Global Introduction of New Vaccines: Delivering More to More

Accessible version: https://www.youtube.com/watch?v=R0CjPYZHIXU
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Global Progress

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Medical Officer
Vaccine Introduction Team, Global Immunization Division
Centers for Disease Control and Prevention
World Health Organization (WHO) initiated Expanded Program on Immunization (EPI) in 1974

- First six diseases targeted were diphtheria, pertussis, tetanus, measles, poliomyelitis, and tuberculosis

Substantial reduction in burden of childhood illness and deaths

WHO/IVB database, 2017. Data as of 19 July 2017
Global Causes of Death in Children Under Age 5 Years

- An estimated 5.6 million deaths in children under 5 years old each year
  - 15,000 under-five deaths per day

- 15–25% are attributable to vaccine-preventable diseases
Vaccines Available to Prevent 25 Infectious Diseases

- Significant advances made in development and introduction of new vaccines
- Licensed vaccines available to prevent 25 infectious diseases

What is a “New” Vaccine?

<table>
<thead>
<tr>
<th>Initial Vaccines</th>
<th>Universally Recommended Vaccines</th>
<th>Vaccines Recommended for Targeted Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td><em>Haemophilus influenzae</em> type B (Hib)</td>
<td>Yellow fever</td>
</tr>
<tr>
<td>Pertussis</td>
<td>Pneumococcal conjugate (PCV)</td>
<td>Japanese encephalitis</td>
</tr>
<tr>
<td>Tetanus toxoid</td>
<td>Rotavirus</td>
<td>Typhoid conjugate</td>
</tr>
<tr>
<td>Measles</td>
<td>Rubella</td>
<td>Meningococcal</td>
</tr>
<tr>
<td>Oral poliovirus (OPV)</td>
<td>Inactivated polio (IPV)</td>
<td>Cholera</td>
</tr>
<tr>
<td>Bacille Calmette-Guerin (BCG)</td>
<td>Human papillomavirus (HPV)</td>
<td>Rabies</td>
</tr>
</tbody>
</table>
Why We Need New Vaccines

1. Reduce child mortality from vaccine-preventable diseases
2. Prevent and control outbreaks of vaccine-preventable diseases
3. Eliminate and eradicate vaccine-preventable diseases
4. Respond to rapidly increasing antimicrobial resistance

“We envision a world in which all individuals and communities enjoy lives free from vaccine-preventable diseases.”
GVAP Mid-point Progress Targets 2015

1. DTP3: All countries >90% national coverage, and >80% in every district by end 2015
2. Polio: transmission stopped by end 2014
4. Measles: eliminated in 4 regions by end 2015
5. Rubella: eliminated in 2 regions by end 2015
6. Introduction of new and under-utilized vaccines: At least 90 low- or middle-income countries to have introduced one or more such vaccines by 2015

NOT ACHIEVED

ACHIEVED

DTP3: Third dose of Diphtheria Tetanus Pertussis vaccine
WHO: 2017 SAGE Assessment Report of GVAP
GVAP vaccine introduction target has been met and exceeded

Since 2010, 193 vaccines have been introduced in 108 of 138 low- and middle-income countries

WHO: 2017 SAGE Assessment Report of GVAP
Progress in New Vaccine Introduction

Countries with Haemophilus influenzae type b (Hib) Vaccine in National Immunization Program

Introduced to date: 191 countries
Not introduced/no plans: 3 countries
Incidence of Invasive Hib Disease Declines Following Hib Vaccine Introduction in Children Younger than 5 Years

Incidence of Invasive Hib Disease in Children <5 years, Kilifi, Kenya, 2000–2014

Hib: *Haemophilus influenzae* type b
Countries with Pneumococcal Conjugate Vaccine (PCV) in National Immunization Program

- Introduced to date: 137 countries
- Planned introduction in 2018: 4 countries
- Not introduced/no plans: 53 countries

WHO/IVB Database, as of 26 January 2018
Reduction in Annual Pneumonia Incidence Following PCV Introduction in The Gambia

Countries with Rotavirus Vaccine in National Immunization Program

- Introduced to date: 93 countries
- Planned introduction in 2018: 9 countries
- Not introduced/no plans: 92 countries

WHO/IVB Database, as of 26 January 2018
Decrease in Rotavirus-positive Cases with Increasing Rotavirus Vaccine Coverage in Four African Countries, 2010–2015

Dramatic Reduction in Diarrheal Deaths Following Rotavirus Vaccine Introduction in Mexico

Number of Diarrhea-related Deaths among Children <5 years age, Mexico, 2002–2010

Countrywide vaccine introduction in May 2007

Number of deaths from diarrhea

0 50 100 150 200 250


0–11 Mo of age
12–23 Mo of age
24–59 Mo of age
Countries with Human Papillomavirus (HPV) Vaccine in National Immunization Program

- Introduced to date: 79 countries
- Not introduced/no plans: 115 countries
Substantial Decline in Prevalence of HPV Types 6, 11, 16, 18 Following HPV Vaccine Introduction

Prevalence of Human Papillomavirus (HPV) Types 6, 11, 16, 18 by Age Group; NHANES United States, 2003–2014

Markowitz LE, Hariri S, Lin C; et al. J Infect Dis. 2013 Aug 1;208(3):385-93
Oliver SE, Unger ER; Lewis R et al. J Infect Dis. 2017 Sep 1;216(5):594-603
Efforts of Global Partners to Improve Vaccine Introduction in Low- and Middle-income Countries

- **World Health Organization (WHO)**
  - Vaccine prequalification
  - Global recommendations and policies

  - Communication and social mobilization
  - Vaccine procurement

- **Gavi, the Vaccine Alliance (Gavi)**
  - Donor funding for eligible countries
  - Eligibility determined by country gross national income
  - Vaccine market shaping through forecasting and assuring demand
By 2020, all or nearly all Gavi-eligible countries are projected to have introduced the following nine vaccines where recommended:

- Hepatitis B
- Rotavirus
- Meningococcal serogroup A
- Hib
- Rubella
- Japanese encephalitis
- PCV
- Yellow fever
- Measles second dose

Estimated 23.3 million deaths will be averted by vaccines during 2011–2020, in 73 Gavi-eligible countries
WHO Immunization Policy Framework and Decision-making on Vaccine Introduction

Global
- Strategic Advisory Group of Experts (SAGE) on Immunization

Regional
- Regional Immunization Technical Advisory Group (RITAG)
  - Identifies regional priorities
  - Sets regional policies and strategies

National
- National Immunization Technical Advisory Group (NITAG)
  - Makes immunization policy recommendations to national health authorities

Adapted from: World Health Organization and Strategic Advisory Group of Experts (SAGE) on Immunization
www.who.int/immunization/programmes_systems/policies_strategies/decision_making/en/
Vaccine Supply Security and Procurement Can Hinder New Vaccine Introduction

- Recent supply shortages of rotavirus, PCV, IPV and HPV vaccines
  - Vaccine markets and limited numbers of manufacturers
  - Increasing demand and inaccurate supply forecasting

- Countries may use programmatic modifications to address supply constraints
  - Fractional doses of vaccines
  - Phased introductions

- Increasing vaccine manufacturing in middle-income countries can reduce price and increase supply

Global Mandates Can Facilitate Vaccine Introduction

Polio Endgame Strategy

2014–2015
Introduce IPV

April 2016
Switch from tOPV to bOPV

2019–2020
Withdraw OPV
Outbreaks of Vaccine-Preventable Diseases

- Require additional resources for vaccination campaigns
  - Cholera outbreaks in Haiti, Zambia, and Yemen
  - Yellow fever outbreaks in Angola and Brazil
- May necessitate the use of vaccines before licensure
  - Ebola in West Africa
- Can occur during a humanitarian crisis
  - Diphtheria among Rohingya refugees in Bangladesh

Photo: © Unicef
Increasing Antimicrobial Resistance Necessitates Global Support for New Vaccine Introduction

- PCV introduction has prevented resistant infections and led to reduction in antibiotic use

- Newer typhoid conjugate vaccine available
  - Prequalified by WHO – January 2018
  - Gavi-endorsed funding support for eligible countries
  - Potential for high impact on prevention and control of antimicrobial-resistant typhoid fever
### Additional New and Pipeline* Vaccines across the Lifespan

*Vaccines shown in blue are in varying stages of development

<table>
<thead>
<tr>
<th>Infants and young children</th>
<th>Older children and adolescents</th>
<th>Older Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Japanese encephalitis</td>
<td>• Tetanus adolescent dose</td>
<td>• Zoster</td>
</tr>
<tr>
<td>• Meningococcal A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Measles 2nd dose</td>
<td></td>
<td></td>
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<tr>
<td>• Rubella</td>
<td></td>
<td></td>
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<tr>
<td>• Varicella</td>
<td></td>
<td></td>
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<tr>
<td>• Hepatitis A</td>
<td></td>
<td></td>
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<tr>
<td>• Malaria</td>
<td></td>
<td></td>
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<tr>
<td>• Dengue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Enterotoxigenic <em>E. coli</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• *Shigella</td>
<td></td>
<td></td>
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<tr>
<td>• Group A <em>Streptococcus</em></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Pregnant women</th>
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</thead>
<tbody>
<tr>
<td>• Influenza</td>
</tr>
<tr>
<td>• Group B <em>Streptococcus</em></td>
</tr>
<tr>
<td>• Respiratory syncytial virus</td>
</tr>
</tbody>
</table>
Progress Made in New Vaccine Introduction but Need for Sustained Efforts

- Extensive progress in introducing new vaccines in low- and lower middle-income countries, meeting GVAP target
  - Largely due to support from international partners and donors
  - Significant reductions in vaccine-preventable disease and mortality

- Many factors affect the timing and prioritization of vaccine introduction
  - Vaccine supply constraints and global mandates
  - Outbreaks and humanitarian crises
  - Increasing antimicrobial resistance

- Need for continued support of implementation to sustain health gains and work toward remaining GVAP targets

Global Progress

Carsten Mantel, MD, MPH
Managing Director, MMGH Consulting GmbH, CH-Zürich
Senior Advisor Immunization, Department of Infectious Disease Epidemiology, Robert Koch Institute, D-Berlin
"The mission of the Decade of Vaccines is to extend, by 2020 and beyond, the full benefits of immunization to all people, regardless of where they are born, who they are, or where they live..."
Inequity in new vaccine access across countries remains

We are still not reaching every child everywhere
- Nearly 1 in 10 infants worldwide has not received any DTP vaccine (12.9 million infants)
- The global coverage of DTP3 is stagnating at around 86%
- Most of the unvaccinated and under-vaccinated children live in 10 large countries

Rotavirus vaccine use is delayed in Asia

Middle-income countries are lagging in new vaccine introduction
Numbers of Unvaccinated Children Falling in Some but Not All Large Countries

Number of Unvaccinated Children in Top 10 Countries with Most Unvaccinated (DTP3)

- Nigeria
- India
- Pakistan
- Indonesia
- Ethiopia
- DR Congo
- Iraq
- Angola
- Brazil
- South Africa

www.who.int/immunization/sage/meetings/2017/october/1_MacDonald_GVAP_SAGEOct2017.pdf
Delay in Introducing Rotavirus Vaccine in Parts of Asia and Europe

- Introduced to date: 93 countries
- Planned introduction in 2018: 9 countries
- Not introduced/no plans: 92 countries

WHO/IVB Database, as of 26 January 2018
Challenges for Middle-Income Countries (MICs)

- About two-thirds of the world’s poor now live in MICs
- For children, the largest fraction without access to new vaccines are born in MICs
- About one quarter of vaccine-preventable deaths occur in the MICs that are excluded from or are soon to lose donor support
- 20 MICs are expected to transition from Gavi support by 2020
Introduction of PCV Slower in Middle-Income Countries

Comparison of PCV Uptake in High-income, Gavi-eligible and Gavi-ineligible Countries, 2010–2016

Percentage of Countries


High-income countries
Gavi-eligible countries
Gavi-ineligible middle-income countries

www.who.int/immunization/sage/meetings/2017/october/1_MacDonald_GVAP_SAGEOct2017.pdf
Inequity in vaccine delivery within countries is associated with:

- Conflicts, fragile situations, or humanitarian emergencies
- Residence (urban or rural), with low coverage in urban slums and remote rural communities
- Nomadic populations and ethnic minorities
- Economic status (wealth quintiles)
- Education (of mothers)
- Gender
- Vaccine hesitancy
Increasing Proportion of Unimmunized Live in Cities and Urban Slums

Distribution of Unimmunized or Under-immunized (DTP3) in Top 10 Countries

- 56%: Non-urban
- 26%: Urban Non-slum
- 18%: Urban Slum

Many Countries Show High Levels of Inequity
Differential in DTP3 coverage between highest and lowest wealth quintile

In certain countries, a child from a rich family is up to 9 times more likely to be vaccinated for DTP3 than a child from a poor family.
New Vaccines and Equity—The Response

- **Renewed global focus on equity across countries**
  - GVAP equity monitoring and response (WHO, UNICEF, World Bank)
  - Gavi coverage and equity strategy 2016–2020
  - Global Routine Immunization Strategies and Practices (GRISP)
  - Middle-income country strategy

- **Increasing access to the unvaccinated within countries**
  - Governments often have difficulties in reaching these populations—or lack political will
  - Community-based organizations play an important role in reaching the unimmunized and in increasing vaccine access and coverage—also related to new vaccines (e.g., IPV, HPV)
  - New approaches to reach urban poor (slums), nomadic, marginalized populations
  - New delivery and access strategies in crisis and humanitarian emergencies
### Gavi 2016–2020 Strategy Includes Equitable Uptake and Coverage

**Mission**

To save children’s lives and protect people’s health by increasing equitable use of vaccines in lower-income countries

#### Principles

- Country-led
- Community-owned
- Globally engaged
- Catalytic & sustainable
- Integrated
- Innovative
- Collaborative
- Accountable

#### Goals

<table>
<thead>
<tr>
<th>1</th>
<th>Accelerate equitable uptake and coverage of vaccines</th>
</tr>
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</table>
|   | Coverage and equity  
|   | Introduction and scale-up of new vaccines  
|   | Flexible response to special needs of fragile countries |

<table>
<thead>
<tr>
<th>2</th>
<th>Increase effectiveness and efficiency of immunisation delivery as an integrated part of strengthened health systems</th>
</tr>
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</table>
|   | Integrated comprehensive immunisation programmes  
|   | Supply chains, health information systems, demand generation and gender sensitive approaches  
|   | Engagement of civil society, private sector and other partners |

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<thead>
<tr>
<th>3</th>
<th>Improve sustainability of national immunisation programmes</th>
</tr>
</thead>
</table>
|   | National and sub-national political commitment  
|   | Allocation and management of national human and financial resources  
|   | Sustained performance after graduation |

<table>
<thead>
<tr>
<th>4</th>
<th>Shape markets for vaccines and other immunisation products</th>
</tr>
</thead>
</table>
|   | Adequate and secure supply  
|   | Appropriate and sustainable prices  
|   | Incentivise development of suitable and quality products |
## New Vaccines and Equity—The Response
### Middle-Income Country Strategy 2015–2020

<table>
<thead>
<tr>
<th>Goal</th>
<th>Enhance sustainable access to vaccines for populations in middle-income countries to meet GVAP targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Raise and sustain equitable immunization coverage and enable new vaccine introductions</td>
</tr>
<tr>
<td><strong>Focus areas</strong></td>
<td></td>
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<tr>
<td>① Strengthened decision making for timely and evidence-based immunization policy and programmatic choices</td>
<td>② Increased political commitment and financial sustainability of immunization programs</td>
</tr>
<tr>
<td>③ Enhanced demand for and equitable delivery of immunization services</td>
<td>④ Improved access to affordable and timely supply</td>
</tr>
<tr>
<td><strong>Strategic enablers</strong></td>
<td></td>
</tr>
<tr>
<td>Country commitment to and investment in immunization</td>
<td></td>
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<tr>
<td>Coordination among international and local partners</td>
<td></td>
</tr>
<tr>
<td>International and national advocacy &amp; country-to-country peer learning</td>
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<tr>
<td>Strong monitoring &amp; evaluation efforts</td>
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</table>

[Link to PDF](www.who.int/immunization/programmes_systems/sustainability/WHO_MICTaskForce_StrategyLeaflet_P12_FINAL.pdf)
New Vaccines and Hesitancy—The Response

- **Efforts to address misperceptions and vaccine safety concerns**
  - Targeting and training health workers
  - Identifying key influencers
  - Preparing Web and social media information
  - Informing the public about decisions

- **Tailoring Immunization Programmes (TIP) tool**
  - Toolkit for responding to vaccine-hesitant populations

New Vaccine Products and Technologies
Ensure Reach of Those Most in Need

- Innovative vaccine products (thermostable, low multidose, monodose/prefilled, fractional dosing)
- Innovative packaging (reduced volume)
- Improved cold chain equipment
- Innovative delivery technologies (intradermal devices, cPADs, microarray patches, electroporation, integrated reconstitution devices)

Microarray Patch

C PAD: compact, pre-filled auto-disable injection device
Improved Packaging and Presentation Reduces Stress on Supply Chains

Initial rotavirus vaccine lyophilized, no VVMs
Full course: **330 cm³**

Second generation rotavirus vaccine, VVMs, liquid
Full course: **170.6 cm³**

Latest rotavirus vaccine, VVMs
Full course: **34 cm³**

VVM: Vaccine vial monitor

Cold Chain volume per dose (cm³) varies by secondary packaging: in one dose carton 115.3; in 10 dose carton 43.3; in 50 dose carton 17.1

New Vaccine Delivery Technologies

Blow-Fill-Seal Vaccine Containers

Intradermal injection device

Microarray vaccine patch

Compact pre-filled auto-disable injection device (cPAD)

Microarray vaccine patch

Microarray vaccine patch

Graphics ©: PATH Vaccine and Pharmaceutical Delivery Technologies; West Pharmaceutical Services; Georgia Tech; Uniject™; Rommelag;
Improving The Cold Chain

Pics: © Mantel C.
New Vaccines: Strengthening Routine Immunization

- Increased focus on immunization, more advocacy and visibility
- Opportunities for change in routine practices
- Enhanced training
- Improved vaccine management (e.g., demand forecast, supply and logistics, cold chain)
- Improved data quality, collection, recording and reporting
- Strengthened vaccine preventable disease surveillance
- Improved adverse events reporting and management

www.apps.who.int/iris/bitstream/10665/204500/1/9789241510103_eng.pdf
New vaccines: Delivering More to More
Increasing Vaccine Access to More Populations Across The Life Course

- New vaccines and life-course approach in immunization programs
  - Birth dose
  - EPI infant services
  - Second-year-of-life visit
  - Pre-school vaccination

- Regular joint child health visits

Photo: © Unicef
New vaccines delivered through non-immunization services and platforms

- Antenatal services and maternal immunization (influenza, tetanus)
- School-based delivery (HPV)
- Adolescent health programs (HPV)
- Services for the elderly (PCV, influenza)
- Disease-related services, e.g., diabetics and influenza

Photo: © Unicef
Reducing Missed Opportunities for Vaccination

A missed opportunity to vaccinate is...

any visit to a health service by a child (or adult) who is **eligible** for vaccination, that **does not result in** the person receiving all the vaccine doses for which he or she is eligible
Many Eligible Children Leave Health Facility Without Being Vaccinated

Eligible Children Who Left a Health Facility Unvaccinated, By Country, 2016

- Chad: 43%
- Timor Leste: 55%
- Malawi: 60%
- Kenya: 75%
- Burkina Faso: 82%

In Chad, 15 Simple Strategies Reduced Missed Opportunities and Increased Vaccinations

Comparison of the Number of Vaccine Doses Given in Four Districts in Chad, May–August 2016, 2017

One strategy was simply issuing vaccination coupons to cross-refer children who visited for other reasons.
New Vaccines Linked with Other Health Interventions Will Take Us Further

- Other interventions delivered together with (new) vaccines
  - Deworming (albendazole)
  - Vitamin A
  - Long lasting impregnated nets
  - Chemoprophylaxis
  - Nutrition interventions
  - Water, sanitation, and hygiene

- New collaborative approach to integration

Overburdened alone, or share the load together?

Pics ©: Goodman T.
Financial and Economic Considerations

Craig Burgess, MD, MSc, MBA
Senior Technical Advisor
JSI Training and Research Institute Inc.
High Return on Investment and Economic Benefits

- For every $1 invested, immunizations pay back:
  - $16 from costs associated with illness and lost productivity
  - $44 from costs associated with broader economic impact of illness

- New vaccines against pneumonia (Hib, PCV) and diarrhea (rotavirus) are significant contributions to this investment

Vaccines Are Cost-Effective and An Attractive Investment

- Vaccines are cost-effective
- Most traditional and new vaccines cost less than:
  - $100 per disability-adjusted life year averted (DALY)
  - 3 times gross domestic product (GDP) per capita
- Variability in cost effectiveness is due to context
  (e.g., disease burden in population, delivery mechanisms)
- Vaccines are an attractive investment for essential health packages
  - Vaccines are often more cost-effective than other basic health interventions

New Vaccine Context: Understanding Complex Decision-Making

- **Stakeholders**
  - Political, finance, civil society, and private
  - NITAG, Interagency Coordinating Committee (ICC), Ministry of Health, Ministry of Finance

- **Decentralized decision-making**
  - Decisions on budget and planning to districts

- **Views on sustainability differ**
  - Economist and community views

NITAG: National Immunization Technical Advisory Group
New Vaccine Context of Decision-Making

- Political and Technical Factors:
  - Burden of disease
  - Vaccine safety, efficacy, and quality
  - Political and public health priorities
  - Comparison with other interventions (including other vaccines)
  - Economic and financial criteria

- Feasibility and Scheduling:
  - Characteristics of vaccine presentation
  - Availability of vaccine supply
  - Vaccination program performance

- Decision-making:
  - Introduce the new vaccine
  - Postpone introduction

New Vaccine Context of Integration Into System

- **New vaccines need to fit into:**
  - Essential health packages
  - Integrated delivery platforms
  - Planning and budgeting

- **Evidence needed for decisions**
  - Economics, disease burden, delivery, cold chain

- **Decision-making about how, where, and when**

- **Decisions need compromise and trade-offs**

- **Communicating results and opportunities**
  - Raises awareness and demand, and reduces hesitancy
Vaccine prices are main cost driver in immunization programs
- Price for all recommended vaccines increased by 68 times during 2001–2014
- Most increases in cost are driven by the price of newer vaccines

<table>
<thead>
<tr>
<th>Year</th>
<th>Vaccine Prices</th>
<th>Vaccines</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>$0.67</td>
<td>6 initial antigens (OPV, DTP, measles, BCG)</td>
</tr>
<tr>
<td>2014</td>
<td>$32.09 fully immunized boy (11 antigens)</td>
<td>11 antigens in total</td>
</tr>
<tr>
<td></td>
<td>$45.59 fully immunized girl (11 antigens + HPV)</td>
<td>6 initial antigens + Hepatitis B, PCV, rubella, rotavirus, IPV, and Haemophilus influenzae type b (Hib)</td>
</tr>
</tbody>
</table>
Increasing cost per child immunized, as coverage increases (e.g., harder to reach)

Increasing use of campaigns to deliver in certain contexts

Investing in delivery systems is crucial if vaccines are to:

- Reach those with greatest disease burden (equity)
- Maximize cost-effectiveness
- Protect investment in new vaccines
After Vaccines, The Main Cost Driver Is Systems Related

Estimated Systems Costs (Service Delivery and Supply Chain) from Decade of Vaccines Work, 2011–2020

- **Service Delivery**
  - 41% Human resources
  - 15% Program management
  - 4% Disease surveillance
  - 2% Social mobilization, communication and advocacy
  - 2% Training and capacity building

- **Supply chain and logistics, 37%**

- **Supply Chain and Logistics**
  - 23% Cold chain equipment and overheads
  - 9% Vehicles and transport
  - 5% Human resources

[Link to document details](www.who.int/bulletin/volumes/92/5/13-130146/en/)
New Vaccine Cost Considerations

- **Equity**: link to health sector, primary health care, Reaching Every District or Community plans
- **Multiple shared costs**: staff, transport, facilities
- **Effectiveness of delivery**: timeliness, safety, and strategy (outreach, fixed post, school-based, workplace, campaigns, child health days)
- **Community participation**: sustainability, acceptability and uptake
- **Tools, repository, and community of practice for costing and financing**: [www.immunizationeconomics.org](http://www.immunizationeconomics.org) and [www.immunizationfinancing.org](http://www.immunizationfinancing.org)

New Vaccine Budgeting

- Realistic budgets—a political process that needs better evidence
- ‘On’ budget or ‘off’ budget?
- What is affordable when:
  - Expenditure on health is low?
  - There are competing priorities?
  - Delivery of routine vaccines is incomplete?

<table>
<thead>
<tr>
<th>Country Classification</th>
<th>2014 Average Health Expenditure Per Capita (US$)</th>
<th>Number of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income</td>
<td>$37</td>
<td>31</td>
</tr>
<tr>
<td>Lower middle-income</td>
<td>$92</td>
<td>54</td>
</tr>
<tr>
<td>Middle income</td>
<td>$290</td>
<td>103</td>
</tr>
</tbody>
</table>

data.worldbank.org/indicator/SH.XPD.PCAP
Transitioning from Gavi and Global Polio Eradication Initiative (GPEI) Support

- Transition plans require dialogue with broad health systems planners
- Address country management of logistics and supply need
- Plan and budget for future new vaccines
- Focus on domestic resource mobilization
- Sustainability and capacity of institutions
Key questions for countries to ask

- Is the financing really additional?
- Is there a ‘hidden’ cost to new financing?
- Is the funding predictable and sustainable?
- How flexible is the financing?
- Will funding flow equitably?
New Vaccine Financing – Finding the Funding

- **Domestic resources for funding**
  - Tax (“sin”/earmark), risk pooling, user fees, national trust funds, loans, budget support, universal health care advocacy for health budget 5% GDP

- **Reducing costs of vaccines through pooled procurement for vaccines**
  - Gavi, Vaccine Independence Initiative (VII), accessing UNICEF prices, and PAHO Revolving Fund

- **Increasing efficiency to lower spending**
  - Decrease vaccine wastage and drop out, integration, increase social mobilization
Strengthening New Vaccine Introduction

- **National decision-making** requires increasing awareness and use of evidence (disease burden, economics, systems) and understanding politics.

- Translating global policy making to national action requires context-specific approaches and an understanding of stakeholders.

- New vaccine introduction has a role to play in economic development as well as disease control with very positive return on investment.
New Vaccine Implementation: The Way Forward

- **Improve integration of service delivery at all levels**
  - Optimize vaccination schedules and broaden life-course approach
  - Reduce missed opportunities for vaccination
  - Use opportunities for ‘collaborative’ integration of immunization with other programs and sectors

- **Reduce inequity in immunization across and within countries**
  - Implement GVAP, Reaching Every District or Community (focus on hard to reach)
  - Strengthen country immunization delivery systems and reduce vaccine hesitancy
  - Improve presentation and packaging and new delivery technologies

- **Reinforce alignment between immunization, global health, and development agendas**
  - e.g., sustainable development goals and universal health coverage