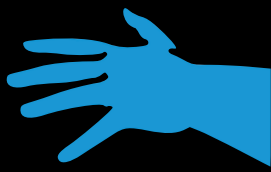
Global Immunization Overview

An Update on Accelerated implementation of the Global Vaccine Action Plan (GVAP)



Dr J.M. Okwo-Bele

SAGE meeting, 25 April 2017

World Health Organization

Outline

Accelerated GVAP implementation at global and regional levels

- Access and Coverage
- Supply chains
- Data quality

Immunization in global health agendas

- Vaccines & Anti-Microbial Resistance
- Vaccines & Health security

Ways forward

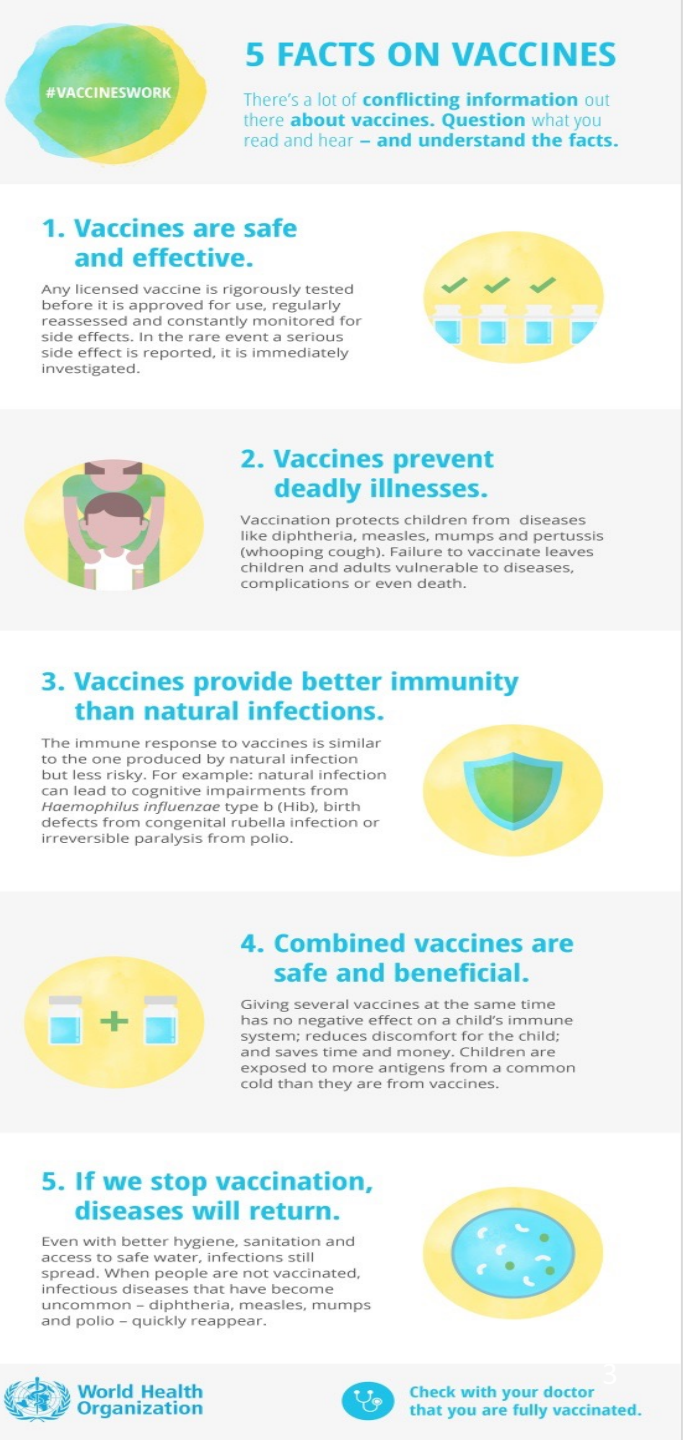
- GVAP Leadership meeting
- GVAP at WHA and Regional Ministerial meetings
- Transition at WHO

WHO campaign website

www.who.int/campaigns/immunization-week/2017/en/

WIW digital hub

thesocialpresskit.com/vaccineswork



Immunization Week in the 6 regions

AFR: *Vaccines protect everyone, get vaccinated!*

AMR: *#GetVax to celebrate a healthy tomorrow!*

EMR: *#Vaccines work*

EUR: *#Vaccines work*

SEAR: *#Vaccines work*

WPR: *Vaccination is everyone's job. Protect our children, protect our community*

African Vaccination Week

European Immunization Week
Prevent Protect Immunize

Vaccination Week Eastern Mediterranean

Immunization Week South-East Asia

Immunization Saves Lives

Immunization week 2017

April 25 is World Malaria Day

Malaria Vaccine Pilot Implementation

Progress to date

$52.1m secured for phase 1 (2017-2020)

Coordinating mechanisms being set up

Country selection and field implementation planning initiated (Malawi, Kenya, Ghana)

Joint regulatory review initiated

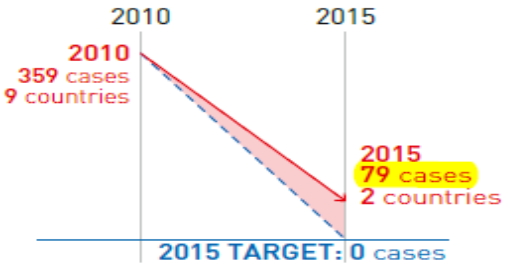
Master protocol for evaluation developed

ACCELERATED GVAP IMPLEMENTATION

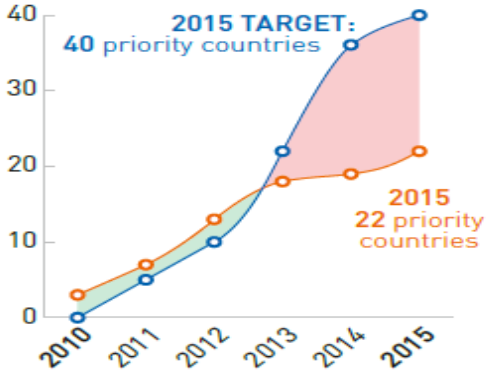
GVAP mid-term report: some progress, but too slow to achieve goals

MISSED

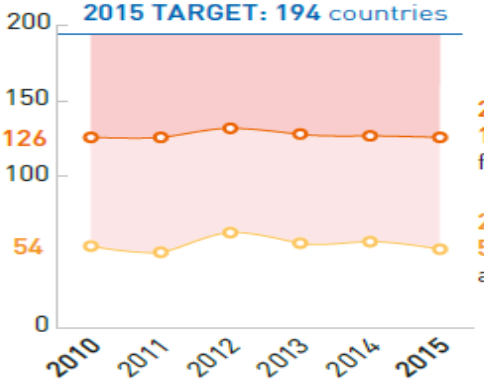
POLIO:
Number of new cases of paralytic poliomyelitis due to wild poliovirus



MATERNAL AND NEONATAL TETANUS ELIMINATION:
Number of countries verified for elimination



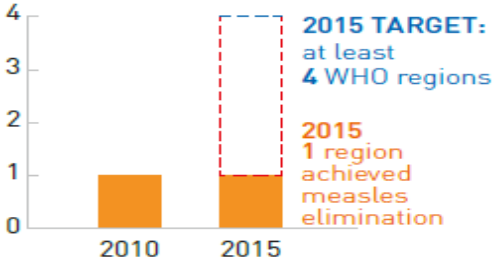
COVERAGE AND EQUITY:
Number of countries with national vaccination coverage of 90%, with no district's coverage less than 80%



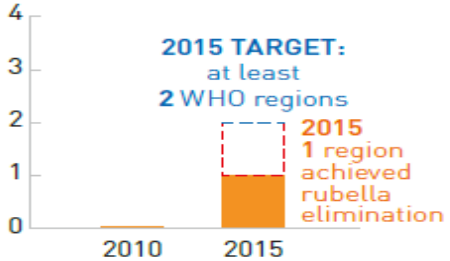
2015
126 Countries achieved 90% national coverage for DTP3

2015
52 Countries achieved 90% national coverage and no districts coverage less than 80% for DTP3

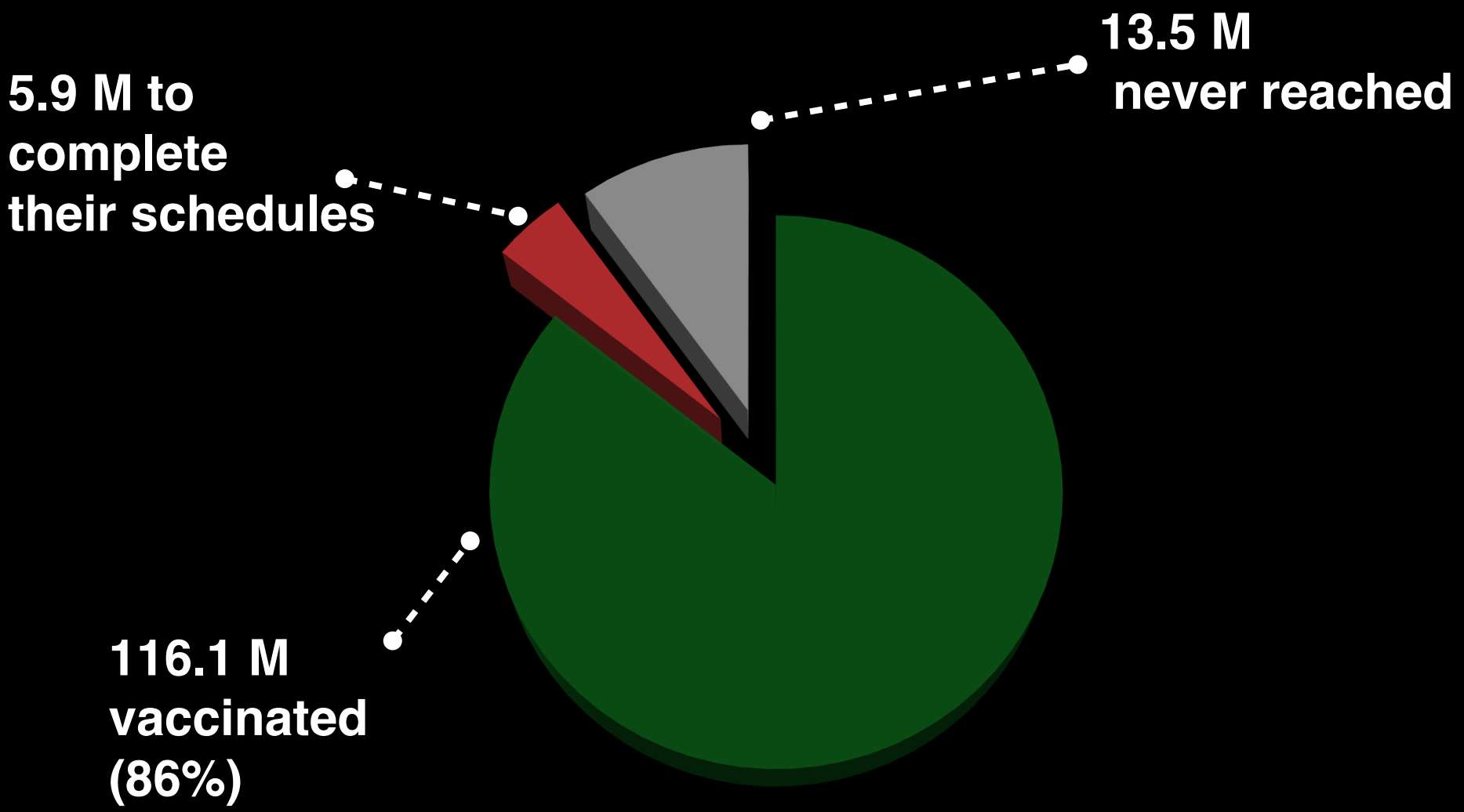
MEASLES:
Number of WHO regions to achieve measles elimination



RUBELLA:
Number of WHO regions verified for rubella and CRS elimination



Infants in the world according to their DTP3 vaccination status, 2015



Source: JRF 194 WHO Member States. Updated on 18 July 2016

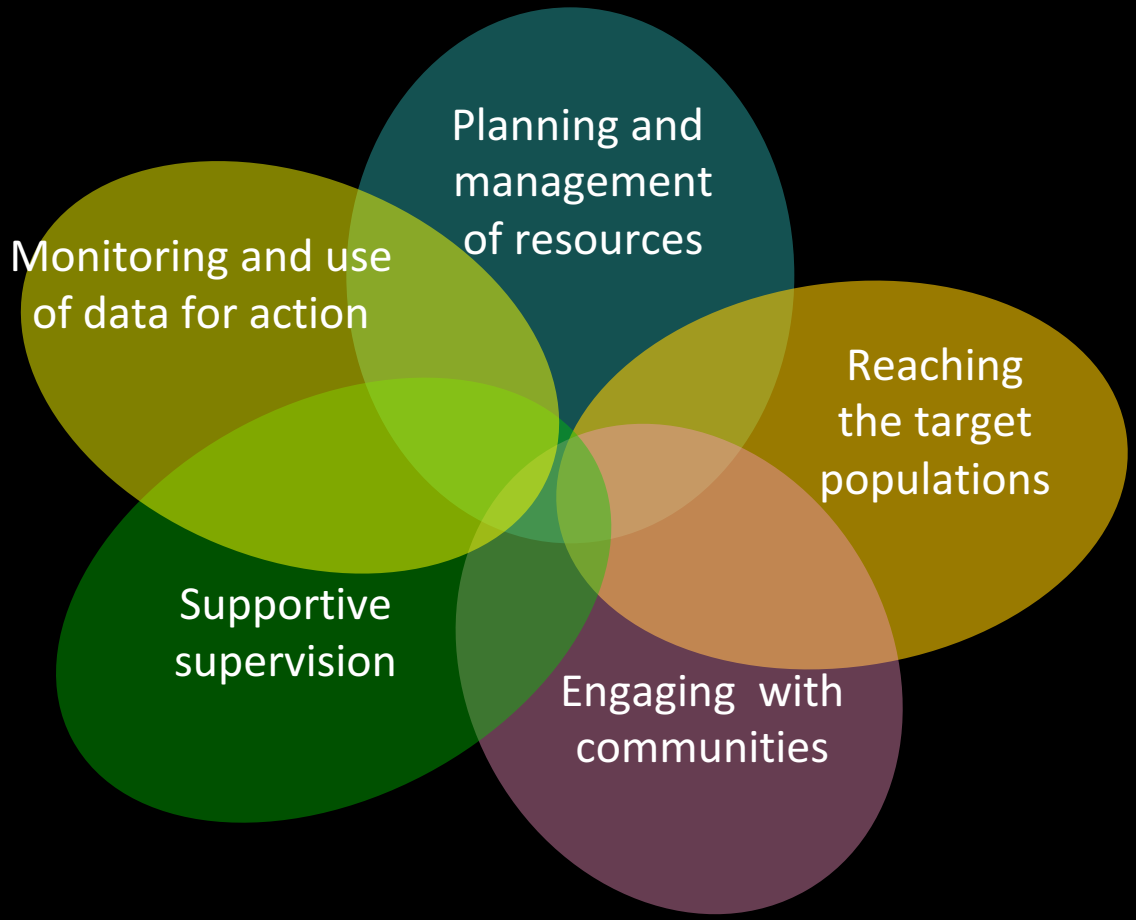
Tackling the top operational challenges

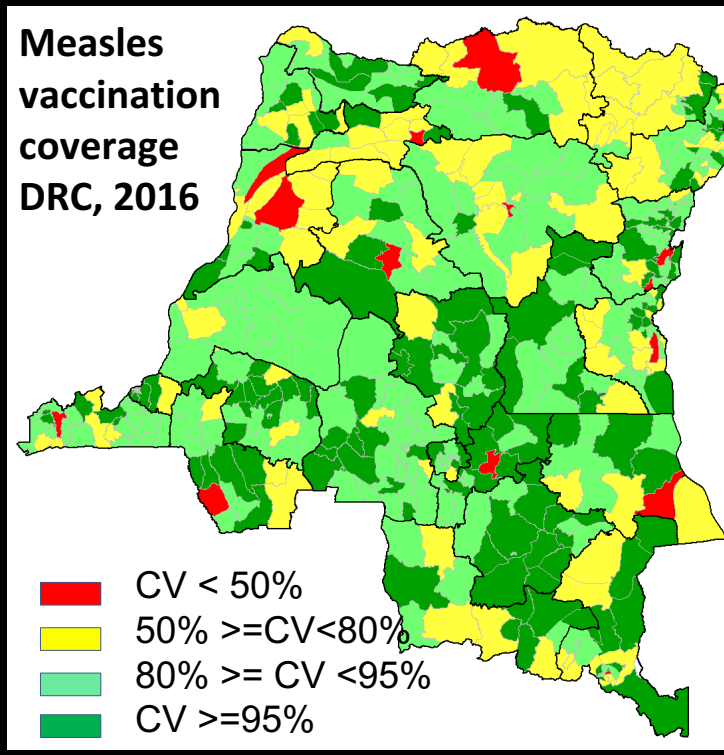
Access & missed opportunities for vaccinations

Vaccine & supply chain management

Availability and use of quality data at all levels

The Reaching Every District's (RED) strategy revisited !





The AFRO revised "RED" guide

Emphasis on reaching equity in Immunisation (*new*)

- **Targets: marginalized populations ie urban poor, migrants, ethnic/religious, etc…**

Life course vaccination *(new)*

- **Catch up on missed vaccination during 1st year of life**
- **"Routinize" 4th DTPc, MCV2, HPV**

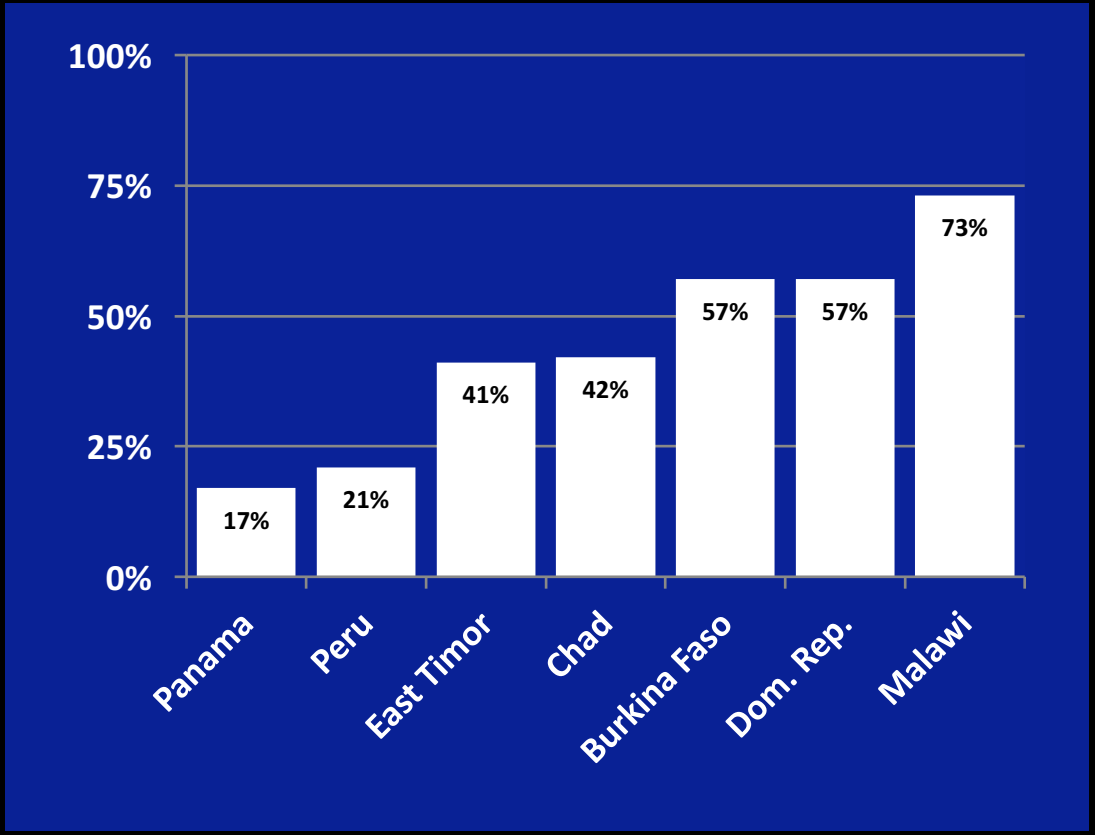
Integration of health services *(reinforced)*

HF and community level focus *(new)*

Addressing the "Missed Opportunities for Vaccinations" (MOVs) to close the coverage gaps

Chilren with multiple contacts per year

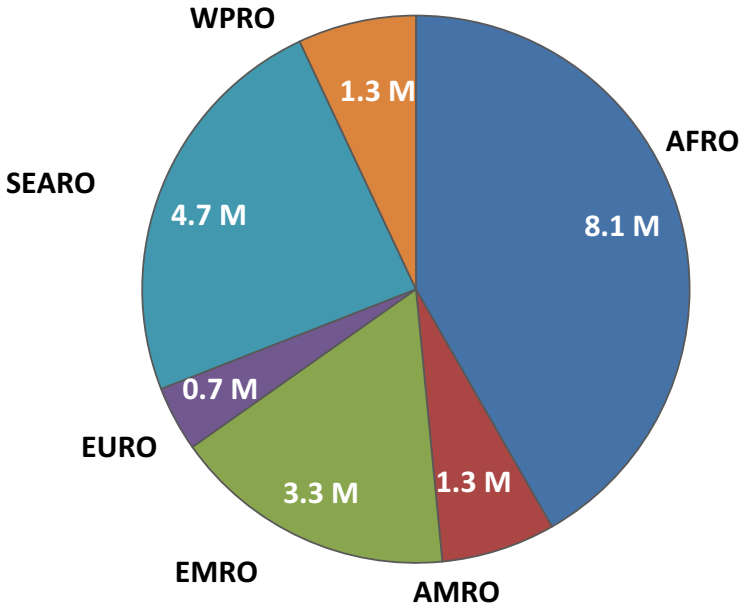
Proportion of eligible infants missed for vaccinations

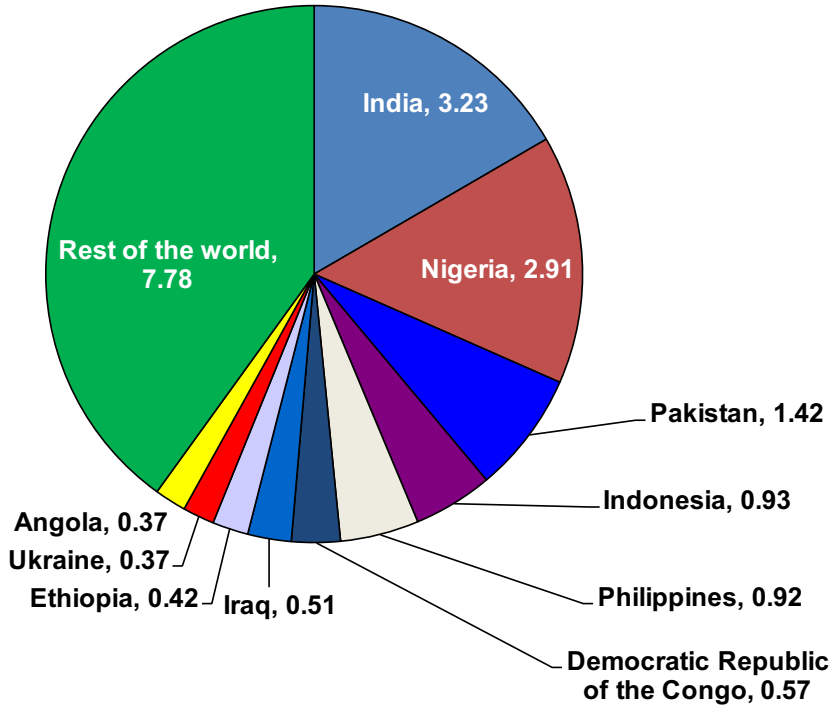


Reducing MOVs: time for bold actions !

- MOVs guidance manuals available
- Training of consultants
- Strong partnership support secured
- 20 countries to apply new norm : “Every health contact, an opportunity to vaccinate”

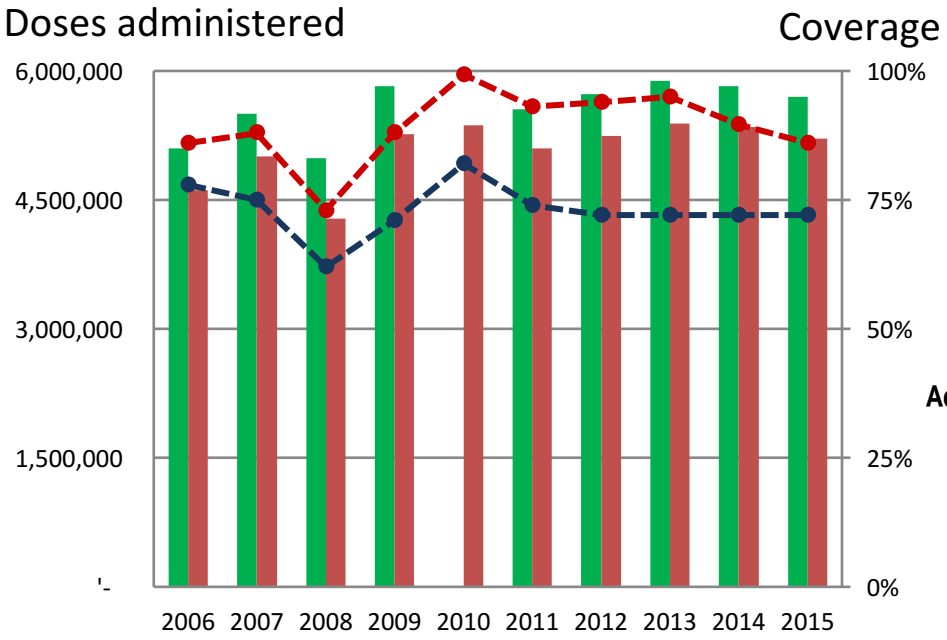
19.4 million infants not immunized (DTP3), 2015



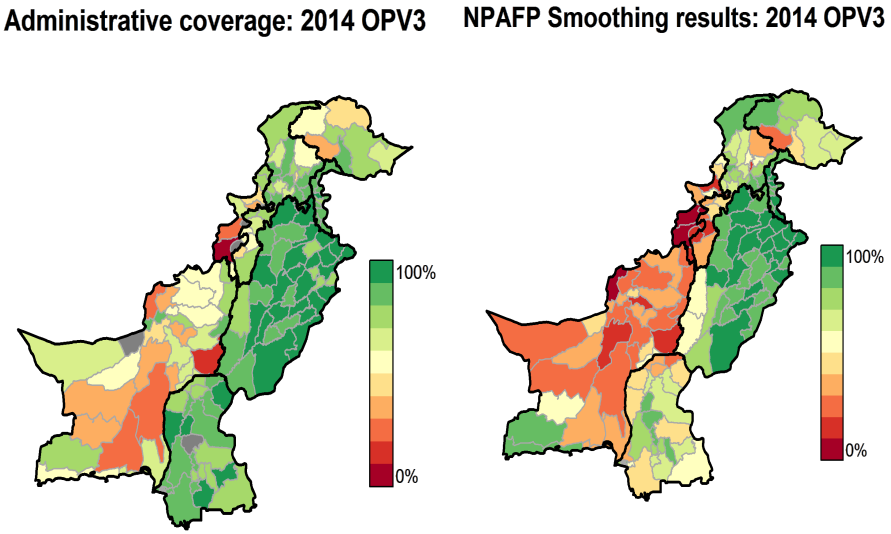


Source: WHO/UNICEF coverage estimates 2015 revision. July 2016 / United Nations, Population Division. The World Population Prospects - the 2015 revision". New York, 2015.
Immunization Vaccines and Biologicals, (IVB), World Health Organization.
194 WHO Member States. Date of slide: 28 July 2016.

Trends of DTP1/DTP3 doses administered and DTP3 coverage Pakistan, 2006-2015



Mapping Routine Immunization coverage (Admin vs Non-Polio Acute Flaccid paralysis – NPAFP)



Slide from Hil Lyons and Guillaume Chabot-Couture, Institute for Disease Modeling, Nov 2015

Progress update, Pakistan

- Strong political support (Federal/some provinces)
  - Gov financial contribution secured
  - Increased visibility and openness
  - Peer learning across provinces
  - Comprehensive EPI review for KP and Sindh in 2017

- PEI-EPI synergy and collaboration improving

- MNT elimination validated/Rota vaccine introduced in Punjab province

- Ongoing work to improve data quality work

WHO/IVB/14.05

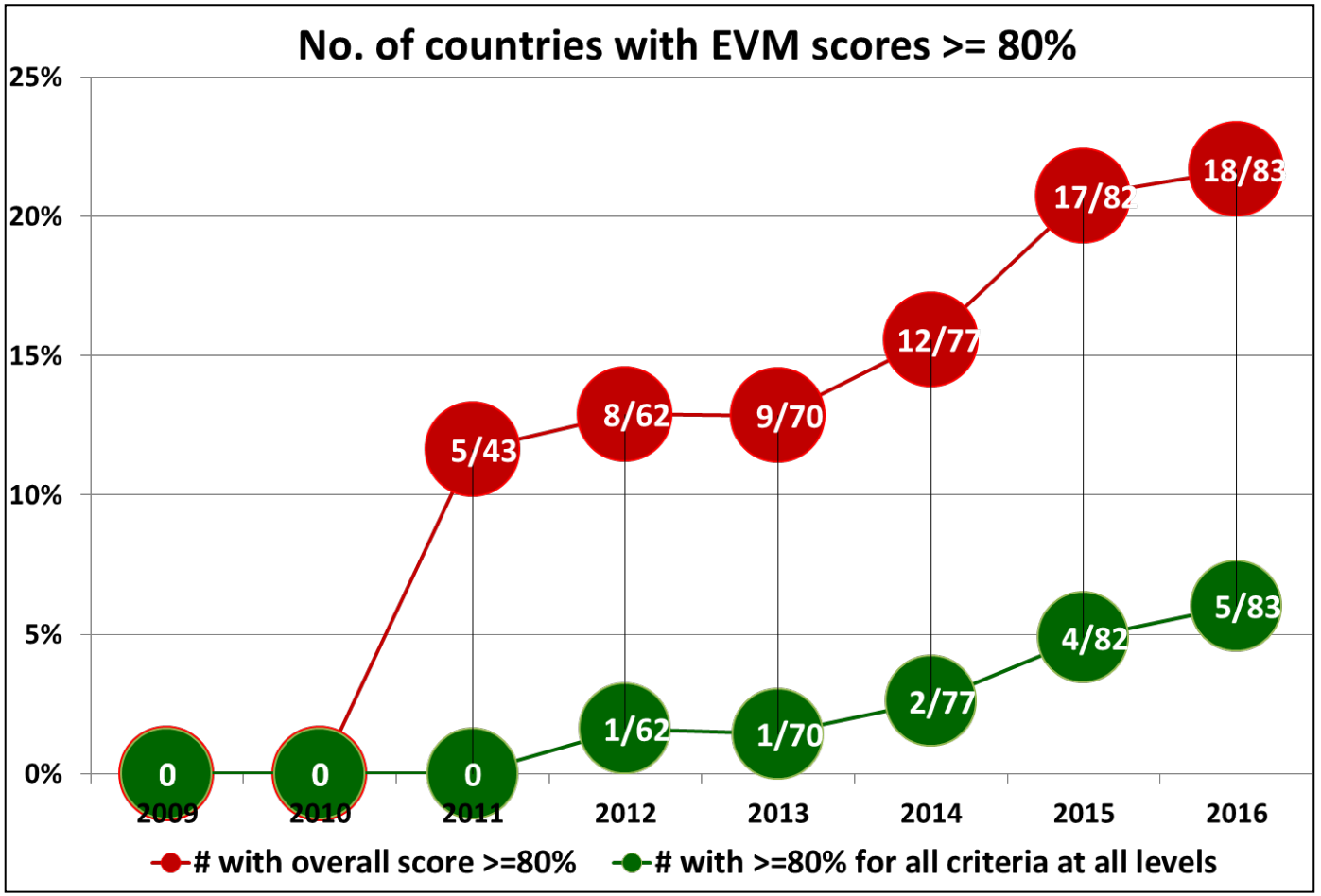
IMMUNIZATION SUPPLY CHAIN AND LOGISTICS

A NEGLECTED BUT ESSENTIAL SYSTEM FOR NATIONAL IMMUNIZATION PROGRAMMES

A CALL-TO-ACTION

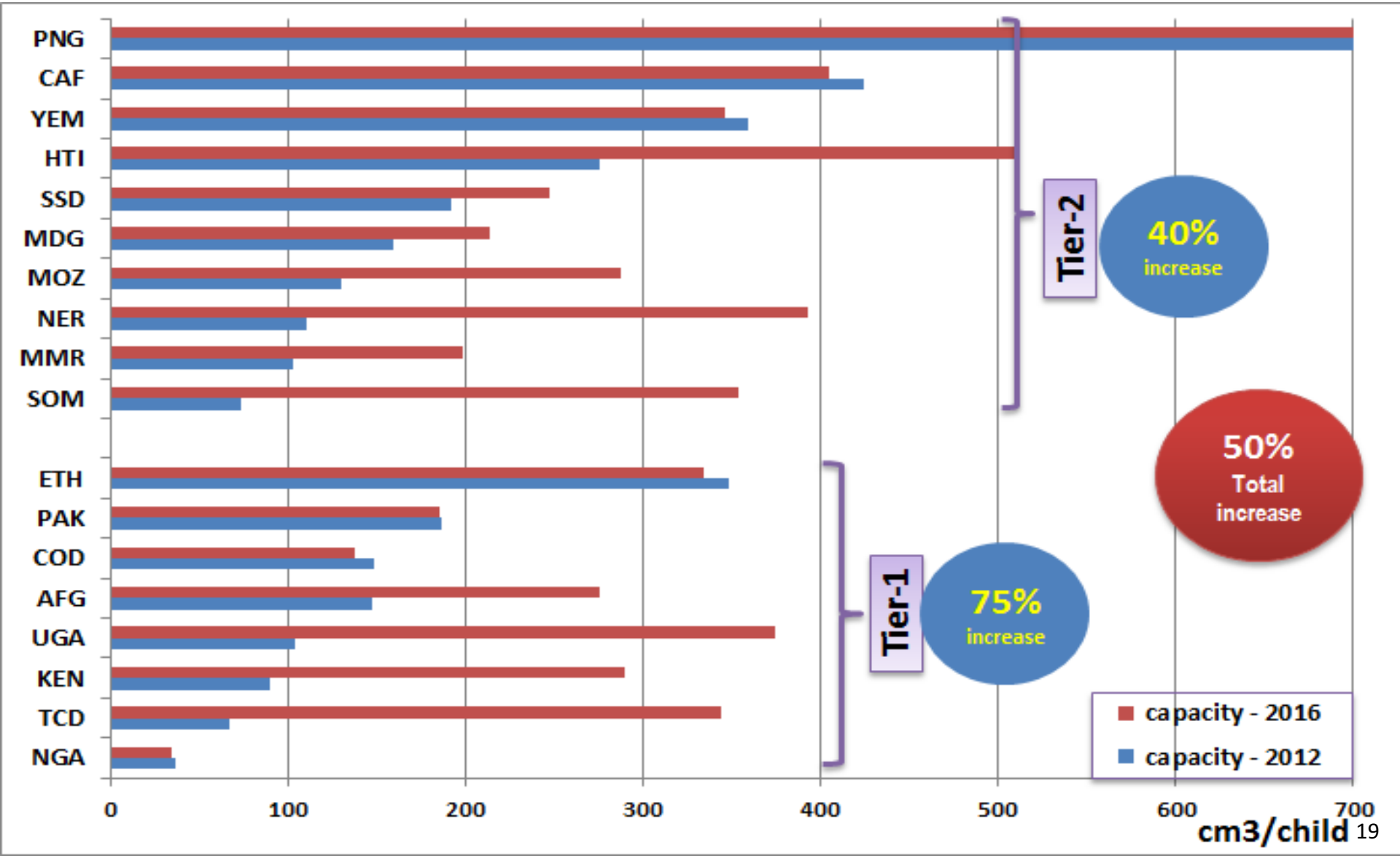
FOR NATIONAL PROGRAMMES AND THE GLOBAL COMMUNITY BY THE WHO IMMUNIZATION PRACTICES ADVISORY COMMITTEE

Effective Vaccine Management (EVM) global trends



120 EVM assessments reported from 83 countries in all regions.

Great improvements in Central Cold Chain Capacity, 2012-2016



Access to timely & affordable vaccine supply

Lower priced vaccines in emergencies

- 'Humanitarian mechanism' currently applied for PCV10 through MSF (Syria, South Sudan and Nigeria)
- GSK & Pfizer currently offering PCV at ~US$3 under mechanism

Increasing Vaccine Price transparency

- Vaccine prices available for 70% of the world in 2016
- For many vaccines, significant spread in prices across different markets

Addressing vaccine shortages

- To pre-empt and manage vaccine shortages and enhanced access
- Current prototypes: BCG and D/d & T containing vaccine

Access to timely and affordable vaccine supply

World Health Organization

MARKET UPDATE BCG VACCINE

BCG VACCINE

Key Takeaways

- In 2017, supply of BCG is estimated to be 1.5X greater than forecasted demand. Given instability of the BCG manufacturing process, this extra supply is reassuring and confirms important progress relative to a bleaker supply-demand balance in recent years.
- However, demand flexibility is limited due to product registration constraints (~1/3 of countries have only one registered product) and supply is still concentrated with a few large suppliers (with prequalified (PQ'd) products) serving most countries (both self-procuring and procuring through UNICEF). Consequently, shortages at country level may still occur.

QUICK STATS

TOTAL # OF SUPPLIERS
19 (4 PQ'd)
Suspended production in 2017: 3 (1 PQ'd)

2017 ESTIMATED MAX GLOBAL SUPPLY
~500M doses

2017 FORECASTED GLOBAL DEMAND
~350M doses

2015 REPORTED PRICE RANGE
US$ 0.04-15.08 (Median: $0.52)

Stockouts

Several short-duration stock-outs (max 1.5 months) were reported over ten years (2005-2015) across all regions, income groups, and procurement methods. The African region, low income (LICs) and lower-middle income countries (LMICs) were most affected. In 2014 and 2015 average stock-out duration increased. Stock-outs seem to be due to several factors: production issues, countries having only one product registered, timely availability of financing (national or external), procurement shortcomings, and inefficient vaccine management.

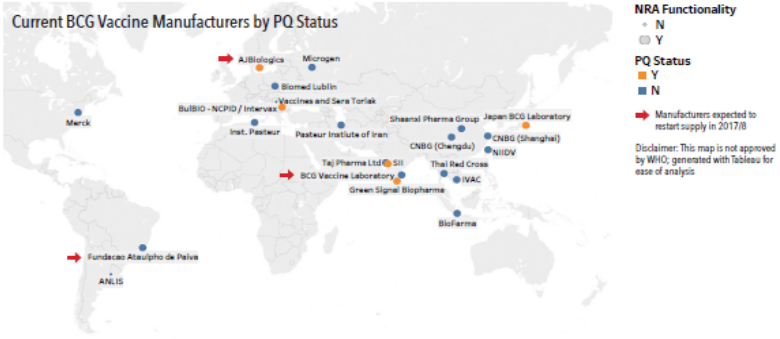
Global Demand

A model, based on country-reported EPI schedule, UN Population Division (UNPD) population, WHO-UNICEF estimated coverage, 50% wastage, and historical procurement data forecasts annual global demand at ~350M doses. Information on past country purchase shows that countries may be over-procuring BCG possibly due to actual wastage >50%, large country stocks, or country target population greater than UNPD estimates.

The greatest difference in forecasted demand and historical procurement is seen for self-procuring LMICs.

Global Supply

Between 2013 and 2015, manufacturing issues for most PQ'd suppliers led to temporary reduced production or suspension of production. Additionally, some non-PQ'd manufacturers exited the market. Nevertheless, supply increased significantly in 2016 as some of the manufacturers' production issues were resolved and one new supplier, Green Signal, was PQ'd. In 2017 supply is estimated to reach ~500M doses from 19 suppliers. The suppliers can be split in two groups: 1. four suppliers with PQ'd products that can reach 169 countries (86% of WHO member states) accepting UN procurement or where one of their products is registered and, 2. fifteen suppliers with non-PQ'd products that can serve 52 countries where they have product registered. In 2017/2018 three manufacturers are expected to be back online and additional capacity could be made available from one other manufacturer.

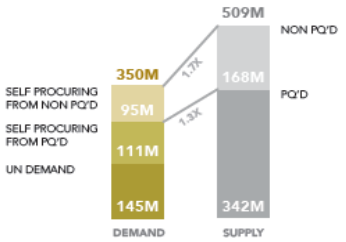


Supply-Demand Balance

In 2017 available supply of BCG is expected to be 1.5X greater than forecasted demand. Given instability of the BCG manufacturing process, this extra supply is sufficiently reassuring and confirms important progress relative to a bleaker supply-demand balance in recent years. Nevertheless, the BCG market is not risk free. Two main factors contribute to the risk:

- **Supply concentration:** two suppliers represent 50% of global vaccine supply and, importantly, 75% of supply of products PQ'd by WHO. The loss of a major supplier would not lead to a supply/demand imbalance, but certainly to a constrained supply situation requiring careful management. In those circumstances vaccine requirements for self-procuring countries and countries procuring through UNICEF will need to be coordinated. Of note, the two major suppliers are released by the same National Regulatory Authority (NRA) – India.
- **Limited demand flexibility:** one third of countries have only one products registered and, as a result, may be at risk for shortages should a production issue occur. Among those, the most at risk are countries with BCG in the EPI schedule, a large birth-cohort, and that import, and thus have less control or visibility on production issues and risks.

2017 ESTIMATED SUPPLY-DEMAND BALANCE



AVERAGE SELF-PROCURING PRICE/DOSE BY MANUFACTURER (2015)

Pricing

Over the past ten years, the price for BCG has remained low – the median reported price in 2015 was US$0.52 (range $0.04-15.08 for 29 reporting countries plus UNICEF and PAHO each included as a single price point). Pricing data (2015) for self-procuring countries shows that price per dose varies by income level, with high income countries (HICs) paying significantly more than middle income countries (MICs), albeit for different products/presentations. Disparity by region is also seen, notably, LMICs in AFR reported a much higher price per dose than EUR or WPR for the same product. Countries (excluding HIC WPR outlier) are paying up to 32X more than the UNICEF price. That said, country affordability has not been raised as an issue for the BCG market.

Recommendations

Global immunization stakeholders, countries, and manufacturers can work to enhance sustainable access to BCG supply by pulling four levers:

- Collect and share information on global demand, supply, and price of BCG to continue risk identification and problem solving
- Enhance supply management at country-level reducing procurement volumes when necessary
- Explore opportunities for registration of several BCG products in each country and/or accepting fast track procedure for PQ'd products
- Investigate the possibility of strengthening production processes of a few key manufacturers for supply security

Data Sources

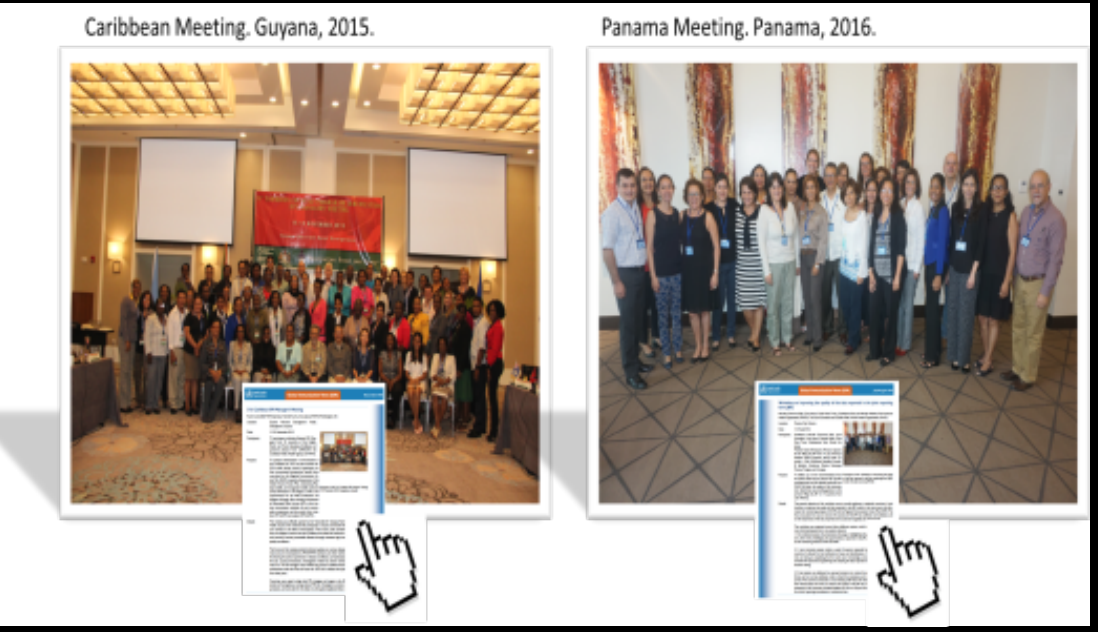
Shortages: regional consultations (current), WHO/UNICEF Joint Reporting Form (JRF) stock-outs reported data (past)

Demand: historical procurement data review (JRF and UNICEF) and global demand forecast (Linksbridge/Gates Foundation Global Vaccine Market Model)

Supply: Nine manufacturers interviews (including the five PQ'd), review of 29 published articles and four policy papers concerning supply, UNICEF SD supply updates, JRF procurement data, PAHO Revolving Fund consultations

Pricing: historical data review (WHO Vaccine Product, Price and Procurement database (V3P), UNICEF SD, PAHO Revolving Fund)

For more information, contact:
Tania Cernuschi, WHO/FWC/IVB/EPI
cernuschit@who.int



Data Quality and use

Reference Guidance :

- Reference manual for Improved quality and use of Coverage surveys
- Routine immunization module in DHIS-2
- Electronic Immunization Registries Guide (AMR)

Capacity building Workshops :

- Data workshops for National and subnational managers
- Desk review of 2016 cov data for all countries in AFR
- Consultants training

- Support to national DQ assessment and coverage surveys

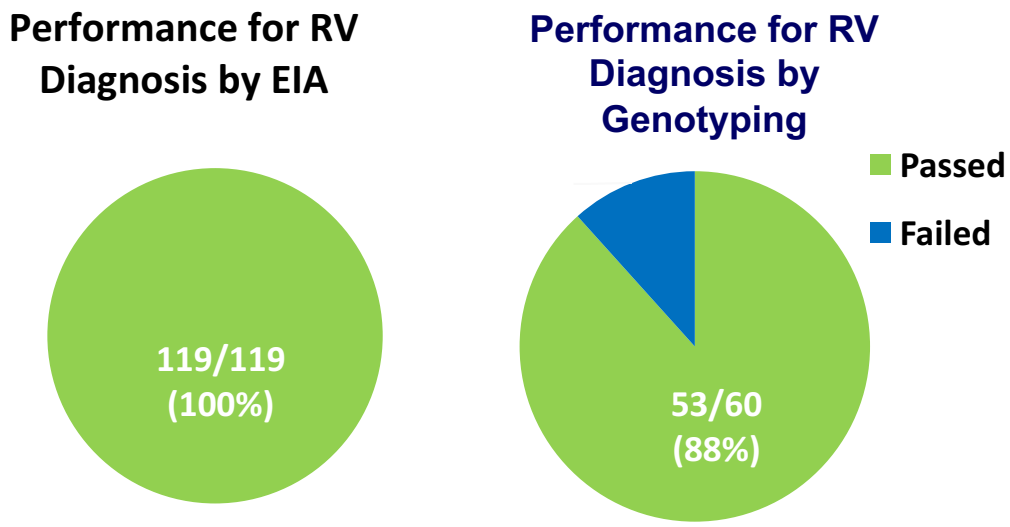
- New in JRF: collection of subnational data at global level in 2017

Strengthened coordination with DHS/MICs and with DHIS-2

Identification and Outsourcing to collaborating institutions

Monitoring Laboratory Performance by External Quality Assessment (EQA) Programs

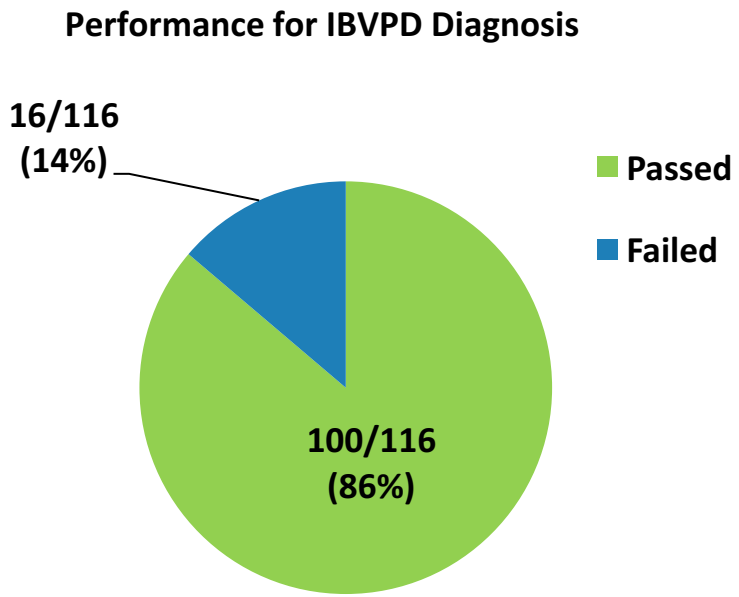
Rotavirus EQA (2016)



Includes 19 China provincial labs, 7 Indian labs, 65 NLs, 9 RRLs, and 19 SSLs that participated in the 2016 Rotavirus EQA

Passing score cutoff for both EIA and genotyping for RRLs: 90% all other labs: 80%

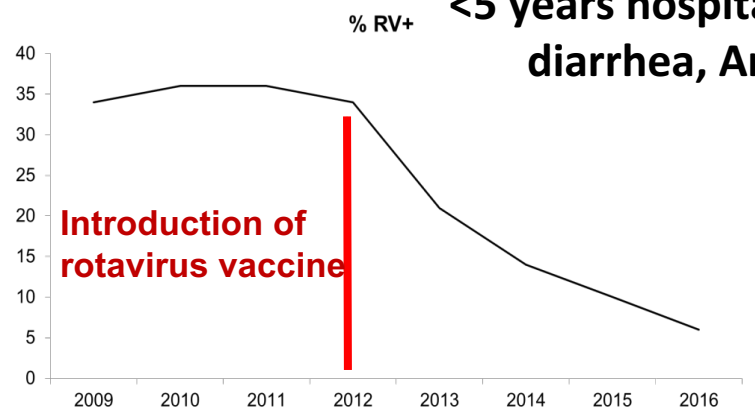
IBVPD EQA (2016)

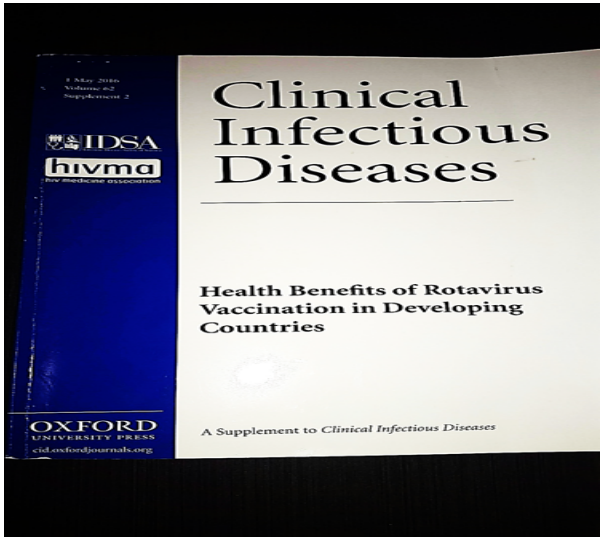


Includes 9 RRLs, 25 NLs, and 82 SSLs that participated in the 2016 EQA that tested for Gram stain, culture ID, and genotypic ID (when applicable)

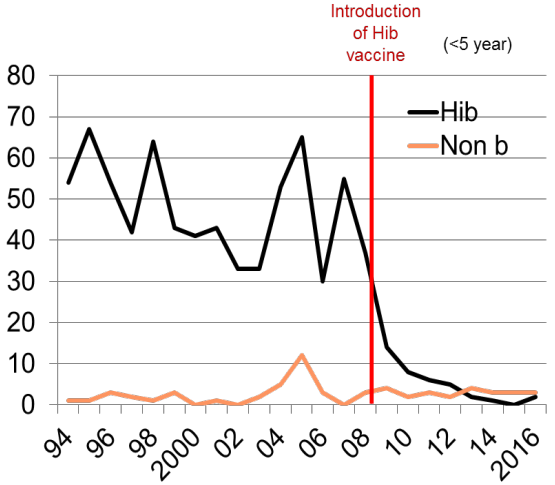
Passing score cutoff for RRLS: 90% SSLs and NLs: 75%

Rotavirus positivity in children <5 years hospitalized with diarrhea, Armenia





Hib Sentinel Surveillance Data in Bangladesh



Sultana *et al* Pediatrics 2013

Non b = type NT, a and f.

7/12 AFRO countries published results showing early impact of rotavirus vaccination in Africa and rotavirus; Sup 2 CID vol 62, May 2016

Our data work urgently requires improved partners' coordination and funding

Main challenges

- Data not always available, complete or detailed enough
- Data not always reliable, consistent over sources
- Lack of "data use culture" and use for decision making
- Inefficient information systems

Global level Governance on DQ

- Agree on a vision and on critical global and regional indicators
- Agree on data collection & sharing with Member States and across partners
- Define the role of SAGE and participating agencies

Adequate Financing

- Support both immunization and surveillance data systems
- Support All countries including non Gavi MICs, in the polio transition context

VACCINES IN GLOBAL HEALTH AGENDAS

Vaccines & Anti-Microbial Resistance (AMR)

AMR, a global health threat

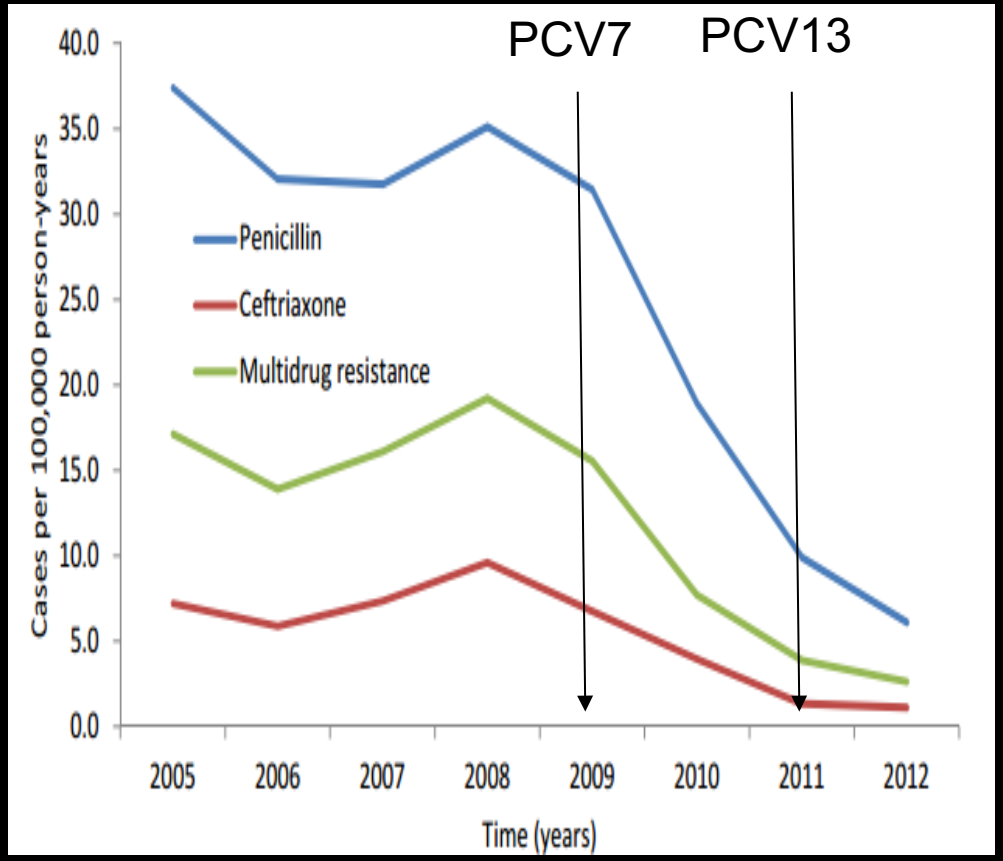
- **50 000 deaths in the US and Europe due to AMR costs $20 billion/yr**
- **Predict mortality due to AMR at 10 million/yr by 2050**
- **Greatest impact will be in developing countries**

Vaccines & AMR

Strategies for vaccines

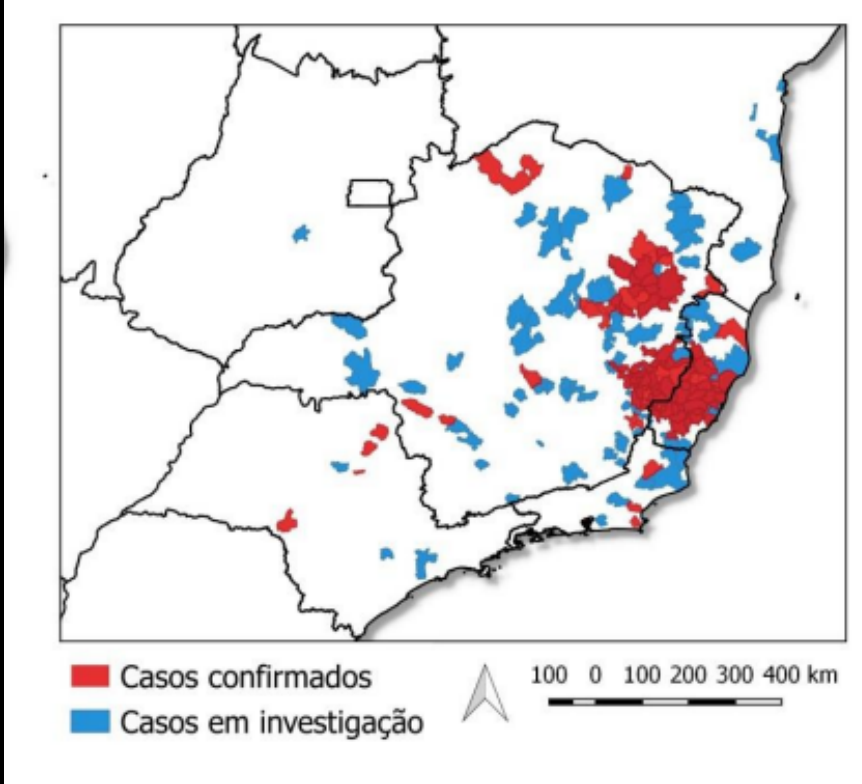
- Increased use of vaccines (PCV, HiB, pertussis but also influenza, rota)
- R&D :
  - Diseases where Antibiotics are less effective (TB, typhoid, STIs, etc)
  - Diseases treated with Antibiotics (GBS, GAS)

Impact of vaccine on antibiotic resistant invasive pulmonary disease in children in SA



Vaccines & Health Security

Emergency Yellow Fever vaccination in Brazil



PAHO support to NITAG, March 2017:

- **Suspension of booster dose**
- Protocol for use of dose-sparing approach in **Rio de Janeiro (+Sao Paulo and Bahia,** as needed)
- **Universal YF vaccination** for all children in Brazil for implementation in 2018.

WAYS FORWARD

The GVAP 'Leadership Council' meeting, Washington, DC, 21 Apr

- Pleased with progress in some areas; concerned with challenges in coverage and equity
- Sense of urgency in tackling GVAP shortcomings
- 'Sherpas' requested to come back with actions drawing from success and lessons from Polio Eradication and other immunization initiatives

GVAP at WHO Governing Bodies

- **Executive Board, Jan 2017**
  - **Substantive discussion on GAVP Mid-term Report**

- **WHA, May 2017**
  - **GVAP Mid-Term Report (*Draft Resolution calls for reporting in 2020 and 2022*)**
  - **Polio transition**
  - **Technical briefing (high level panel)**

AMERICAS: High level support to sustain the elimination of measles, rubella and CRS

- Strategy and Action Plan to sustain elimination to be presented for endorsement at the next Pan American Sanitary Conference (Sept 2017).

- Strategy Highlights :
  - Role of national commissions & annual reports to monitor sustainability.
  - Standardized mechanisms for rapid outbreak response in light of importations.

The strategy was discussed among participants of the recent measles-rubella regional meeting in Panama City

West Pacific to seek Member States endorsement of new plan for Measles and Rubella Elimination*

	Categories	Countries, Areas, Epidemiological Blocks**
1	Verified as having achieved elimination	Australia, Brunei Darussalam, Cambodia, Japan, Macao (China), Republic of Korea, and Hong Kong (China),
2	Achieved elimination but deferred verification (ongoing outbreak)	New Zealand
3	Approaching elimination, but with surveillance gaps	**Lao People's Democratic Republic, Pacific islands, Singapore**
4	Re-established transmission and Endemic measles virus transmission	Mongolia, China, Malaysia, Papua New Guinea, the Philippines, Viet Nam

*** TAG recommendation: WHO to finalize the drafting of a new regional strategy and plan of action in collaboration with TAG, NIPs and partners**

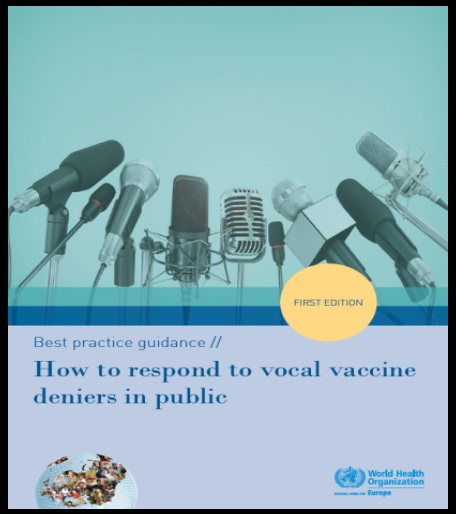
**** as of Sept 2016**

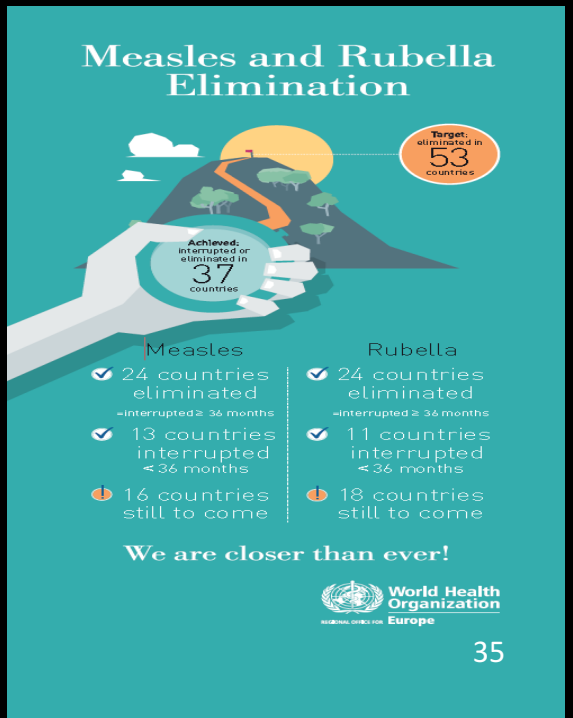
EUROPE: GUIDANCE WELL RECEIVED BY MEMBER STATES

Recent EURO price transparency work, demand & acceptance support, financial sustainability focus and establishment of Hep B verification and control programme

Targeted interventions in measles and rubella endemic countries and verification of the elimination at country-level leading to increased focus on elimination efforts by Member States

Steady progress made in M&R elimination (~70% MS have interrupted &/or eliminated)



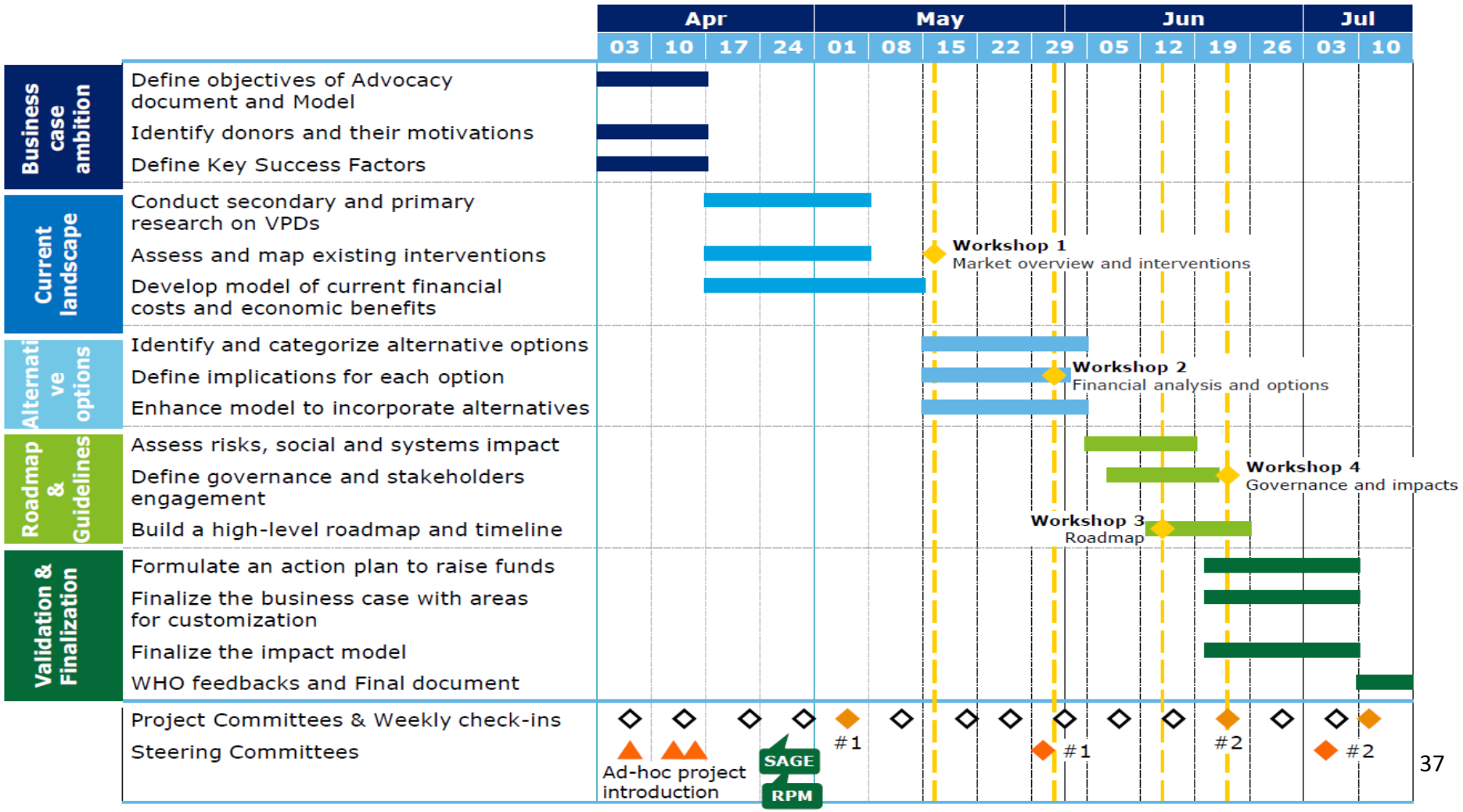


AFRICA: Highest level support to Universal Vaccination

- African Union Summit endorses the Declaration on “Universal Access to Immunization as a Cornerstone for Health and Development in Africa”

- Roadmap to support the implementation of the Declaration finalized.

WHO Business Case for Immunization on the African Continent – Ambitions and Timeframe

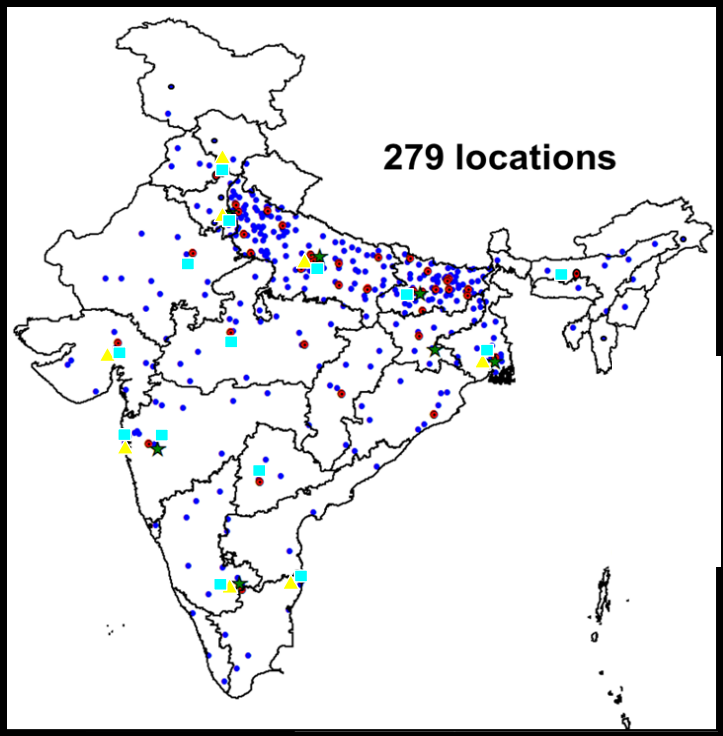


Transition planning in India – progress so far

Priority public health needs for potential support by polio workforce

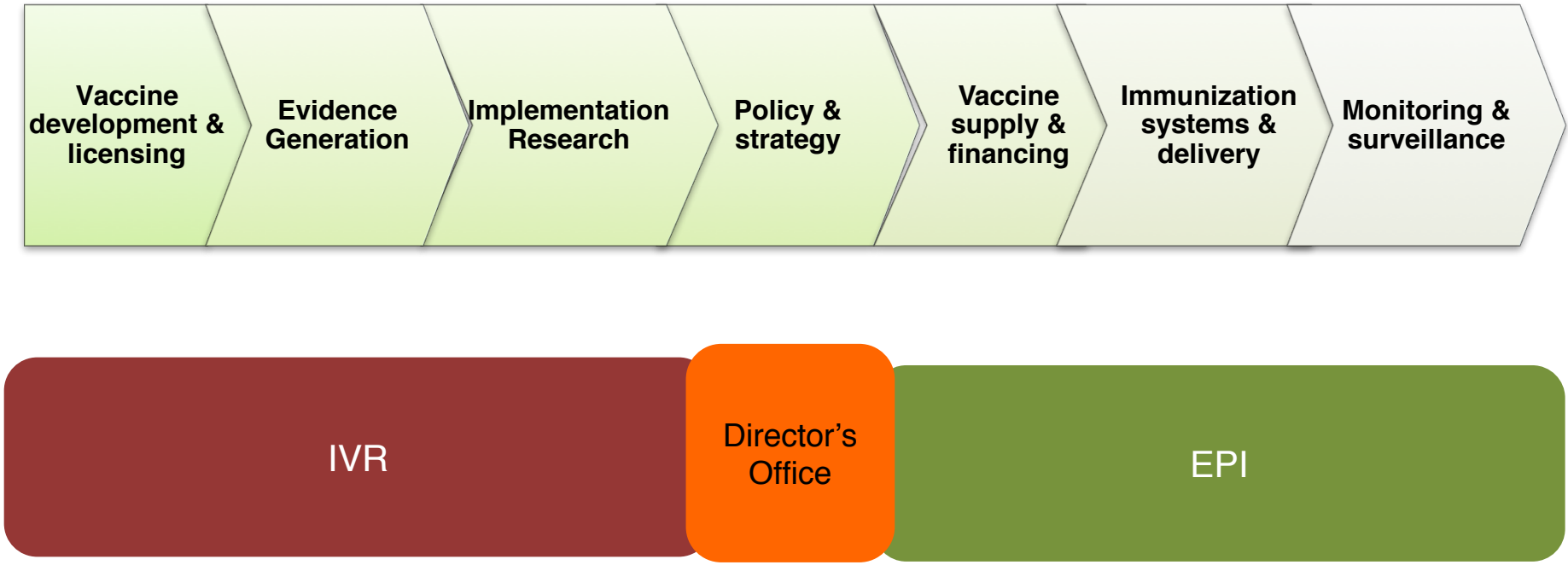
(identified jointly by government and WHO)

Public health needs	Area identified by
Polio	GoI, WHO
Routine immunization, introducing and scaling up new vaccines & health system strengthening	GoI, States
Urban health	GoI
Measles elimination & rubella control	GoI, WHO
VPD surveillance	GoI
NTD: Kala Azar, Lymphatic Filariasis, etc.	GoI, Affected states
Leprosy	GoI, Affected states
RMNCH+A	GoI
Malaria	GoI, Affected states
IDSP	GoI/NCDC
Dengue, Chikungunya, Zika	GoI?
Emergency/Disaster preparedness	State government



Mapping of POLIO assets (HR & infrastructure), India

Where on the vaccine and immunization value chain is the WHO/IVB department involved?



IVB/EPI priorities: Immunization Programme Monitoring & Surveillance

Work areas and key outputs:

Monitoring and reporting on immunization programmes and vaccine preventable diseases

- Produce norms and standards for immunization and VPD surveillance data collection and use
- Collect, collate and disseminate national and subnational data
- Analysis, interpretation and visual representation of key immunization data

National information systems to guide immunization programmes

- Publish guidance on monitoring and assessing programme performance
- Provide guidance on use of innovative information and communication technologies and information systems

Surveillance of VPDs and vaccine safety supported by a well-functioning laboratory networks

- Provide country wide surveillance, safety and outbreak monitoring
- Provide sentinel site surveillance with impact monitoring
- Provide high performing laboratory networks to support surveillance and outbreak preparedness

The new Global Vaccine Framework GVAP 2.0 by 2020 !

Sustain current DoV momentum after 2020 with definition of a ”Global Vaccine and Immunization Framework” for the Decade 2021-2030

Timeline: aim for approval by WHA (May 2020)

Coordination: GVAP Secretariat to coordinate and monitor progress

SAGE: Selected topics on the horizon

(*tentatively planned for October 2017)

Cross-cutting

- GVAP monitoring of progress and plans for Global immunization strategy 2021-30*
- Quality and use of global immunization and surveillance data
- Use of vaccines in immunocompromised populations
- Vaccine health economics
- Strategies to reach older age groups
- Maternal vaccination
- Middle Income countries strategies
- Emergency vaccine development
- Heterologous prime-boost -issues for policy and use
- Combination products
- Optimizing immunization schedules
- ……

Vaccine specific

- Polio eradication*
- Measles and rubella elimination*
- Typhoid*
- Rabies*
- BCG*
- Pneumococcal conjugate vaccines*
- Influenza vaccines
- Meningitis B
- Rotavirus
- RSV
- Mumps
- ……..

Conclusions

- **“Smallpox has succeeded only because it reached beyond the established services and childhood immunization should do the same…” (R. Henderson in “Immunising the children of the world”, 2016)**

- **Meeting the GVAP goals requires working differently with a sense of urgency, sustained focus on reaching the goals and secured high level support !**

THANK YOU !