# The impact of vaccines and challenges in the current decade

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World Health Organization

# Outline



The framework and its processes Progress made -Shortcomings -



Systems related -Vaccine supply -

THE WAYS FORWARD Accountability and improved Coordination Sustained Financing -



# Unprecedented large scale use of vaccines worldwide

Additional public and private investments required to reap the full benefits of vaccines

Coordinated country-led efforts are needed to apply transformative changes



Global Vaccine Action Plan

### **Great Achievements:**

Never been this close of polio-free world (Nigeria off endemic countries list)

Global measles deaths reduced by 78% (2000-2013)

Maternal and Neonatal Tetanus eliminated in 32/56 'problem' countries

Americas - 1<sup>st</sup> region to be declared rubella-free

90 low- and middle-income countries have introduced 1+ new / under-utilized vaccine

### Number of Vaccines/Antigens Introduced Nationwide in Immunization Schedules



5 antigens (DTP, Measles and Polio)

6 antigens

7 antigens

8 antigens 9 antigens 10 antigens

Not applicable

Not available

<u>Selected antigens are</u>: Diphtheria, Tetanus, Pertussis, Measles, Polio - Hepatitis B, Haemophilus influenza type b, Pneumococcal conjugate Rotavirus - Rubella



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### The Strategic Advisory Group of Experts on Immunization (SAGE) – Critical role in policy-making

HPV- decreased doses from 3 to 2 for the 9-14 years

Influenza- pregnant women given highest priority

Combined Measles and Rubella instead of separate immunization

Meningococcal A- large scale for the African meningitis belt.

Yellow fever- only one dose needed



**Topics for 2016 SAGE meetings:** 

Typhoid vaccines Cholera vaccines Tetanus elimination Hepatitis B Dengue vaccines

### (updated: 27 February 2015) Table 1: Summary of WHO Position Papers - Recommendations for Routine Immunization

Antigen		Children (see Table 2 for details)		Adolescents	Adults	Considerations (see footnotes for details)
Recommendations for all immunization programmes						
BCG1		1 dose				Exceptions HIV
Hepatitis B <sup>2</sup>		3-4-doses (see footnote for schedule options)		3 doses (for high-risk groups if not previously immunized) (see footnote)		Birth dose Premature and low birth weight Co-administration and combination vaccine Definition high-risk
Polio <sup>3</sup>		3-4 doses (at least one dose of IPV) with DTP				OPV birth dose Type of vaccine Transmission and importation risk criteria
DTP <sup>4</sup>		3 doses	Booster (DTP) 1-6 years of age	Booster (Td) (see footnote)	Booster (Td) in early adulthood or pregnancy	Delayed/interrupted schedule Combination vaccine
<i>Haemophilus influenzae</i> type b <sup>5</sup>	Option 1 Option 2	3 doses, with DTP 2 or 3 doses, with booster at least 6 months after last dose				Single dose if > 12 months of age Not recommended for children > 5 yrs old Delayed/interrupted schedule Co-administration and combination vaccine
Pneumococcal (Conjugate) <sup>6</sup>	Option 1 Option 2	3 doses, with DTP 2 doses before 6 months of age, plus booster dose at 9-15 months of age				Vaccine options Initiate before 6 months of age Co-administration HIV+ and preterm neonates booster
Rotavirus <sup>7</sup>		Rotarix: 2 doses with DTP RotaTeq: 3 doses with DTP				Vaccine options Not recommended if > 24 months old
Measles <sup>8</sup>		2 doses				Combination vaccine; HIV early vaccination; Pregnancy
Rubella <sup>9</sup>		1 dose (see footnote)		1 dose (adolescent girls and/or child bearing aged women if not previously vaccinated; see footnote)		Achieve and sustain 80% coverage Combination vaccine and Co-administration Pregnancy
HPV <sup>10</sup>				2 doses (females)		Target 9-13 year old girls Pregnancy Older age groups ≥ 15 years 3 doses HIV and immunocompromised

Refer to <a href="http://www.who.int/immunization/documents/positionpapers/">http://www.who.int/immunization/documents/positionpapers/</a> for most recent version of this table and position papers.

This table summarizes the WHO child vaccination recommendations. It is designed to assist the development of country specific schedules and is not intended for direct use by health care workers. Country specific schedules should be based on local epidemiologic, programmatic, resource and policy considerations.

While vaccines are universally recommended, some children may have contraindications to particular vaccines.



# The SAGE report card on the Global Vaccine Action Plan mid-point targets

DTP3: All countries >90% national coverage and >80% in every district by end 2015

- Polio: transmission stopped by end 2014
- Maternal and neonatal tetanus: eliminated by 2015
- Measles: eliminated in 4 regions by end-2015
- OFF TRACK
- **Rubella**: eliminated in 2 regions by end-2015
- Introduction of under-utilized vaccines: At least 90 low middle income countries to have introduced one or more such vaccines by 2015

or

# The challenges ...

# Five areas of weaknesses !

Weak GVAP implementation

Poor data quality and use

Vaccine affordability and supply

Failures of basic integration

Situations disrupting immunisation

Stagnant vaccination coverage

Eradication and elimination goals repeatedly missed

Source: SAGE GVAP assessment report, 2013

In 2014, 3.2 million infants did not received 3<sup>rd</sup> dose of DTP in the Eastern Mediterranean Region - almost exclusively in security compromised countries



DPT3 unvaccinated

DPT3 vaccinated

Source: WHO-UNICEF estimates

#### **Great efforts to reach all in EMR countries !**







The global coverage with 3<sup>rd</sup> dose of DTP containing vaccines could be much higher with reduced drop-out between 1<sup>st</sup> and 3<sup>rd</sup> doses



.Source: WHO/UNICEF coverage estimates 2014 revision. July 2015 / United Nations, Population Division. The World Population Prospects - the 2012 revision". New York, 2013 .Immunization Vaccines and Biologicals, (IVB), World Health Organization WHO Member States 194

#### Exit interviews - Missed opportunities study, Malawi 2015



#### Reasons for non vaccination during visits at health facilities

#### **Vaccination Visits**

- No vaccines
- Other supplies were out-of-stock
- Health worker did not ask

#### **Medical Consultations**

- Vaccine not the purpose of this visit
- Today not a vaccination day
- Vaccines can cause problems
- Vaccination area was closed

#### Source:WHO/MOH, draft 2015

# Vaccine hesitancy

Special Issue on Vaccine Hesitancy, "Vaccine", Aug 2015

Development of network of centres of excellence that can support countries

European Region guide to "tailoring programmes"





#### La Suisse manque de certains vaccins importants

Santé Pour la première fois, une pénurie de vaccins combinés de base sévit en Suisse. Ces produits sont souvent destinés aux bébés pour leur première vaccination.





#### Canadian company offers help for Irish **BCG** vaccine shortage

() 21 August 2015 | Europe





#### News / Health

Africa Faces Acute Shortage of Meningitis C Vaccines





#### Il y a pénurie de vaccins en lle-de-France

Tra' li 27 juillet 2015 à 05h30 👎 0 commentaire

tains vaccins sont presque introuvables en région parisienne. Le DT-Polio, gatoire pour les enfants qui vont rentrer à l'école ou à la crèche, en fait tie. Des parents commencent à s'inquiéter.

#### **Bangalore**Mir

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Babies hurting as shortage hits painless DPTP vaccines By Vandana Kamath, Bangalore Mirror Bureau | Jun 22, 2015, 04.00 AM IST

> counsel parents to accept the n vaccine's after-effects, which it

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Vaccination schedules will be m although with a higher guarante your new-born now. A severe sl painless and reactionless combi Pentaxim has led to parents hav older whole-cell vaccine, which of Paediatricians (IAP) says pro immunity although more painfu reactions like fever.

the painless Pentaxim combina immunised infants against Diph Tetanus, Pertussis (whooping c haemophilic influenza infection

While the manufacturer, leadin pharmaceutical company, Sano

ed supply" of Pentaxim, paediatricians attribute it to Wor AP recommending the use of the whole-cell vaccine consi



Shortage of 6-in-1 vaccine leaves children vulnerable



A medical worker vaccinates a girl at the Kindergarten No 8 in Vinh Long City, Vinh Long Province. The country will face a shortage of six-in-one vaccines until next year. — VNA//NS Photo Pham Minh Tuan

HA NOI (VNS) - Six-in-one vaccines aren't available and the shortage should last until next year, Ministry of Health's Preventive Medicine Department Head Tran Dac Phu said on Tuesday

#### Acute BCG vaccine shortage: Denving newborns precious gift of life

ASIF CHAUDHRY - UPDATED JUN 03, 2015 08:20AM



Indian Academy of Paediatrici

Various reasons are being cited

and pneumonia.

Impact of stock-outs on coverage:

In 2014, 33 countries reported interruptions in immunization service delivery due to vaccine shortages, including low- and high-income countries

In 17 countries, the estimated reduction in coverage due to stock-outs averaged 6.7% for DTP, 5.1% for Polio and 4.2% for BCG

FOR BCG – in 2015, there is a shortfall of 16.5 m doses against the UNICEF total demand of 152.2 m doses

Source:WHO/UNICEF, JRF, 2014

# Some thoughts on the ways forward

### THE NEW "REALITY" OF EPI



Source: BMGF/WHO

### Immunity Profile, Polio Vaccination Status of Non Polio Acute Flaccid Paralysis Cases, AFR Region

NP AFP Cases with Zero Doses Last 12 months





Polio vaccination Status of NP AFP Cases, 6-59 Months



### Meeting the GVAP goals requires "TO REACH EVERY COMMUNITY"



# Additional service delivery points

### **Additional contacts**

*(2<sup>nd</sup> year booster doses; Adolescent vaccination...)* 

# Increased managerial capacity



Work together towards simplified policies/procedures

### **Controlled Temperature Chain (CTC)**

Low-dose vaccine vials

### **Delivery technology & vaccine presentation**





# Need to improve recording and retention of information on individual vaccinations



Prevalence of home-based records - latest national estimates, MICS or DHS survey results, 2000-2013

### Sustained financing -

Increased national funding



GAVI support and market shaping efforts



#### **Projection of Future Resource Requirements\*\***

#### Resource requirements, EPI/Mozambique, 2014-18

# Improved accountability

**Countries** to establish an annual process for monitoring and accountability through an independent body, for example the National Immunization Technical Advisory Group (NITAG).

**Regions** to strengthen the process of annual progress review through their regional technical advisory committees and report annually to the respective Regional Committees.

 At global level, each year, thorough independent reviews by SAGE and discussions at WHA on GVAP progress

 Side technical meetings during WHA as appropriate

# Major causes of under 5 deaths, 2000 and 2013



#### Source: WHO-CHERG estimates for child causes of death, 2000-2013.

#### Reported Measles Incidence Rate, Aug 2014-Jul 2015



Data source: surveillance DEF file

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# Conclusions

The 40 years of evolution of EPI has led to remarkable progress and also increasing complexity, exposing the fragility of the health systems – As such, the full potential of immunization is still untapped

The Global Vaccine Action Plan offers solutions, which implementation requires greater country ownership as well as sustained and concerted efforts of stakeholders

Ebola, Conjugate Meningitis A vaccines offer lessons on the need for developing vaccines suitable for use against diseases affecting mostly the developing countries. The DCVMN has a major role to play.

### Together we can make it happen!



http://www.who.int/immunization/global\_vaccine\_action\_plan/en/

# delivery technologies ...



#### Tetanus Toxoid Uniject and Penta Uniject



# Compact, pre-filled, auto-disable injection technology:

- Correct dosage
- All-in-one design: reduces logistics workload
- Well accepted by health workers and clients
- Reduction in time required by the health worker to deliver vaccination
- Reliance on outreach services for delivery of vaccination
- Crowded & busy health centres: time-saving
- Where opened vial wastage is high

### MenAfriVac roll-out 2010 – 2014





#### Men A cases declined from 75% in 2009 to 2% in 2014 in African meningitis belt



# HPV: The challenge is to ensure that girls are protected in areas where the risk is greatest



#### **Risk of cervical cancer**

#### **HPV** vaccine introduced



Data Source: WHO/IVB Database, as at 23 January 2014

Map production: Immunization Vaccines and Biologicals, (IVB), World Health Organization Includes partial introduction

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