smt

Development of Vaccine Management Information system (2015)
- Development of comprehensive system for managing all information for...
Routine Immunization
UNIVERSAL CHILD IMMUNIZATION CAMPAIGN (UCI)- HUGE ADVOCASY CAMPAIGN

- In 1980s UNICEF coordinated a strategy of social mobilization.
- The media and advertising industries,
- Partners included everyone from different areas
- Society leaders, Goodwill Ambassadors, Heads of State, Municipal mayors, sports personalities, parliamentarians, from professional associations to trade

Global immunization reached an average 80 per cent of children in 1990, achieved through UNIVERSAL CHILD IMMUNIZATION CAMPAIGN
POLIO DISEASES VS POLIO VACCINATION COVERAGE

POLIO CASES

VACCINATION COVERAGE

Polio diseases
OPV3 Coverage

PERTUSIS CASES VS DPT3 COVERAGE

PERTUSIS CASES


DPT3 COVERAGE

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000

Red: Pertusis  Green: DPT3
MEASLES CASES VS MEASLES VACCINATION COVERAGE

Measles Disease Trend
Measles Vaccination Coverage
Trend of under immunized children (DPT3)
Number of District with Penta 3 below 80% decreased from 29 in 2013 to 20 in 2014.

Number of District Penta 3 above 90% increased from 80 in 2013 to 138 in 2014.
Tanzania Routine Immunization Penta 3 performance 2007-2010

Below 80%
80% to 89%
90% +

Districts Penta 3 performance 2011-2014

2011

2012

2013

2014

Legend:
- Red: Below 80%
- Yellow: 80% to 89%
- Green: 90% +
<table>
<thead>
<tr>
<th>TRADITIONAL VACCINES</th>
<th>NEW VACCINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>HEPATITIS B, Hib</td>
</tr>
<tr>
<td>OPV</td>
<td>(DPT-HEPB, Hib)-PENTAVALENT</td>
</tr>
<tr>
<td>MEASLES</td>
<td>PCV13</td>
</tr>
<tr>
<td>DPT</td>
<td>ROTA</td>
</tr>
<tr>
<td>TT</td>
<td>MSD</td>
</tr>
<tr>
<td></td>
<td>MR</td>
</tr>
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<td></td>
<td>HPV</td>
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MALARIAS VACCINE
Disease control /elimination/eradication
• In 2008, WHO estimated that 1.5 million of deaths among children under 5 years were due to diseases that could have been prevented by routine vaccination.

• This represents 17% of global total mortality in children under 5 years of age.
Disease control /elimination/eradication

- Polio
- MNT, Measles
- Rubella & congenital rubella syndrome
- Diphtheria
- Pertussis, Hepatitis B, Hib, pneumo, meningo, Rota

Eradication

Elimination

Control & mortality reduction
Surveillance Status

• AFP surveillance; *Achieved Certification level since 2007*
  – Non Polio AFP rate in 2014 was 3.5/100,000 pop: and Stool Adequacy Rate of 95%
  – By 6\textsuperscript{th} June, 2015, - 2.9/100,000 pop and Stool Adequacy rate of 95%

• Measles Case Based/FRI surveillance
  – In 2014, % of districts reported measles cases with blood 90%
  – FRI/Measles detection rates ; 2.7/100,000
POLIO END GAME FOR TANZANIA

• Ensure high routine immunization by increasing herd immunity
  – OPV3 coverage 95% in all regions

• Prevent cVDPV
  • Reach all unreached children with tOPV

• Intensification of AFP surveillance in all districts
  – Response to all AFP HOT cases

• Quarterly high risk analysis – response and mitigation to high risk districts

• Introduction of IPV in routine immunization

• Change from tri-OPV to bi-OPV

Tanzania is considered to have eliminated maternal and neonatal tetanus in 2012.
Significant decline in number of persons paralyzed by wild polioviruses, 1988-2015

Last case of WPV in Tanzania

Fig 2.1.4: Last WPV 1 case in United Republic of Tanzania together with Mother and Village health worker who detected the case.
Tanzania...last WPV:1996

Arusha- Hanang: 1 case 11th July 1996

Dodoma- Mpwapwa 1 case 23rd June 1995

Kigoma- Kigoma Rural: 1 case 24th July 1996

Mbeya- Mbeya Urban and Rural- 2 cases 13th and 17th July 1995

Mtwara- Mtwara rural: 1 case 30th July 1996

Fig 2.1.4: Last WPV 1 case in United Republic of Tanzania together with Mother and Village health worker who detected the case.
Measles

• We have introduced MR vaccine in 2015
• Surveillance of Congenital Rubella Syndrome
• Objective
• Work to have high coverage of 1\textsuperscript{st} and 2nd dose of MR vaccine. > 90 \% at the national level and in all districts
• Case based surveillance of both Measles and Rubella
2007 – First MNTE validation survey conducted in **Bukombe District** – results proved MNT not eliminated in the District surveyed, and by extension in the country.

The experience led to country wide data review and 17 high risk Districts were identified.

By 2010 - 1.2 million WRA in 17 high risk districts (14 in Mainland and 3 in Zanzibar) were reached through SIAs and 960,000 (80%) were provided coverage with at-least 2 doses of TT.
Neonatal Tetanus Elimination

- **2012** – Second MNTE validation survey conducted in the District with highest risk which was Hanang in Manyara Region

- Results proved that MNT was eliminated in the surveyed District and by extension in the country
THANK YOU ALL FOR THE GIFT OF LIFE