

KEEPING CHILDREN HEALTHY

THE VACCINE ALLIANCE
PROGRESS REPORT 2015

Gavi
The Vaccine Alliance

OUR 2011–2015 MISSION

To save children's lives and protect people's health by increasing access to immunisation in poor countries



1.5 million children die every year of vaccine-preventable diseases



The Vaccine Alliance currently supports 12 life-saving vaccines



Our aim is to reach every child with the miracle of vaccines

Despite increased uptake by developing countries

19 MILLION CHILDREN

ARE NOT FULLY IMMUNISED WITH BASIC VACCINES

that is

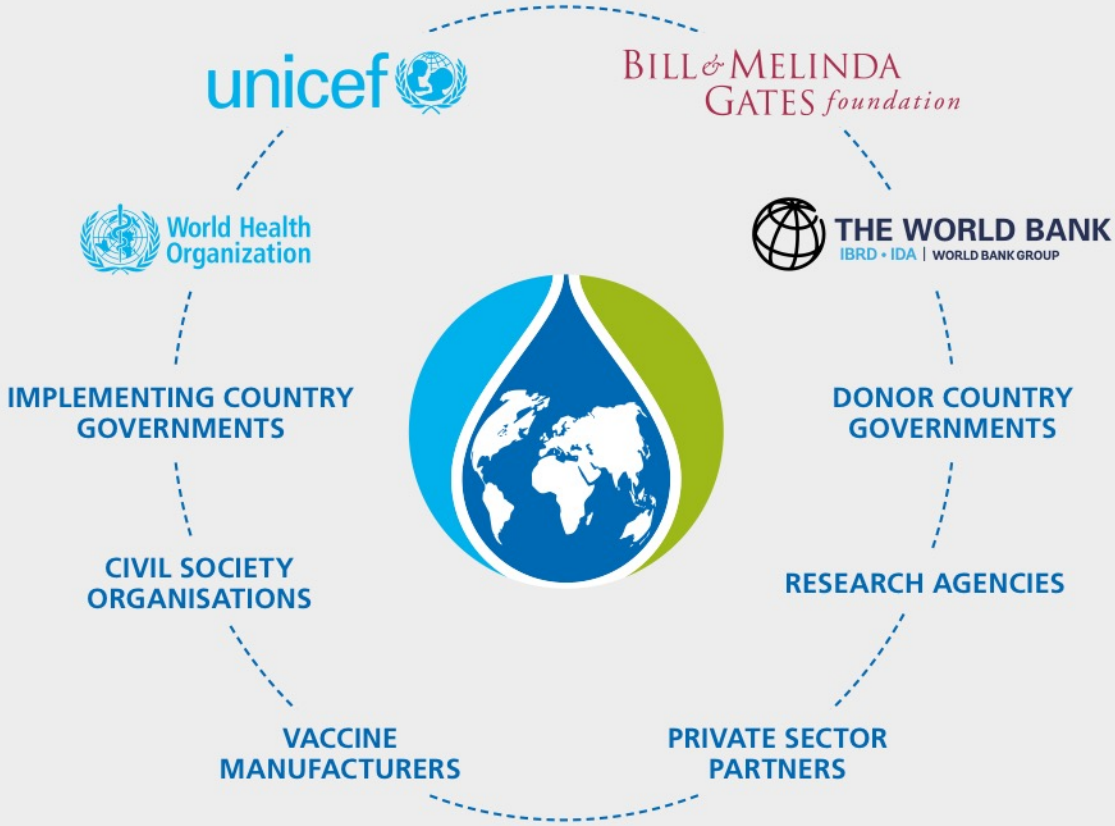
TWICE

AS MANY CHILDREN AS ARE BORN EACH YEAR IN THE USA AND THE EUROPEAN UNION COMBINED



THE VACCINE ALLIANCE

Our partnership combines the technical expertise of the development community with the business know-how of the private sector



Our partners

- **WHO** regulates vaccines and supports country introductions, strengthening immunisation coverage and data quality.
- **UNICEF** procures vaccines and supports countries in maintaining their cold chain, improving access and collecting data.
- **The World Bank** helps pioneer innovative finance mechanisms like the International Finance Facility for Immunisation (IFFIm) and the Advance Market Commitment (AMC).
- **Bill & Melinda Gates Foundation** and other private-sector partners provide funding and expertise.
- **Implementing country governments** identify their immunisation needs, co-finance and implement vaccine programmes.
- **Civil society organisations** help ensure that vaccines reach every child.
- **Vaccine manufacturers** guarantee vaccine quality, supply and affordability for developing countries.
- **Donor country governments** make long-term funding commitments.
- **Private sector partners** contribute resources, expertise and innovation to help achieve our mission.
- **Research agencies** help us generate the evidence base and communicate the value of vaccines.

OUR FOUR GOALS

We focus on four strategic goals to achieve our mission:

1 HEALTHY CHILDREN



The vaccine goal: Accelerate the uptake and use of underused and new vaccines by strengthening country decision-making and introduction

page 10 →

2 HEALTHY SYSTEMS



The health systems goal: Contribute to strengthening the capacity of integrated health systems to deliver immunisation

page 32 →

73 COUNTRIES ARE DRIVING THEIR IMMUNISATION PROGRAMMES WITH GAVI SUPPORT

Afghanistan, Angola, Armenia, Azerbaijan, Bangladesh, Benin, Bhutan*, Bolivia (Plurinational State of), Burkina Faso, Burundi, Cambodia, Cameroon, the Central African Republic, Chad, the Comoros, the Congo, Côte d'Ivoire, Cuba, the Democratic People's Republic of Korea, the Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, the Gambia, Georgia, Ghana, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras*, India, Indonesia, Kenya, Kiribati, Kyrgyzstan, the Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mongolia*, Mozambique, Myanmar, Nepal, Nicaragua, the Niger, Nigeria, Pakistan, Papua New Guinea, the Republic of Moldova, Rwanda, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sri Lanka*, the Sudan, Tajikistan, Timor-Leste, Togo, Uganda, Ukraine**, the United Republic of Tanzania, Uzbekistan, Vietnam, Yemen, Zambia, Zimbabwe

*No longer receiving Gavi support from January 2016
**Did not receive Gavi support in 2015

> As a champion of Gavi, I'd like to say to everyone to support the Vaccine Alliance's efforts to ensure that nations have the means to prevent diseases.

HE Ellen Johnson Sirleaf
President of the Republic of Liberia

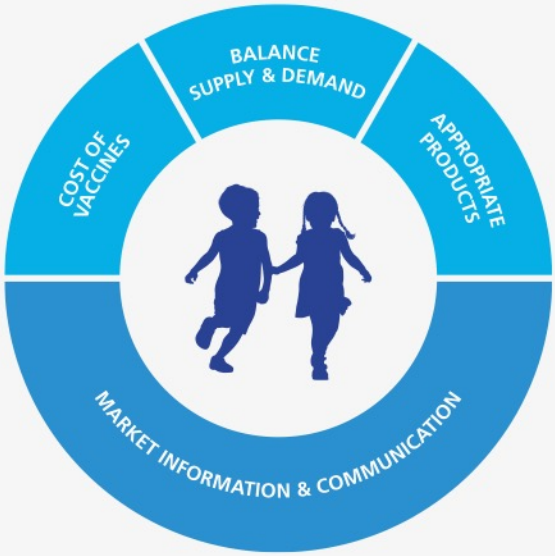
3 HEALTHY FINANCING FOR IMMUNISATION



The financing goal: Increase the predictability of global financing and improve the sustainability of national financing for immunisation

page 48 →

4 HEALTHY MARKETS



The market shaping goal: Ensure appropriate and affordable vaccines for developing countries

page 64 →

THE VACCINE ALLIANCE IS FUNDED BY

Absolute Return for Kids (ARK), Alwaleed Philanthropies, Anglo American plc, Australia, The Bill & Melinda Gates Foundation, Brazil, Canada, The Children's Investment Fund Foundation, China, Comic Relief, Denmark, Dutch Postcode Lottery, ELMA Vaccines and Immunization Foundation, The European Commission, France, Germany, His Highness Sheikh Mohammed bin Zayed Al Nahyan, India, International Federation of Pharmaceutical Wholesalers (IFPW), Ireland, Italy, Japan, JP Morgan, Kingdom of Saudi Arabia, "la Caixa" Foundation, LDS Charities, Lions Clubs International Foundation, Luxembourg, the Netherlands, Norway, The OPEC Fund for International Development (OFID), the Republic of Korea, the Russian Federation, South Africa, Spain, State of Qatar, Sultanate of Oman, Sweden, The A & A Foundation, the United Kingdom, the United States of America, UPS, Vodafone

Q&A WITH GAVI'S EXECUTIVE LEADERS

Gavi CEO Seth Berkley and Board Chair Ngozi Okonjo-Iweala look back on one of the most transformative periods in Gavi's history, and discuss what this means for the next strategic period.

Dr Seth Berkley, CEO

What are the main lessons that Gavi learnt from its 2011–2015 strategy?

Seth: Much of this last period was about tackling the two largest killers of children, pneumonia and diarrhoea. Between 2011 and 2015 we took vaccines that protect against each of these diseases to scale, exceeding our target number of launches. One or more of pneumococcal, rotavirus and pentavalent vaccines were added to routine schedules in 14 more countries than expected. Particularly encouraging was the 2015 completion of India's national roll-out of pentavalent vaccine. In addition, access to routine immunisation in Gavi-supported countries has been boosted, thanks largely to our market shaping activities. The average weighted cost of immunising a child with pentavalent, pneumococcal and rotavirus vaccines has fallen by 43% since the beginning of the strategic period. Indeed, it is now possible to fully immunise a child with all vaccines universally recommended by WHO for the same price it once cost for just these three. That's amazing progress.

What can we take from this as we move from Gavi 3.0 to Gavi 4.0?

Seth: While we did well on launches, we didn't get the coverage we were hoping for. This was partly the result of delays in getting started, but also because of the challenges posed by reaching children in high-risk areas. Too many are still missing out. That is not to say that we didn't make progress; we now have the highest immunisation coverage in history. But if we are to reach the fifth child, we really need to focus on both coverage and equity, in particular by continuing to build on health systems as the base of the primary health pyramid. That is what Gavi 4.0 is all about.

What does this mean for the future and the challenges that lie ahead?

Seth: A key part of what the Vaccine Alliance has been doing, by helping countries strengthen their immunisation programmes, is boosting capacity. This is enabling health systems to handle more complex vaccines, such as inactivated poliovirus vaccine (IPV) and meningitis vaccines, and it also makes systems better able to respond to disease outbreaks. This kind of preparedness is likely to become increasingly more important and relevant to Gavi as climate change, increases in urbanisation and population density, and the growing problem of drug resistance shift the behaviour of infectious disease and challenge our ability to prevent it. During the 2011–2015 strategic period, there has already been much more engagement than expected in relation to outbreaks, notably with Ebola, but also cholera, measles and yellow fever. Lessons learnt from the innovative financing mechanisms that Gavi has used in the past have been applied to drive innovation with Ebola vaccines. Building higher vaccine coverage will also play an important role in outbreak preparedness, both by preventing disease and ensuring the systems are in place to react quickly. This is why our Board approved a new measles strategy in 2015, which puts strengthening routine immunisation at the centre of a more comprehensive approach to tackling this highly infectious disease. Strong systems and high routine coverage will become increasingly important in the face of growing global health security threats.

> We now have the highest immunisation coverage in history. But if we are to reach the fifth child, we really need to focus on both coverage and equity.
>
> **Seth Berkley**
> CEO Gavi, the Vaccine Alliance



Dr Ngozi Okonjo-Iweala, Board Chair

How important is strong political leadership to Gavi's long-term success?

Ngozi: Children are the lifeblood of every country and so protecting their health needs to be a priority for all governments. Health ministers already know this, but moving forward, Gavi's challenge is to engage other political leaders, such as finance ministers, to convince them to make prevention of childhood disease a national priority. To ensure there is sustainable funding for immunisation, there must be a line item for vaccines in every national budget. As a former finance minister I know that we can do this by making the case for the economic merits of immunisation. We must explain that vaccines are not just affordable but an investment, returning US$ 16 in immediate healthcare savings for every dollar spent on them. By making this case and explaining the role vaccines have to play in helping governments reach their economic and development targets, we can put immunisation on every country's agenda.

What signs are there that countries are taking ownership of their immunisation programmes?

Ngozi: All countries ultimately want to be able to support themselves, and Gavi's innovative model is unique in making this possible – it is one of the reasons why I was drawn to it. In 2015, our business model proved its value as four countries transitioned entirely out of Gavi support. With close to 20 other countries set to follow in the next five years, this marks a new phase in the history of the Vaccine Alliance – and there are lots of signs that countries are ready to take ownership of their immunisation programmes. Over the last five years, we have seen 14 countries take on the funding of at least one of their Gavi-supported programmes. In addition, countries are contributing more towards their vaccine programmes, delivering 47% more in co-financing by the end of the 2011–2015 strategic period than was projected in 2010.

What do these changes mean for the Gavi model in the long term?

Ngozi: It means that Gavi will be working itself out of a job in many countries as they take over the management of their vaccine programmes in a sustainable manner. This will enable Gavi to concentrate on the remaining fragile states, which, by their very nature, pose even greater challenges. As we move forward, we will also see an increasingly country-centric approach. The introduction of the partners' engagement framework (PEF), which encompasses our core partners, including WHO and UNICEF, will ensure that our support is more suited to the needs of individual countries through a Gavi-funded permanent country presence.

> All countries ultimately want to be able to support themselves, and Gavi's innovative model is unique in making this possible.
>
> **Ngozi Okonjo-Iweala**
> Board Chair, Gavi



MEASURING OUR PROGRESS

During the past five years, Gavi's work has been guided by its 2011–2015 strategy. In the final year of this strategy, we report on Gavi's progress towards achieving its targets.

OUR MISSION INDICATORS
Saving children's lives → p08

THE VACCINE GOAL
Accelerating access to new and underused vaccines → p10

THE HEALTH SYSTEMS GOAL
Strengthening vaccine delivery platforms → p32

THE FINANCING GOAL
Securing long-term, predictable funding → p48

THE MARKET SHAPING GOAL
Fostering healthy vaccine markets → p64





Schoolchildren in Nepal
GAVI / 2015 / Sam Phillips

MORE THAN **HALF** OF ALL CHILDREN IMMUNISED IN 2015 RECEIVED GAVI-SUPPORTED VACCINES

OUR **MISSION INDICATORS**

→ All three targets exceeded

Gavi has surpassed its mission goals for the 2011–2015 period

Our third strategic period came to an end in December 2015. Check each graph and its analysis to see how we have performed against our three mission goals.

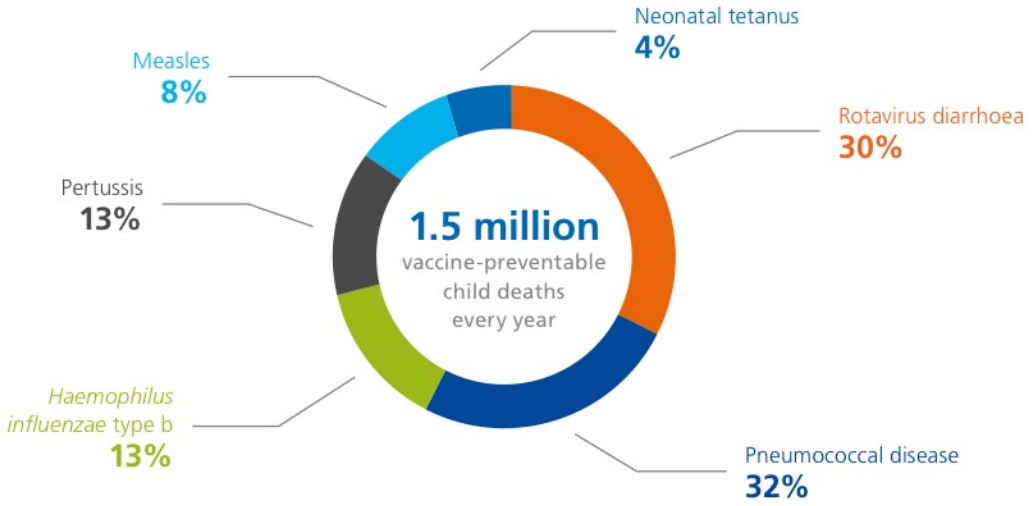
Gavi's under-five mortality rate indicator is testament to our commitment to helping countries achieve the fourth Millennium Development Goal: to reduce the under-five mortality rate by two thirds between 1990 and 2015. Our under-five mortality rate is calculated as the probability of a child born in any of the Gavi-supported countries dying before the age of five.

Our second mission goal indicator reflects the impact of Gavi-supported vaccines on mortality. It calculates the number of future deaths averted in Gavi-supported countries by 10 vaccines: pentavalent, pneumococcal, rotavirus, yellow fever, meningitis A, Japanese encephalitis, human papillomavirus (HPV), measles second dose, measles-rubella and rubella.

To assess our contribution to increasing the level of routine immunisation in the countries we support, we have also estimated the number of children who receive Gavi-funded vaccines through routine vaccination programmes. To ensure we did not double-count children who receive more than one vaccine or more than one dose, we based our calculation on the total number of children reached with the last recommended dose of any Gavi-supported vaccine. The vaccines included in this indicator are: hepatitis B, *Haemophilus influenzae* type b, pneumococcal, rotavirus, measles second dose, routine yellow fever, HPV, rubella, routine meningitis A and routine Japanese encephalitis.

Six leading vaccine-preventable diseases

Percentage of global child deaths



Source: WHO

REDUCED CHILD MORTALITY

Average child mortality in Gavi-supported countries fell from 76 to a projected 63 deaths per 1,000 live births between 2010 and 2015, an unprecedented rate of reduction of 3.6% per year. The acceleration in the number of new vaccine introductions in recent years, as well as the increased coverage with existing vaccines, has contributed to the substantial reduction in under-five mortality rates.

Under-five mortality rate

In Gavi-eligible countries (per 1,000 live births)



Sources: The United Nations Inter-agency Group for Child Mortality Estimation, United Nations Population Division; World Population Prospects

FUTURE DEATHS AVERTED

By helping countries to avert more than 4 million future deaths between the start of 2011 and the end of 2015, Gavi exceeded its target of 3.9 million for the five-year period. In addition, Gavi-funded measles vaccine campaigns conducted between 2013 and 2015 are estimated to have averted more than 300,000 future deaths. Since Gavi was set up in 2000, we have contributed to averting more than 8 million future deaths in developing countries.

Number of future deaths averted

(millions)



*Projection

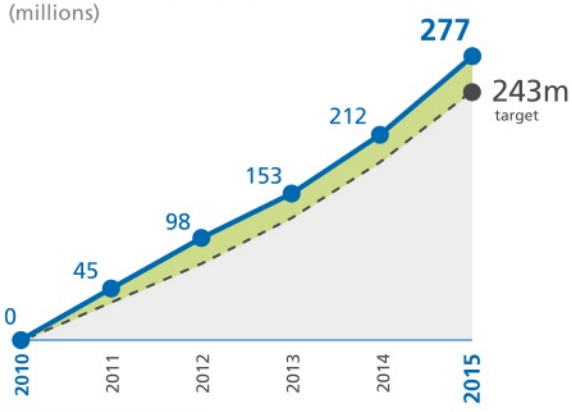
Source: Joint impact modelling by Gavi, the Vaccine Alliance and the Bill & Melinda Gates Foundation

CHILDREN IMMUNISED

By the end of 2015, 277 million children had been immunised with Gavi-supported vaccines relative to the end of 2010. This means that the Vaccine Alliance surpassed its target of immunising an additional 243 million children during the 2011–2015 period across all our routine vaccine programmes. Since our inception in 2000, we have supported countries in immunising close to 580 million children.

Number of children immunised

(millions)



Sources: WHO/UNICEF Estimates of National Immunization Coverage, United Nations Population Division; World Population Prospects

ACCELERATE ACCESS TO LIFE-SAVING VACCINES

Gavi exceeds 2015 vaccine introduction targets

14 countries roll out pneumococcal, pentavalent and rotavirus vaccines ahead of schedule but coverage rates lag behind

Human papillomavirus vaccine (HPV) protects 1 million girls from cervical cancer

Demonstration projects provide valuable lessons to guide revised approach to delivering HPV vaccine support

Vaccine Alliance rethinks its measles and rubella vaccine strategy

Strong routine immunisation systems identified as key to tackling highly contagious diseases

VACCINE INTRODUCTION
TARGETS REACHED AHEAD OF SCHEDULE

Gavi-supported vaccine introductions and campaigns, since programme start and in 2015



[a]5 of the 73 countries introduced pentavalent vaccine independently of Gavi support.

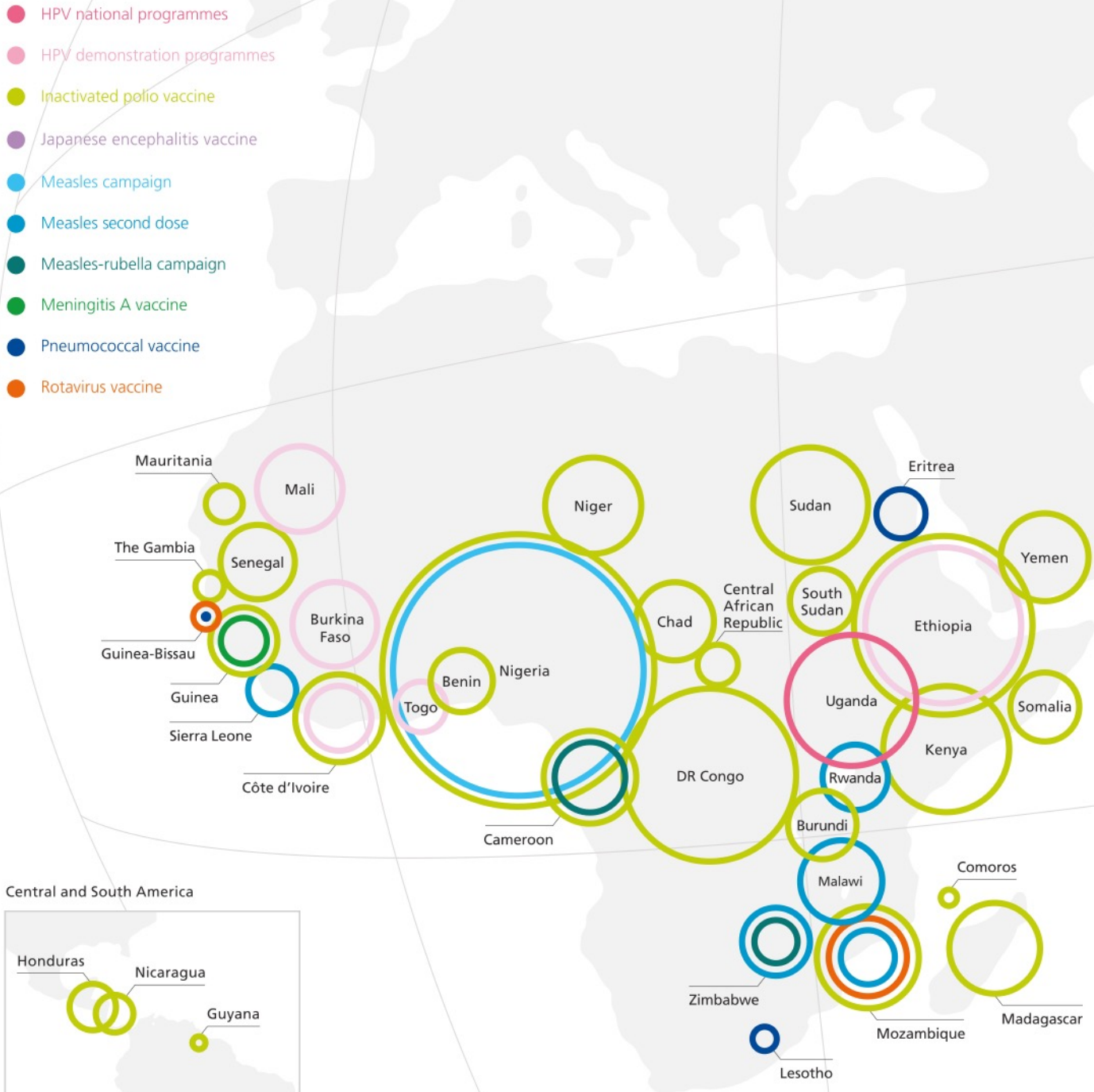
We completed the 2011–2015 period by surpassing our targets for country introductions of pentavalent, pneumococcal and rotavirus vaccines. However, coverage rates for all three vaccines fell short of our goals. These are expected to catch up in the coming years as the most populated developing countries plan to introduce one or both of pneumococcal and rotavirus vaccines. Most encouragingly, India, which accounts for almost one third of Gavi's birth cohort, completed its nationwide introduction of pentavalent vaccine in 2015.

By supporting more than 200 vaccine introductions in five years, we have helped countries boost their ability to deliver more vaccines. Gavi provides support for almost all the vaccines universally recommended by WHO in the first two years of a child's life, as well as HPV vaccine which is delivered in adolescence.

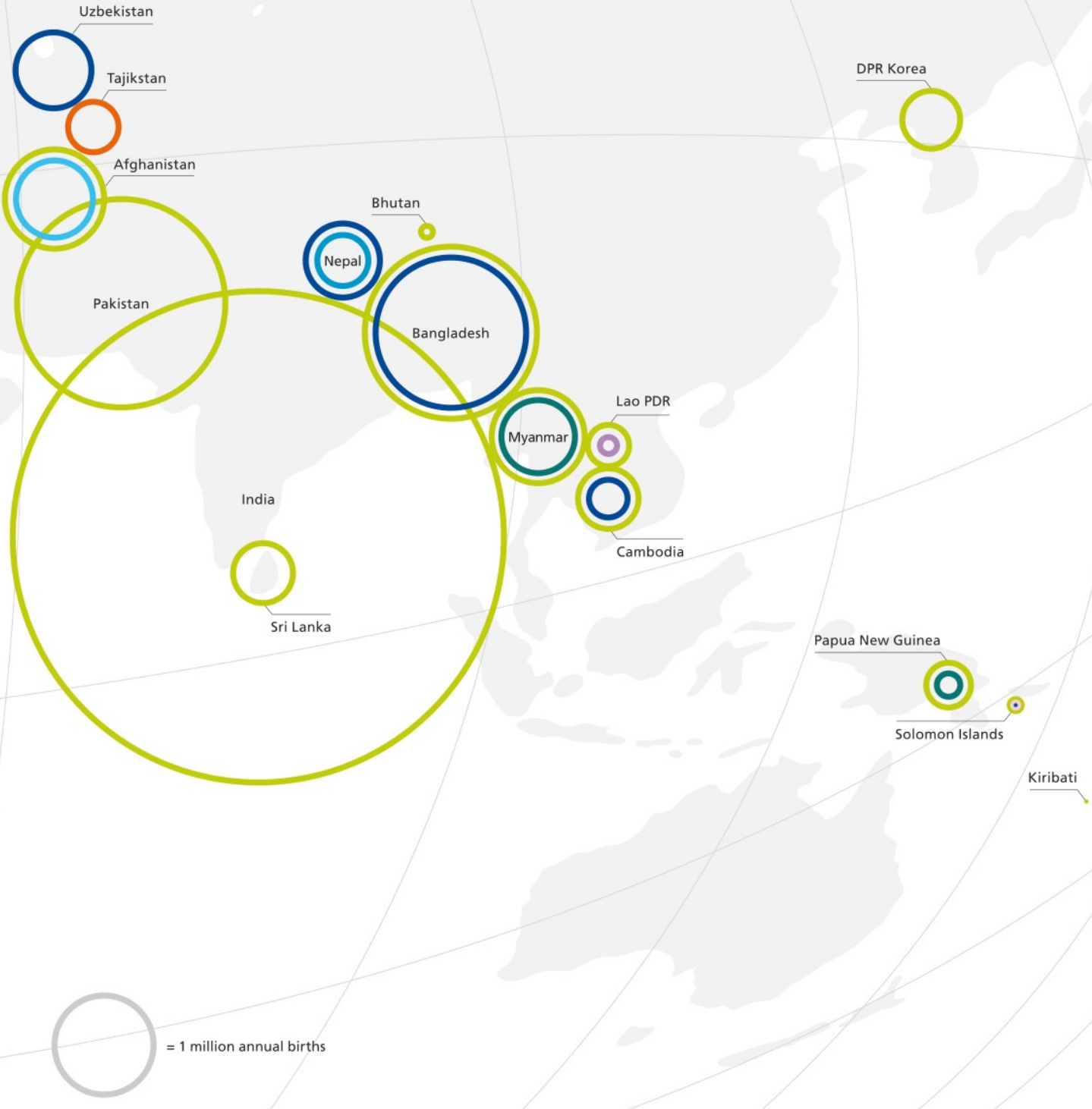
At the start of the strategic period, we were funding an average of one vaccine programme in each Gavi-supported country; five years later, this figure has almost quadrupled.

In 2015, Gavi also drew lessons from country introductions of two critical vaccines in its portfolio: the human papillomavirus (HPV) and measles-rubella vaccines. Our new measles and rubella strategy reinvigorated efforts to control these two infectious diseases, mainly through strengthened routine immunisation coverage. As we move into the new strategic period, we will not only support country introductions of these vaccines but also ensure they are rooted in stronger national immunisation systems.

GAVI-SUPPORTED VACCINE LAUNCHES AND NEW CAMPAIGNS IN 2015



Sources: Gavi, the Vaccine Alliance, 2016; United Nations Population Division, Department of Economic & Social Affairs; World Population Prospects


Uzbekistan
Tajikistan
Afghanistan
Pakistan
Bhutan
Nepal
Bangladesh
India
Sri Lanka
Myanmar
Lao PDR
Cambodia
DPR Korea
Papua New Guinea
Solomon Islands
Kiribati
= 1 million annual births

VACCINE INTRODUCTION TARGETS **REACHED AHEAD OF SCHEDULE**

In 2015, we continued to track our progress against introduction and coverage targets for the three key vaccines in countries eligible for Gavi support: pentavalent, pneumococcal and rotavirus. Together, these vaccines provide protection against the major causes of the world's biggest child killers – pneumonia, diarrhoea and meningitis – as well as reduce the risk of contracting liver cancer by protecting against hepatitis B infection.

Gavi reached its introduction targets for all three vaccines over a year ahead of schedule – evidence of the sustained demand for new vaccines across Gavi-supported countries. However, the percentage of children reached with a full course of each of these vaccines fell short of our five-year targets, mainly due to supply shortages and delays in some of the most populated developing countries.

Pentavalent vaccine

Protects against five major infections in one shot: diphtheria-tetanus-pertussis (DTP), hepatitis B and *Haemophilus influenzae* type b (Hib).

Gavi supports: **routine immunisation**

The Vaccine Alliance had achieved its five-year target for pentavalent vaccine by 2012 and reached all 73 Gavi-supported countries by the end of 2014

The year 2015 brought welcome progress towards our pentavalent coverage target; Uttar Pradesh's roll-out of the five-in-one vaccine meant that by December all states in India had introduced the vaccine. While we still fell 9% short of our 77% goal, pentavalent's roll-out in India – home to the world's largest birth cohort with 26 million newborns each year – is expected to significantly increase coverage rates by the end of 2016.

The Alliance exceeded its pentavalent introduction target – reaching all 73 Gavi-supported countries by the end of 2014, 12 months ahead of schedule and 15 years after setting out to ensure all poor countries have access to DTP, hepatitis B and Hib vaccines.

Hepatitis B infection causes hundreds of thousands of deaths every year through acute and chronic illnesses, including liver cancer and cirrhosis, while the Hib bacterium causes meningitis, pneumonia and septicaemia.

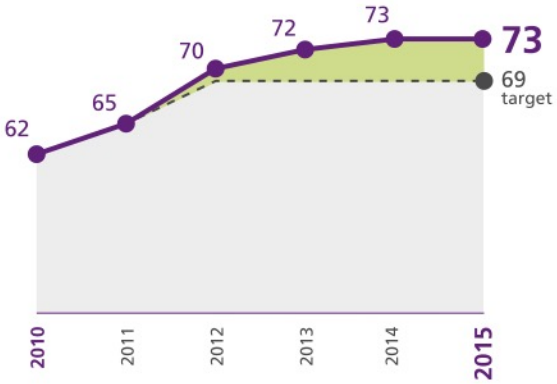
The pentavalent success story reflects the power of our public-private sector model. While WHO and UNICEF help countries make informed decisions about when and how to introduce the vaccine, UNICEF's Supply Division works to meet demand for 200 million doses each year. With the number of suppliers rising from just one in 2000 to seven in 2016, production capacity has increased tenfold, and the average weighted price of pentavalent has fallen by 44% over the current strategic period.

Introductions in 2015:
All 73 Gavi-supported countries completed their introductions by the end of 2014

Number of children reached from programme start to 2015:
296 million

Number of country introductions

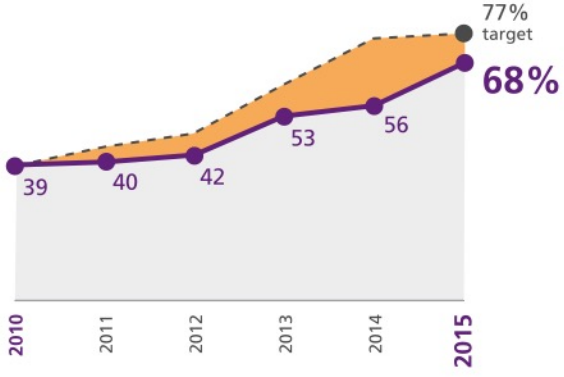
Pentavalent vaccine



Source: Gavi, the Vaccine Alliance, 2015

Coverage (%)

Pentavalent vaccine, 3rd dose



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2016

Mission Rainbow promises a brighter future for India's underimmunised children **p30-31**

Pneumococcal vaccine

Helps prevent the primary cause of bacterial pneumonia, a leading cause of vaccine-preventable deaths among under-fives.

Gavi supports: **routine immunisation**

Gavi exceeds 2015 target for vaccine introductions but misses coverage goal

Countries continued to recognise the importance of pneumococcal vaccine in preventing one of the main child killer diseases – pneumonia. In 2015, another eight countries introduced the vaccine into their routine immunisation schedule, raising the total number of introductions for the 2011–2015 strategic period to 51, above the target of 45. A total of 54 countries have introduced pneumococcal vaccine with our support since it was added to our vaccine portfolio. Included in the group of countries that introduced in 2015 were Bangladesh, which simultaneously introduced pneumococcal and inactivated polio vaccine, and Nepal, which continued with its programme to roll out the vaccine even in the aftermath of a devastating earthquake.

WHO estimates that to date over 76 million children have been protected against pneumococcal disease with Gavi support. Only 15 of those countries eligible for Gavi funding have yet to apply for pneumococcal vaccine support.

The vaccine's high rate of introduction matches the successful roll-out of the pentavalent vaccine and has pushed coverage levels to 35% in 2015 – but still five percentage points short of our five-year target.

However, in some countries that have introduced both the pneumococcal and pentavalent vaccines, coverage rates for the full three doses of pneumococcal vaccine lag behind rates for three doses of pentavalent vaccine – despite their matched schedules. This trend is reflected in Gavi's failure to meet its annual pneumococcal coverage targets for the 2011–2015 period, which is attributed to supply issues in the early years of the programme and delayed introductions in countries with large populations, such as Bangladesh and Nigeria.

With our new 2016–2020 mission focused on increasing coverage and equity, Vaccine Alliance partners are working to both drive up and maintain pneumococcal coverage rates. Efforts are concentrated on ensuring that vaccine supply remains stable, that adequate support is available for those yet to introduce and that programmes, once established, are sustainable over the long term.

Encouragingly, the Gavi Board has approved a new strategy for India, which allocates funds to catalyse the nationwide introduction of pneumococcal vaccine.

Introductions in 2015:
Bangladesh, Cambodia, Eritrea, Guinea-Bissau, Lesotho, Nepal, Solomon Islands, Uzbekistan

Number of children reached from programme start to 2015:

76 million

Number of country introductions

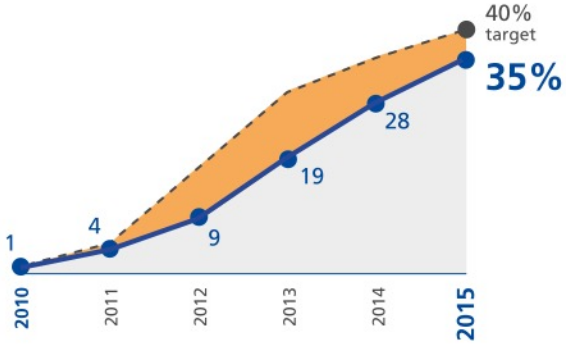
Pneumococcal vaccine



Source: Gavi, the Vaccine Alliance, 2015

Coverage (%)

Pneumococcal vaccine, 3rd dose



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2016

ROTAVIRUS VACCINE
INTRODUCTIONS EXCEED TARGET

Rotavirus vaccine

Protects against a leading cause of severe diarrhoea, which kills hundreds of thousands of children each year.

Gavi supports: **routine immunisation**

By the end of 2015, over half of all Gavi-supported countries had introduced the rotavirus vaccine into their routine immunisation systems

Three new rotavirus introductions in 2015 ensured that we surpassed our 2011–2015 target of 33 introductions by a healthy margin of four. However, the Vaccine Alliance finished the strategic period 11 percentage points short of its annual coverage targets, mainly because of supply constraints experienced up until 2014.

2015 saw few new applications for Gavi's rotavirus vaccine support. These were limited by factors such as countries not being eligible for support (because of their low DTP3 coverage rate or by being close to transitioning out of Gavi support) and countries prioritising other vaccines in their immunisation schedules.

However, projected introductions in several highly-populated countries should boost coverage rates after 2018. The Democratic Republic of the Congo, India, Nigeria and Pakistan, which together account for almost half of the children born in Gavi-supported countries, are all expected to introduce rotavirus vaccine. Tajikistan's on-schedule introduction of rotavirus vaccine set 2015 off to a good start. Several introductions had been delayed in 2014 because countries' immunisation systems were not sufficiently equipped or prepared.

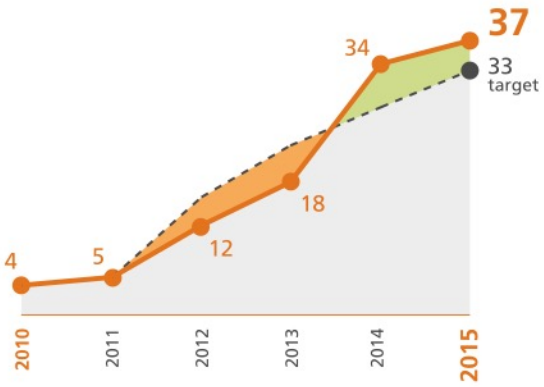
Gavi encourages countries to integrate immunisation with other cost-effective interventions for preventing and treating diarrhoea. These include breastfeeding, adequate nutrition, handwashing with soap, safe drinking water and sanitation, and treatment with oral rehydration solution, antibiotics and zinc.

Introductions in 2015:
Guinea-Bissau, Mozambique, Tajikistan

Number of children reached from programme start to 2015:
over 36 million

Number of country introductions

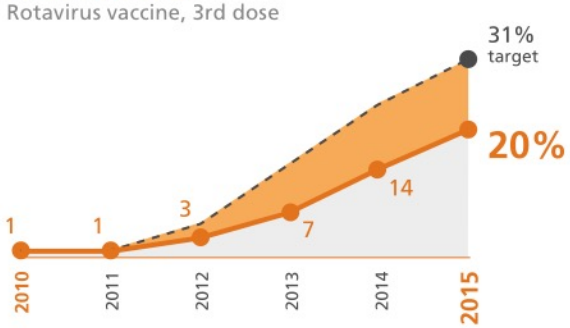
Rotavirus vaccine



Source: Gavi, the Vaccine Alliance, 2015

Coverage (%)

Rotavirus vaccine, 3rd dose



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2016

HPV VACCINE
FIGHTING CERVICAL CANCER

Preventing cervical cancer: out-of-school lessons learnt **p18-19**

Human papillomavirus vaccine

Protects against the main cause of cervical cancer. Vaccination is vital in poor countries where access to screening and treatment is limited.

Gavi supports: **routine immunisation and demonstration projects**

Gavi is drawing on lessons learnt from demonstration projects to revise its support for HPV vaccine

Gavi support for the human papillomavirus (HPV) vaccine has meant that an estimated one million girls have been immunised against a leading cause of cancer in just three years. By the end of 2015, 19 countries had conducted HPV demonstration projects, a first step towards national introduction, while two countries – Rwanda and Uganda – had added the vaccine to their routine programmes. In addition, the Gavi Board provided catalytic funding to 15 countries that were no longer eligible for Gavi support when HPV vaccine support was first offered.

As it is taking longer than expected for countries to transition from demonstration projects to national introductions, Gavi is revising its HPV support. The new approach will draw heavily on the valuable lessons learnt from the demonstration projects, which are designed to test the feasibility of vaccinating adolescent girls with the HPV vaccine. These important lessons include:

- **School-based delivery works:** countries have achieved more than 80% coverage by administering the HPV vaccine through schools – well above the 50% minimum required to apply to Gavi for national support.
- **Integrate with routine immunisation:** evidence from Rwanda, Uganda and the United Republic of Tanzania shows that delivery costs drop if the HPV vaccine is delivered through existing health clinics and outreach sessions, as well as schools.
- **Communication is essential:** raising political and grassroots awareness of cervical cancer prevention is critical to the success of HPV vaccination programmes.
- **Deliver with other health programmes:** HPV has given countries the opportunity to integrate HPV vaccine delivery with other adolescent health programmes such as deworming and health education.

HPV infection is the main cause of cervical cancer, which claims the lives of 266,000 women each year, mainly in developing countries. Without changes in prevention and control, cervical cancer deaths are forecast to rise to 416,000 by 2035. In total, Gavi expects to help countries immunise over 30 million girls by 2020, an ambitious target that was recognised by the global cancer community in November with a special award.

National introductions in 2015:
Uganda

Demonstration projects in 2015:
Burkina Faso, Côte d'Ivoire, Ethiopia, Mali, Solomon Islands, Togo

Number of girls reached from programme start to 2015:
1 million



Girls lining up for HPV vaccine in Kayunga district hospital, Uganda

GAVI / 2014 / Tormod Simensen

PREVENTING CERVICAL CANCER: OUT-OF-SCHOOL LESSONS LEARNT



To date, immunisation against human papillomavirus (HPV), which helps prevent cervical cancer, has largely been conducted through school-based campaigns. But what about those who do not go to school? How do we reach communities where there is low school attendance? A new, more community-orientated approach being tested in Bong County, Liberia, may provide the answer to these questions.



Princess Ko

One of the first girls to attend an out-of-school HPV vaccination session in Liberia

Ten-year-old Princess Ko waits patiently with the other girls until her name is called. As her parents watch on, she enters the small open hut that serves as a community health centre to receive her first shot of human papillomavirus (HPV) vaccine. There is a sense of anticipation in the air, yet as she feels the scratch of the needle in her upper arm she neither winces nor grimaces. Instead Princess looks down at the small pinprick and smiles with pride, and perhaps just a hint of relief. Having lived through the West African Ebola epidemic and the measles outbreaks that followed, she and her parents understand the importance of vaccination and how fortunate she is to be among the first in Liberia to receive this potentially life-saving vaccine.

Princess is even more fortunate than she realises. This HPV demonstration project taking place in Bong County, just 200 km outside the capital, Monrovia, is part of a joint roll-out – with rotavirus vaccine. It is also one of the first HPV vaccination sessions that draws on lessons learnt from earlier introductions and targets girls both in and out of school.

Since Gavi started supporting HPV vaccines, demand has been extremely high. While countries recognise the importance of HPV vaccination for reducing cervical cancer rates, the target population – girls aged between 9 and 13 years – is not easily reached through immunisation programmes more suited to vaccinating infants. The 21 countries that have already introduced the vaccine with Gavi support, including 6 in 2015, do so largely through school-based campaigns. While this approach has successfully reached many girls, it leaves open the question of how to access those who do not attend school.

Princess is one of eight girls attending the vaccination session in Bong who do not go to school. That's because the nearest school is a five-mile walk away, along a busy highway – a journey that most parents consider too dangerous for their child to make each day.

In order to reach girls like Princess and her friends with HPV, Liberia is raising local awareness of cervical cancer prevention through face-to-face meetings with community leaders. This helps ensure high turnout for HPV vaccination sessions in community health centres, such as the one in Bong.

Other countries are watching Liberia's new approach to HPV roll-out with interest. Since most countries have only



Girls attending out-of-school HPV vaccination session in Bong County, Liberia

Gavi / 2016 / Duncan Graham-Rowe

> Finding ways to reach girls like Princess is vital if we want to stop the rise in cervical cancer deaths.

introduced HPV vaccines in districts with high levels of school attendance, we have very little evidence for what works when this is not the case. However, it is anticipated that when combined with school-based HPV vaccination sessions, social mobilisation projects like the Bong example will help to increase national coverage rates and reduce health inequity by reaching some of the more marginalised members of society. The Liberia experience will also help to inform efforts to use HPV vaccination as a platform for rolling out broader adolescent health and education interventions, such as nutrition, deworming, body literacy and menstrual hygiene.

Finding ways to reach girls like Princess is vital if we want to stop the rise in cervical cancer deaths. Currently around 266,000 women die from this form of cancer every year, equating to roughly one every two minutes. The figure may already exceed the annual number of maternal deaths and, without intervention, is expected to reach nearly 416,000 by 2035.

For Princess however the good news is that there is talk of building a school in her village, which means she won't miss out on an education. As for the HPV vaccine, Princess beams as she holds up her vaccination card. She's got that covered.

MOVING FORWARD WITH SUPPORT FOR IPV AND ORAL CHOLERA VACCINE

Inactivated polio vaccine

Protects against a highly contagious viral infection, mainly affecting children under the age of five, which can lead to paralysis or even death.

Gavi supports: **routine immunisation**

The IPV programme is being implemented at record speed

In 2015, the Vaccine Alliance continued to support one of the fastest roll-outs in the history of vaccination: the introduction of at least one dose of inactivated polio vaccine (IPV) into the routine immunisation schedules of all Gavi countries. By the end of 2015, all 71 eligible countries had applied and been approved for IPV support, and 38 had successfully completed their introductions.

The sheer pace and scale of IPV introductions, coupled with the technical difficulties of increasing production and the increased use of the vaccine for campaigns, has, however, led to severe supply constraints. This has pushed the global IPV roll-out off schedule, with at least 40 countries delaying their scheduled IPV introductions. Consequently, 21 countries – all at low risk of polio outbreaks – did not introduce the vaccine until after the globally coordinated switch from trivalent to bivalent oral polio vaccine (OPV) in 2016.

To eliminate the risk of vaccine-derived polio cases, the Polio Eradication and Endgame Strategic Plan calls for the removal of oral polio vaccines by 2019 – a critical step to completing polio eradication. The phased process starts in April 2016 with the replacement of trivalent OPV, containing type 2 virus, by bivalent OPV, comprising poliovirus types 1 and 3 only. To minimise the risks associated with the switch, WHO recommended that all countries introduce at least one dose of IPV into their routine immunisation schedule before the transition. IPV provides protection against all three poliovirus types.

Supply issues could also affect 19 countries that have already introduced IPV, heightening the risk of systemic stock-outs; this would be a first for Gavi-supported vaccines. With supply constraints expected to remain until at least 2018, the Immunisation Systems Management Group, responsible for coordinating with partners in the Polio Endgame, is prioritising Gavi-supported countries most at risk of type 2 polio outbreaks. Some countries, including several states in India and Sri Lanka, may use a less concentrated dose of IPV. This will still provide protection while reducing the risk of vaccine stock-outs.

The wild polio virus remains endemic in Afghanistan and Pakistan. The Global Polio Eradication Initiative (GPEI) has thus extended its deadline for eradicating polio from 2018 to 2019.

Introductions in 2015: **Afghanistan, Bangladesh, Benin, Bhutan, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Comoros, Côte d'Ivoire, Democratic People's Republic of Korea, Democratic Republic of the Congo, Ethiopia, Gambia, Guinea, Guyana, Honduras, India (phased), Kenya, Kiribati, Lao People's Democratic Republic, Madagascar, Mauritania, Mozambique, Myanmar, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, Senegal, Solomon Islands, Somalia, South Sudan, Sri Lanka, Sudan, Yemen**

Number of children reached from programme start to 2015:

10 million



Nurse Madelein Semo vaccinates a young baby with IPV at the Ngbaka health centre in Kinshasa, the Democratic Republic of the Congo

GAVI / 2015 / Phil Moore

> Eradicating polio is a once in a lifetime opportunity. When the world is certified as polio free, I will be the happiest man.
>
> **Dr Tanbirul Islam**
> National professional officer, WHO Country Office, Bangladesh

Oral cholera vaccine

Cholera is an acute intestinal infection caused by contaminated food or water. It can lead to severe dehydration and, in its extreme form, can be fatal.

Gavi supports: **global oral cholera vaccine stockpile**

Stockpile supplies two million vaccine doses to six countries in 2015

Prior to Gavi's 2013 decision to contribute US$ 115 million towards the cost of maintaining the oral cholera vaccine (OCV) stockpile over a five-year period, 2014–2018, supply was struggling to keep pace with the demand caused by the estimated 1–4 million new cases of cholera that occur each year. Currently cholera causes somewhere between 28,000 and 142,000 deaths worldwide.

Gavi's support for the OCV stockpile has helped to mitigate the current global shortage of cholera vaccine. In 2015, the number of vaccine doses distributed worldwide increased by 60%, with more than two million doses delivered to six countries, including Bangladesh, Cameroon and Haiti. Despite progress, shortages remain, forcing some countries to postpone their campaigns. However, in December WHO prequalified a new vaccine from a manufacturer based in the Republic of Korea, Eubiologics, a welcome development that will help resolve supply constraints.

The stockpile, designed for use in emergencies and countries that regularly experience outbreaks, is managed by the International Coordinating Group, comprising the International Federation of Red Cross and Red Crescent Societies, Médecins Sans Frontières, UNICEF and WHO. In addition to increasing supply, our support will help countries gather evidence of the impact of vaccination on cholera epidemics and provide incentives for more manufacturers to strengthen production capacity. This information will inform our next OCV investment strategy, which is due in 2018.

In line with WHO recommendations, OCV is increasingly seen as part of an integrated response to cholera. Countries' suite of prevention and control strategies includes provision of oral rehydration salts and water, sanitation and hygiene initiatives. A Gavi-supported study by the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) is piloting a unique immunisation strategy designed to ensure children living in urban slums do not miss out on OCV; the research is also measuring the cost-effectiveness of a number of prevention strategies, including vaccination.

Campaigns in 2015:
Bangladesh, Cameroon, Haiti, Malawi, United Republic of Tanzania, South Sudan

Number of people reached through oral cholera vaccine stockpile in 2015:

Over 1 million



Oral cholera vaccine is distributed at the Minawao Camp for internally displaced people, Cameroon

Gavi / 2015 / Athanas Makundi

STOPPING THE MAIN CAUSE OF VIRAL ENCEPHALITIS

Japanese encephalitis vaccine

Spread by mosquitoes, Japanese encephalitis is the main cause of viral encephalitis, especially in Asia. Case–fatality rates can be as high as 30%, while up to 50% of survivors suffer permanent disability.

Gavi supports: **catch-up campaigns for children aged 9 months to 14 years on condition that countries self-fund routine immunisation**

Lao PDR adds Japanese encephalitis vaccine to routine immunisation schedule, soon after Gavi-funded catch-up campaign

In April 2015, the Lao People's Democratic Republic (Lao PDR) became the first country to run a Gavi-supported Japanese encephalitis (JE) campaign – just 18 months after WHO added a JE vaccine developed by Chengdu Institute of Biological Products to the list of prequalified vaccines that United Nations agencies can procure. This was the first-ever WHO prequalification for a vaccine produced in China. Following the success of the catch-up campaign, Lao PDR added JE vaccine to its routine immunisation schedule.

Although relatively unknown outside of Asia, some four billion people live in areas at risk of JE, including eight Gavi-supported countries in South-East Asia and the Western Pacific. Gavi support for JE catch-up campaigns is intended to pave the way for countries to self-fund routine immunisation programmes and to help the region take the first step towards reducing the JE disease burden. Nepal and Vietnam have also applied and been approved for support, with campaigns scheduled for 2016 and 2017, respectively.

The Alliance has drawn on the strengths of its individual partners to accelerate access to JE vaccine, which has a long manufacturing lead-time. WHO, UNICEF's Supply Division, PATH and the Bill & Melinda Gates Foundation all play a critical role in ensuring sufficient supply of the vaccine to countries ahead of its planned introduction.

Campaigns in 2015:
Lao PDR

Number of children (9 months–14 years) reached from programme start to 2015:
1.6 million



Nurses prepare to administer the first dose of the Japanese encephalitis vaccine to students in Vientiane, Lao PDR

Gavi / 2015 / Bart Verweij

PREVENTING MEASLES THROUGH ROUTINE IMMUNISATION AND CAMPAIGNS

Measles vaccine

Helps prevent measles infection and its complications, which still claim over 100,000 lives each year.

Gavi supports: **a second dose of measles vaccine for routine immunisation for a maximum of five years, and measles campaigns in six large countries at high risk of outbreaks**

Gavi-funded campaigns conducted in two high-risk countries in 2015: Afghanistan and Nigeria

To date, Gavi has helped countries immunise 32 million children against measles, with six countries drawing on Gavi support to introduce a second dose of measles vaccine in 2015. Sierra Leone was one of the six – a welcome sign that the country is recovering from the effects of the Ebola outbreak, which had delayed introduction plans in 2014.

Since 2013, Gavi has also funded measles campaigns in six large countries considered at high risk of measles outbreaks, reaching a total of 118 million children in the past three years. Afghanistan and Nigeria both ran measles campaigns in 2015. Despite reporting high coverage, these countries continue to experience measles' outbreaks, highlighting the need to focus on strengthening routine immunisation, as well as better monitoring of campaigns.

In 2015, the Gavi Board approved measles follow-up campaigns in Chad, the Democratic Republic of the Congo, Ethiopia and Nigeria to mitigate the risk of outbreaks and further escalation of ongoing outbreaks.

Measles second dose routine introductions (either as measles or measles-rubella) in 2015:
Malawi, Mozambique, Nepal, Rwanda, Sierra Leone, Zimbabwe

Measles campaigns in 2015:
Afghanistan, Nigeria

Number of children reached with measles or measles-rubella second dose from programme start to 2015:
32 million

Number of children reached through measles campaigns from programme start to 2015:
118 million

Nurse prepares measles vaccine in Kilifi district, Kenya

Gavi / 2015 / Duncan Graham-Rowe



PROTECTING CHILDREN AGAINST MEASLES AND RUBELLA

Measles-rubella vaccine

Each year, 80,000 children in Gavi-supported countries are born with malformations and disabilities due to congenital rubella syndrome. Rubella vaccine protects against this debilitating disease.

Gavi supports: **measles-rubella catch-up campaigns, vaccine introduction grants for routine introductions**

In 2015, Gavi supported measles-rubella catch-up campaigns in four countries in Africa and Asia

The measles-rubella vaccine can help reduce the number of children in developing counties who are born with congenital rubella syndrome. By providing the two antigens in a combination vaccine, Gavi helps reduce the burden on countries' delivery systems.

We support measles-rubella catch-up campaigns, which target the next generation of mothers and children aged between 9 months and 14 years. By providing this support as well as a vaccine introduction grant, the Vaccine Alliance aims to catalyse the introduction of rubella vaccines into routine immunisation schedules to help sustain high coverage and avoid outbreaks of rubella.

In 2015, Gavi helped six countries add measles-rubella vaccine to national immunisation programmes through introduction grants and funded four campaigns in Africa and Asia. Myanmar's catch-up campaign reached more than 13 million children, helping to complement the routine immunisation system by focusing on hard-to-reach communities. In the United Republic of Tanzania, our partnership with the Lions Clubs International Foundation motivated over 100 religious leaders to participate in efforts to raise national awareness of the importance of measles-rubella immunisation.

Measles-rubella campaigns in 2015: **Cameroon, Myanmar, Papua New Guinea, Zimbabwe**

Number of people reached through measles-rubella campaigns from programme start to 2015:

164 million

Children in Rwanda wait for the start of a measles-rubella vaccination session

Gavi / 2013 / Charlie Whetham



NEW MEASLES AND RUBELLA STRATEGY

> The package of support will save lives and give developing countries a golden opportunity to reform how they protect their children against measles.

Dagfinn Høybråten
Gavi Board Chair, 2011–2015



Data are key: young nurses in Myanmar are trained to keep meticulous records of every vaccinated child

Measles & Rubella Initiative / 2012

Over the past five years, measles vaccine coverage has stagnated in Gavi-supported countries at around 78%. At the same time, the number of outbreaks of this highly contagious disease has increased – both in developing and developed countries. With 95% coverage required to prevent measles epidemics, outbreaks are generally an early warning sign of low routine coverage and reduced population immunity.

In 2015, the Gavi Board approved a new strategy designed to reverse this trend and put countries back on track to control measles and rubella. Immunisation experts guiding the rethink include representatives from WHO, UNICEF, the United States Centers for Disease Control and Prevention, and the Bill & Melinda Gates Foundation.

Since 2004, when Gavi first started to provide funding to the Measles & Rubella Initiative, support for measles vaccines has evolved and currently takes four different forms – all of which target measles control. The new strategy, which will come into effect ahead of the September 2016 round of applications for Gavi support, puts strengthening routine immunisation at the centre of a more comprehensive approach to tackling measles and rubella.

In addition to extending our vaccine support to include routine immunisation with measles second dose and measles-rubella first and second dose, the new approach:

- shifts support for campaigns from six large countries to all Gavi-supported countries that need it;
- funds periodic follow-up measles or measles-rubella vaccine campaigns, which are independently monitored, in all Gavi-supported countries; and
- encourages better planned, more data-driven campaigns.

To strengthen country commitment to combating measles, Gavi support will be integrated into national multi-year plans for immunisation. Countries will be required to map out how vaccination will reach every district and community, as well as fully finance their own routine measles vaccine in order to qualify for Gavi support for a second dose of the measles-rubella vaccine.

The new measles-rubella approach will be central to Gavi's overall 2016–2020 strategy, with two new performance indicators focused on measles. We project that our funding will help to avert more than one million future deaths from measles and congenital rubella syndrome over the next five-year period.

PREVENTING MENINGITIS THROUGH ROUTINE IMMUNISATION AND CAMPAIGNS

Meningitis A vaccine

Protects against seasonal epidemics of meningitis A, which threaten 450 million people in Africa's meningitis belt. Survivors can face brain damage, deafness and other disabilities.

Gavi supports: **mass campaigns and routine immunisation with meningitis A vaccine**

Gavi to fund routine vaccination from 2016; six countries already approved for support

The MenAfriVac vaccine represents the culmination of the Meningitis Vaccine Project, a 10-year effort to develop an affordable vaccine for Africa's "meningitis belt" involving the region's health ministries, the Bill & Melinda Gates Foundation, UNICEF, WHO and PATH.

Since 2010, Gavi-supported mass campaigns have immunised 235 million people, aged between 1 and 29 years, against meningitis in 16 of the 26 countries that lie in the meningitis belt: Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Ethiopia, the Gambia, Ghana, Guinea, Mali, Mauritania, the Niger, Nigeria, Senegal, the Sudan and Togo. This figure includes those reached by Guinea's 2015 campaign, which was delayed by the Ebola outbreak, as well as those reached by the last phase of Ethiopia's national campaign, which targeted 16.1 million people and was integrated with a measles campaign.

On average, countries have reached more than 85% of those at risk of contracting the deadly disease. The impact has been dramatic, with the number of recorded epidemics in the meningitis belt dropping to their lowest-ever level. After 1.8 million people were vaccinated with a single dose of the vaccine in three regions of Chad, meningitis rates fell by 94%. There were also no new cases in children aged less than 1 year or in adults older than 29 years, underlining the MenAfriVac's positive impact on population level immunity[a].

From 2016, we will support routine vaccination of children aged 9–18 months. So far, six countries have been approved for this type of support and will begin to take steps to introduce the single dose vaccine into their routine immunisation programmes during 2016. Gavi will also support catch-up campaigns to cover those children born after a mass campaign.

Campaigns in 2015: **Guinea**

Number of people (1–29 years) reached through campaigns from programme start to 2015: **235 million**

> We have achieved something truly historic with the meningitis A vaccine – creating an affordable, effective, tailor-made vaccine for Africa.
>
> **Steve Davis**
> President and CEO, PATH

Meningitis vaccine stockpile

Gavi supports: **a variety of multivalent vaccines against meningitis strains including A, C, W and Y**

Although the meningitis A vaccine has virtually eliminated epidemics caused by the *Neisseria meningitides* serogroup A (NmA), four other meningococcus strains, including NmC, continue to cause outbreaks of viral meningitis across parts of Africa.

Between February and June 2015, an NmC epidemic claimed 1,000 lives in the Niger and Nigeria. For the first time, Gavi funds were used to purchase a multivalent (ACWY) meningitis vaccine for use in the Niger's emergency response.

Countries using meningitis vaccine stockpile in 2015: **Niger, Nigeria**

[a] **Source:** Daugla and al. *The Lancet*, Sept 12 2013

FIGHTING PNEUMONIA IN NEPAL: MAKING NUMBERS COUNT



At Kathmandu's Patan hospital, Gavi is funding impact studies on two vaccines that protect children against the main causes of deadly pneumonia: *Haemophilus influenzae* type b (Hib) and pneumococcal disease. Three doctors who are leading these studies identify four ways in which Patan's pioneering research is shaping Nepal's immunisation policy.

QUANTIFYING BURDEN OF DISEASE

"Some countries are unaware of the burden of Hib and pneumococcal disease in young children," says Dr Andrew J Pollard, Professor of Paediatric Infection and Immunity at the University of Oxford, which partners with Gavi to support Patan's vaccine impact studies. "Generating data which shows there is a burden, is essential to provide the key evidence governments need to drive the introduction of immunisation programmes that prevent the causes of pneumonia in young children."

CHANGING IMMUNISATION POLICY

When Nepal introduced pneumococcal vaccine in 2015, it became the first Gavi-supported country to use a 2+1 vaccination schedule – two primary doses plus a booster dose – as opposed to the more standard 3+0 schedule – three primary doses – that is administered in most countries. The decision was based on data generated at Patan hospital showing that immunity in the second year of a child's life was better with a 2+1 schedule than with a 3+0.

"Our study definitely helped the government make the final decision to use a 2+1 schedule for pneumococcal vaccination," says Professor Shrijana Shrestha, Dean of the Academy of Health Science at Patan hospital. "Our experience could be very useful to our neighbouring countries as well."

PROVING IMPACT ON PNEUMONIA

Patan's Chief Paediatrican, Dr Imran Ansari, estimates that prior to the addition of *Haemophilus influenzae* type b (Hib) vaccine into Nepal's routine immunisation schedule, over a quarter of the 1,500–2,000 children admitted to his ward each year had pneumonia. "Even though the impact studies have not been published yet, it is my general impression that after the introduction of the Hib vaccine, the incidence of pneumonia has gone down," says Dr Ansari.

SHOWING THE ECONOMIC IMPACT

In addition to studying the effectiveness of the pneumococcal vaccine in reducing disease, Patan's study is also assessing the long-term economic impact of preventing pneumonia, both for families and the government. "We're looking at health economics," says Dr Pollard, "By preventing disease, how have we changed the health of the population? What impact does that have economically, both for families who may no longer have to look after a sick child, and for the healthcare system?"

Q&A

What vaccine impact studies does Gavi support?
The Vaccine Alliance is funding a series of studies around the world to help demonstrate the impact of pneumococcal and rotavirus vaccines in Gavi-supported countries. These vaccines protect children against the main vaccine-preventable causes of pneumonia and diarrhoea – currently the world's biggest child killers.

What is the objective?
The studies help us learn more about the two vaccines and their impact on health – there is currently a lack of pneumococcal and rotavirus vaccine impact data in low-income countries, especially from Asia. Secondly, we hope that the studies will give policy-makers, both nationally and regionally, concrete evidence of how routine use of both these vaccines can impact health. These data will be especially important in the case of rotavirus because, to date, few Asian countries have introduced the vaccine.

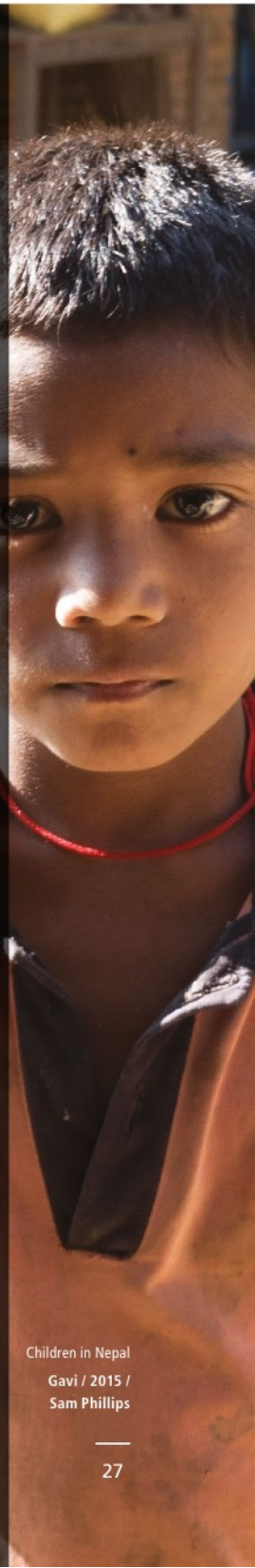
Where are the studies taking place?
Ten targeted impact assessments are in progress across Africa and Asia. In addition, Gavi supports surveillance of invasive pneumococcal disease and rotavirus disease as well as vaccine safety monitoring at numerous sites across Gavi countries.

What are the main areas of focus of the pneumococcal vaccine impact studies?
The studies are evaluating two types of pneumococcal vaccine: PCV10 and PCV13, which protect against 10 and 13 strains of pneumococcal disease, respectively. Studies look at:

- the effectiveness of the vaccine;
- changes in the number of children hospitalised for pneumonia, meningitis and sepsis before and after the introduction of the vaccine;
- overall pneumococcal vaccine coverage rates;
- the impact on the local economy of healthier children and adults; and
- the wider health impact of immunisation on local communities (if enough infants are immunised against pneumococcal disease, it becomes difficult for the disease to gain a foothold in the community – this offers some protection to those who are unable to receive vaccinations, known as herd immunity).

What about the rotavirus vaccine?
We hope that rotavirus impact studies across Africa, as well as in Haiti and Uzbekistan, will show the real-world impact of the vaccine on the number of hospitalisations for diarrhoea. The work will also measure the vaccine's effectiveness when delivered through the routine immunisation schedule[a].

[a]Health benefits of rotavirus vaccination in developing countries, *Clinical Infectious Diseases*, Volume 62 suppl 2, 1 May 2016



Children in Nepal
Gavi / 2015 / Sam Phillips

YELLOW FEVER: NEW AREAS AT RISK

Yellow fever vaccine

Helps prevent a deadly viral disease spread by mosquitoes. Death rates can be as high as 50% among those severely affected.

Gavi supports: **mass campaigns and routine immunisation**

Mass campaigns protect "high-risk" countries, but yellow fever is spreading into new areas

The development of the yellow fever vaccine in the 1930s won the Rockefeller Institute a Nobel Prize. For centuries, the tropical virus had been responsible for devastating epidemics in large cities in Africa, the Americas and Europe. By the time yellow fever had run its course in Philadelphia in 1793, one tenth of the city's population had lost their lives.

In the last 20 years, the combination of declining population immunity, rapid urban migration, climate change and deforestation have led to a resurgence in the number of yellow fever cases. Current estimates put the number of cases of yellow fever worldwide in the region of 200,000 per year, and the number of deaths at around 30,000 per year.

A single dose of yellow fever vaccine leads to long-term, probably even lifelong, immunity in 99% of people vaccinated. Between 2006 and 2014, and with support from Gavi, the International Coordination Group (ICG) deployed over 25 million doses of the yellow fever vaccine worldwide in response to yellow fever outbreaks. The ICG includes representatives from WHO, UNICEF, Médecins sans Frontières and the International Federation of Red Cross and Red Crescent Societies.

Gavi-supported mass prevention campaigns, which started in 2011, have so far protected over 98 million people in 14 countries: Benin, Burkina Faso, Cameroon, the Central African Republic, Côte d'Ivoire, Ghana, Guinea, Liberia, Mali, Nigeria, Senegal, Sierra Leone, the Sudan and Togo. Gavi support has also helped 17 countries to add yellow fever vaccine to their routine immunisation schedules since 2000.

According to the Yellow Fever Initiative, mass campaigns have significantly reduced the risk of yellow fever outbreaks in Africa, lowering the disease burden by an average 27% among the 12 "high-risk" countries. No yellow fever outbreaks were registered in West Africa in 2015. However, rapid urbanisation and environmental changes are shifting the geography of yellow fever such that the virus is now affecting areas previously considered non-endemic. In 2015, two "low-risk" central African countries reported yellow fever cases – Equatorial Guinea and Gabon. In December, the initial cases of an urban outbreak were detected in Luanda, Angola – the beginning of an outbreak that subsequently spread throughout the community.

Even though four companies manufacture the yellow fever vaccine, the demands of mass preventive campaigns and outbreak response have severely depleted supplies. Doses intended for preventive campaigns are frequently diverted to treat outbreaks, leaving emergency stocks dangerously low and delaying preventive campaigns. In both Nigeria and the Sudan, for example, campaigns are three–four years overdue. In response, Gavi is working with WHO to rework its yellow fever control strategy. This will be presented to the Board in 2016.

Number of people reached through campaigns from programme start to 2015:

Over 98 million

Number of people reached through routine immunisation from programme start to 2015:

91 million

TANZANIA: COVERAGE AT A CROSSROADS

> I'd say achieving high national coverage was down to government commitment and the involvement of key partners like Gavi.
>
> **Dr Dafrossa Cyrily Lyimo**
> Manager of Tanzania's Immunisation and Vaccine Development Programme

Dr Dafrossa Cyrily Lyimo has managed Tanzania's Immunisation and Vaccine Development Programme since 2009. She began her career in medicine almost 30 years ago as a general practitioner in a municipal hospital before moving into healthcare management. We talked to Dr Dafrossa about her country's achievements in vaccination and her vision for the future.

Gavi: What is the situation in Tanzania with regard to vaccination coverage?

Dr Dafrossa Cyrily Lyimo (DCL): Generally, it's good. In 2015 we had 98% country coverage for the third dose of pentavalent vaccine. Coverage with this vaccine has increased across all districts.

What was a key turning point for the national immunisation programme?

DCL: 2001–2002, when Tanzania started receiving support from Gavi, as well as our increased government co-financing.

What are your most notable successes?

DCL: They include the dual introduction of the pneumococcal and rotavirus vaccines in 2013, improved routine immunisation coverage, and Tanzania being certified polio free by the African regional Polio Certification Committee. In 2012, we were among the countries registered as having eliminated neonatal tetanus.

What were the biggest challenges?

DCL: Tanzania is a huge country, so a major challenge has been achieving a balance between sustainability and reaching the maximum number of children. The fact that we have a number of hard-to-reach areas with nomadic populations doesn't help. We've also faced a shortage of transportation to distribute vaccines and supplies, human resource limitations and sector-wide barriers. This has led to low and fluctuating coverage in some districts. Having insufficient funds to implement what we need also makes things difficult.

You have been successful when it comes to achieving high national coverage. Why do you think that is?

DCL: I'd say it was down to government commitment and the involvement of key partners like Gavi, WHO, UNICEF, the Clinton Health Access Initiative and the Maternal and Child Survival Program. Strong leadership of the programme at national and subnational levels helped, as did a clear strategy, detailed planning and adequate cold chain capacity and infrastructure.

To what extent has strong political support, in particular the personal commitment of former President Kikwete, played a role in Tanzania's immunisation success story?

DCL: Former President Kikwete has played a number of key roles. He hosted the opening ceremony of the Gavi Partners' Forum in 2012. He committed his government to procuring traditional vaccines and co-financing Gavi vaccines, and he launched the One Plan for Reproductive and Child Services that contributed to improving maternal and child health. Under his leadership, Tanzania was able to reduce child mortality, helped to a large extent by immunisation.

While national coverage is high, certain communities such as Maasai tribes are hard to reach. How is Tanzania addressing this?

DCL: We work to understand the background of nomads to make sure we reach them and offer immunisation services. This involves developing an effective strategy, delivering specific communication messages and holding regular primary healthcare meetings.

How can Gavi help Tanzania ensure vaccines reach every child everywhere?

DCL: Gavi can help us collect sufficient data and create a way to get to hard-to-reach communities. They can support linking civil registration with immunisation. And they can help develop innovations that enable unique identification and the mapping of the movements of our nomadic population.

Where do you hope Tanzania will be in five years' time with regard to coverage and equity?

DCL: I hope we'll have sustained our high coverage while improving our performance among the hard-to-reach population and in lower-performing districts. Specifically, we're hoping to attain the global measles-rubella elimination goal and contribute to a world free of poliomyelitis.

Why do you do what you do?

DCL: First and foremost, I love children. I'm a mother of four. In the early 1960s, my parents managed to make sure I was vaccinated. I'd like all children born in Tanzania to enjoy the same protection. Also I once worked as a clinician in a paediatric ward and, at that time, children were dying daily from vaccine-preventable diseases like diarrhoea, pneumonia, diphtheria, measles and tetanus. Vaccines were available but access was a challenge. Now I have the opportunity to help, I'm inspired to do everything I can to ensure children have access to powerful vaccines and other preventative services.



Tanzania's One Plan aims to ensure that new vaccines reach all their children

Gavi / 2012 / Sala Lewis

MISSION RAINBOW PROMISES A BRIGHTER FUTURE FOR INDIA'S UNDERIMMUNISED CHILDREN



Nearly one fifth of the world's underimmunised children live in India. In 2015, with support from Gavi, the Indian Government launched **Mission Indradhanush – Mission Rainbow**, a nationwide drive to reach millions of "hidden" children living in urban slums and other hard-to-reach areas with life-saving vaccines.



Increasingly some of today's most marginalised communities live in urban slums, hiding in plain sight

From an 11th floor window of an apartment block, the view of Agra's city skyline is mesmerising. In the distant haze, beyond the rooftops that shimmer in the Indian heat, it is possible to make out the familiar ivory white dome and four minarets of the Taj Mahal. Such views are normally the preserve of India's burgeoning middle-class who are wealthy enough to afford such apartments. Today, however, the only people enjoying this view are the migrant construction workers still working on the complex and who, ironically, have no homes of their own.

The workers live in a slum at the foot of the tower block – temporary shacks that serve as home for hundreds of labourers and their families, at least until the building work is complete. Then, they will pack up and move on to wherever they can find work. Common throughout India, such settlements have become a focus for Mission Indradhanush – Mission Rainbow – a nationwide drive to improve access to childhood immunisation. Launched in 2015, this bold political initiative aims to ensure that all children under the age of two and pregnant women are fully immunised with the seven vaccines covered by India's Universal Immunization Programme.

Currently India is home to nearly one fifth of the world's undervaccinated children. That translates into 3.2 million children who are not receiving a full course of even the most basic vaccines (three doses of the diphtheria-tetanus-pertussis vaccine). By concentrating efforts on its worst performing districts, the Government of India together with WHO, UNICEF and Gavi, hopes to turn things around; its target is to reach 90% of all infants within five years.

Migrant populations, such as the one in Agra, represent some of the hardest to reach communities. With no permanent settlement, they often live "off-the-grid" hidden yet in full view of local administrators. Even if on the odd occasion they do come into contact with health services, continuity of provision is next to impossible to achieve, as they drift from one district to the next.



Children living in urban slums, Agra, India

Gavi / 2016 / Duncan Graham-Rowe

For Mission Indradhanush to succeed, an essential first step is to generate demand for immunisation among migrant communities. This requires a dual track approach. Learning from its highly successful polio elimination programme, the Government of India has already mapped 256,000 migrant sites. Alongside other "high-risk" areas currently not being reached, these communities are being integrated into microplans for routine immunisation. At the same time, the Government is working with these "invisible" communities to raise awareness about the benefits of vaccines and overcome misconceptions about safety.

The coming years will be critical, in part because of the ambitious targets India has set for itself. Not only does the Government plan to add a number of new vaccines to its Universal Immunization Programme, including rotavirus, rubella, pneumococcal and human papillomavirus (HPV) vaccines, but it hopes to transition out of Gavi support. India's immunisation programmes are scheduled to become fully self-financing by 2021.

To help with the process, in December the Gavi Board approved a new strategic partnership with India. This focuses on new vaccine support, health system strengthening and collaboration on vaccines supply and procurement. The new strategic partnership will build on the support that Gavi has already provided through the national scale-up of the pentavalent vaccine. Uttar Pradesh's introduction of the five-in-one vaccine in December meant all Indian states have now introduced the vaccine.

The rapid roll-out of pentavalent vaccine has added momentum to the Indian Government's efforts to achieve more equitable and sustainable immunisation coverage. The view for Indian migrant workers in Agra and across the country is looking decidedly brighter and healthier.

THE HEALTH SYSTEMS GOAL

Stronger country focus lays foundation for 2016–2020 strategy

New approach targets increased and equitable access to immunisation, prioritising countries with greatest challenges

Strategic focus on strengthening supply chains yields early results

Gavi launches cold chain equipment platform and supports training for supply chain managers

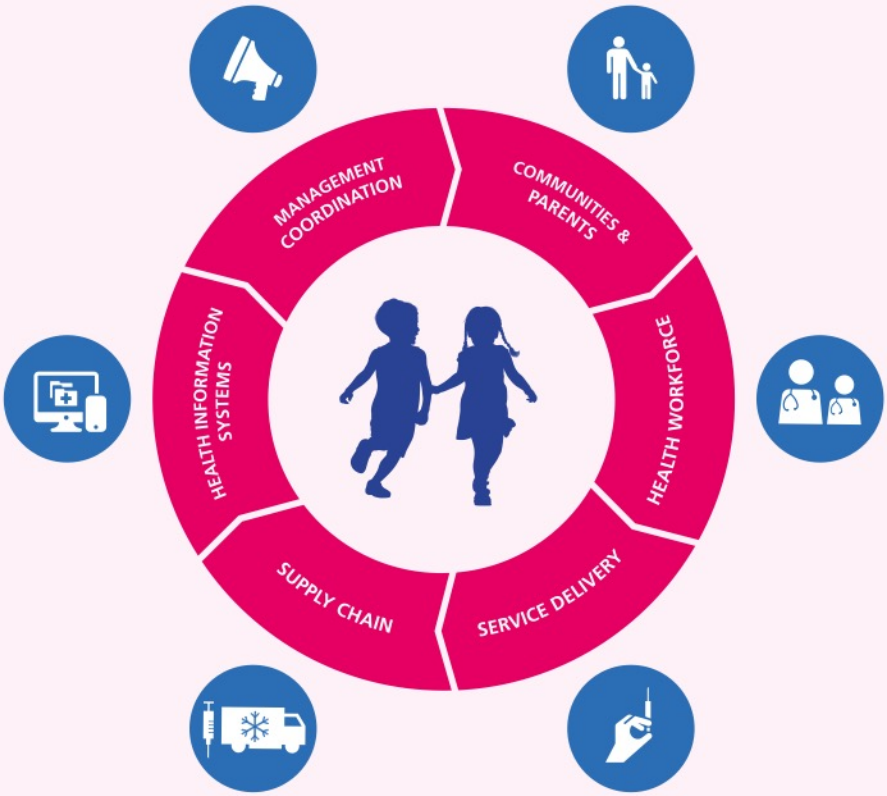
Immunisation coverage rates: progress stagnates

While DTP3 coverage increased by three percentage points between 2011 and 2015, we fell short of our overall target

> “Through the Gavi partnership, we will continue to increase our vaccination coverage and have a positive and lasting impact on our children’s health.

HE Ibrahim Boubacar Keïta
President, Mali

Gavi's support for strengthening health systems: key focus areas



65 million

CHILDREN IMMUNISED WITH GAVI-SUPPORTED VACCINES IN 2015

NEARLY ONE IN FIVE CHILDREN ARE NOT FULLY IMMUNISED WITH BASIC VACCINES

Gavi and its partners have made significant headway in increasing access to routine vaccinations in many developing countries, including some in which conditions are especially challenging. Since 2010, basic immunisation coverage across Gavi-supported countries has increased from 78% to 81%, despite a large population increase.

An unprecedented level of access means that more children are being vaccinated than ever before. In 2015 alone, more than 65 million children were immunised with Gavi-supported vaccines.

Because the remaining pockets of unimmunised children tend to be those that are hardest to reach, coverage improvements slowed during the 2011–2015 period, and we failed to reach our five-year targets for improving coverage and equity.

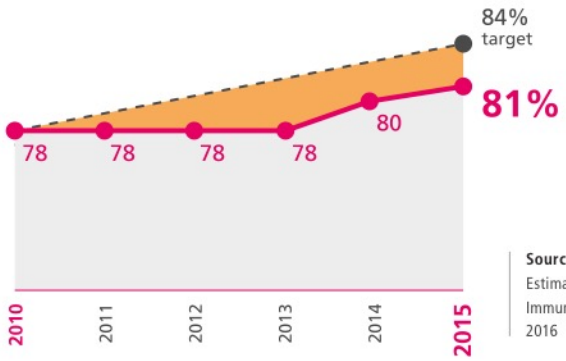
Almost one in five children in Gavi-supported countries is still not receiving a full course of the most basic package of vaccines.

A "business as usual" approach will not be sufficient to reach these children. In 2015, we started laying the foundation for our new strategy's focus on improving coverage and equity. A new model for health system and immunisation strengthening support, to be implemented from 2016 onwards, will direct investment to where it is needed most – the poorest and hardest-to-reach communities and populations.

HEALTH SYSTEMS IN GAVI-SUPPORTED COUNTRIES

DTP3 COVERAGE (%)

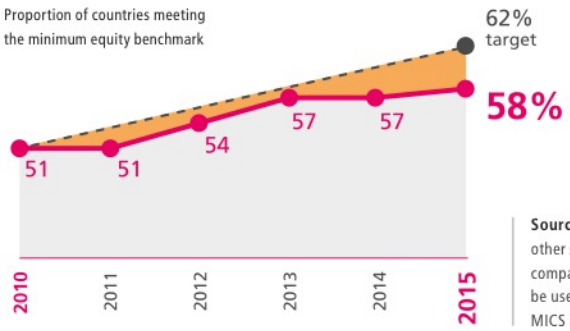
Coverage with three doses of a diphtheria-tetanus-pertussis-containing vaccine (DTP3) is a standard measure of the strength of national immunisation programmes. In 2015, coverage with DTP3-containing vaccines – including the pentavalent vaccine – reached 81% in Gavi-supported countries. While we did not meet our target of 84% coverage across the 73 countries, our 2016–2020 strategy will focus on further improving immunisation coverage and making it more equitable.



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2016

EQUITY IN IMMUNISATION COVERAGE (%)

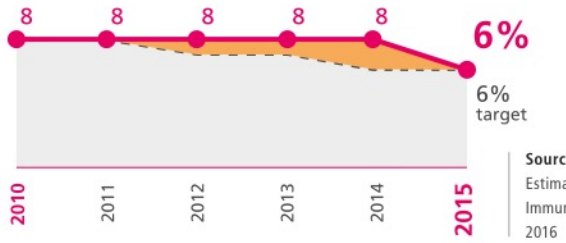
Poverty is a critical factor in determining whether or not a child is immunised. Equity in immunisation can therefore be measured by comparing DTP3 coverage for the poorest 20% of the population with that for the richest 20%. The percentage of Gavi-supported countries meeting the minimum equity benchmark increased from 51% in 2010 to 58% in 2015, 4 percentage points below the target.



Sources: DHS and MICS; other surveys that use comparable methods may be used where no DHS or MICS is conducted

PERCENTAGE POINT DIFFERENCE BETWEEN DTP1 AND DTP3

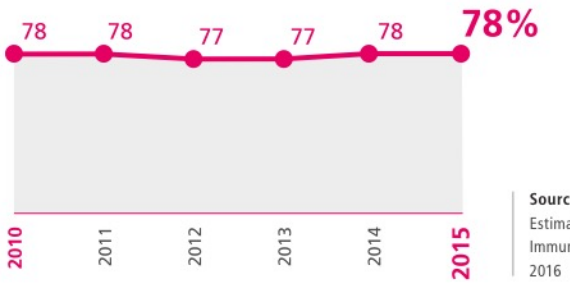
Tracking the percentage of children who receive the first but not the third dose of DTP-containing vaccines reflects the number of children who failed to complete the full vaccination series. In 2015, the difference between DTP1 and DTP3 coverage in Gavi-supported countries fell to 6 percentage points, in line with our 2015 target. This shows that countries are increasingly able to deliver a full course of the vaccine.



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2016

FIRST DOSE OF MEASLES COVERAGE (%)

Children are usually immunised against measles at nine months of age – later than DTP3 but still within the first year of life. Coverage with the first dose of measles vaccine, which Gavi does not currently support financially, thus measures the ability of health services to vaccinate children beyond early infancy. While DTP3 coverage has increased in recent years, routine coverage with the first dose of measles vaccine has stalled at 78%. Gavi has not set a specific target for measles vaccine coverage.



Source: WHO/UNICEF Estimates of National Immunization Coverage, 2016

HEALTH SYSTEM **STRENGTHENING**

> Universal vaccination will play a fundamental role in developing a healthy population and in ensuring that we develop our economies.
>
> **President Jakaya Kikwete**
> Global Ambassador for Immunisation

Investments continue to rise

In 2015, Gavi completed a decade of providing support for health system strengthening (HSS). In the early stages, HSS funding was used to support a wide range of initiatives, mainly aimed at increasing access to essential primary healthcare services. During this period, immunisation coverage rates in many Gavi-supported countries averaged around 70%.

As access to basic health services steadily improved over the 2011–2015 period, HSS funding was increasingly used to support improvements in immunisation. With this change, focus largely shifted away from service delivery more towards areas such as supply chain management and health information systems, where significant bottlenecks remained. In this period, we also worked with countries to ensure more thorough monitoring and evaluation of HSS grants.

In 2015, Gavi disbursed US$ 172 million in HSS support – 19% more than in the previous year. By the end of the year there were 77 active HSS grants spread across 64 countries. Basic immunisation coverage reached an average of 81% in the 73 Gavi-supported countries in 2015, up from 78% in 2010. HSS was likely one of the factors contributing to this increase.

Redesigning the HSS programme: preparing for 2016–2020

Recognising that HSS support is one of our most powerful mission tools, in 2015 we started to restructure the HSS programme to better align it with the goals and objectives of our next five-year strategy.

Going forward, our new health system and immunisation strengthening (HSIS) support model will focus on removing barriers to increased and equitable access, prioritising the countries with the greatest challenges.

In Madagascar and Pakistan, for example, existing HSS grants are already being reallocated to reach communities that persistently miss out on immunisation. The new model will bundle and streamline different types of support that each country receives to ensure they are better integrated.



Participants in a workshop for health workers in Dhaka, Bangladesh

Gavi / 2015 / GMB Akash

A platform for universal health coverage

Vaccines do not deliver themselves. On the one hand this requires efficient supply systems, trained health workers and well-run health facilities; on the other, parents and communities need to recognise the value of immunisation.

In 2015 alone, 65 million children in Gavi-supported countries received three doses of a DTP-containing vaccine. This equates to more than 195 million points of contact between these children and the primary health system, providing an opportunity to reach not only the child but also his or her parents and siblings with other health services and information.

If the existing routine immunisation system is expanded yet further, we will have in place a solid platform upon which to build. Strong routine immunisation systems will make an important contribution to achieving universal health coverage and other global sustainable development goals.

GROWING THE ROLE OF **CIVIL SOCIETY**

Given their important contribution to raising awareness of the benefits of vaccines, civil society organisations (CSOs) are key players in increasing coverage and ensuring that children in the hardest-to-reach areas are immunised.

To further strengthen the collaboration with CSOs, Gavi's civil society constituency has received funding totalling US$ 7.7 million for the 2011–2015 period. This grant, managed by Catholic Relief Services (CRS), is used to reinforce the role of civil society in immunisation and health system strengthening through CSO platforms in 24 countries.

The majority of these platforms are members of national immunisation committees, engage in health policy dialogue and, together with other Gavi partners, help develop and implement HSS proposals. Of the 15 countries approved for HSS funding in 2015, 14 worked with CSOs to develop their proposals and all, bar one, allocated funds to CSO-related activities.

CSO support through Gavi HSS grants ranges from national advocacy and demand generation for immunisation to health worker training and service delivery.

In the Gambia, for example, CSOs conducted health worker training across all health regions in 2015. In Afghanistan, CSOs used HSS support to deliver basic childhood vaccines and other maternal and child health services in remote areas.

The Ghana Coalition of NGOs in Health, which brings together more than 500 CSOs, used a portion of Ghana's HSS grant to carry out regular community outreach activities and to support CSOs in participating in immunisation campaigns. Nicaragua's CSO platform used the funds to train partners working at community level. In India, the CSO platform drew on the funding to develop a behaviour change and communication strategy.

A 2015 assessment described the collaboration with CSOs through these platforms as highly relevant to Gavi's mission. However, it is too early to measure the impact of this work on expanding access to immunisation among at-risk populations. The assessment also noted that it will take time for the CSO platforms to become fully recognised and integrated.

Gender and immunisation

Gender-related barriers to immunisation extend beyond the more obvious and measurable differences in the number of boys and girls vaccinated. Studies have found that globally there is no significant difference in immunisation coverage between boys and girls, although local variations do occur. Other factors, typically outside of the immunisation programme, are weighing on gender equity in immunisation but these are often more difficult to measure and address.

For instance, children of uneducated mothers are far less likely to be vaccinated than children of better educated, literate mothers. This is particularly detrimental in countries such as Chad, where female literacy rates are roughly half those of men. Chad also has the third lowest proportion of female healthcare workers in the world; this too can deter women from taking their children to be immunised.

Other gender-related factors act in more subtle ways, but nevertheless can have negative impacts on immunisation levels.

Sometimes women cannot draw on family income to pay for transportation to the clinic, or they may not have time to go to the clinic because of household chores or other family obligations. In some places, women cannot travel without company.

Barriers to immunisation do not only apply to women; fathers have an equally important role to play in ensuring children's access to vaccination.

Gavi provides health system strengthening funding to help countries address all barriers to immunisation, including those related to gender. As part of this effort, Gavi-supported countries are encouraged to analyse and understand how coverage varies by sex, income and geographic location to help identify reasons for low immunisation coverage in certain groups. Efforts to better define gender-related barriers and activities are crucial to address more subtle barriers, which may not be immediately clear from data showing the number of immunised boys and girls.

YEMEN: ADAPTABILITY IN ADVERSITY

> Apart from funding, Gavi has been extremely flexible. They've accepted that we need to act, do outreach and distribute the vaccines.
>
> **Dr Osama Mere**
> Acting country representative in Yemen for WHO

Dr Osama Mere was born in Damascus and graduated from medical college at Damascus University in 1990. For five years, he served as head of Child Health and the national manager of the Extended Programme for Immunization (EPI) in Syria. In 2015, he became the acting country representative in Yemen for WHO. We talked to him about how Gavi has adapted its health system strengthening to ensure vaccines are still being delivered despite Yemen's ongoing conflict.

Gavi: What are the main challenges of delivering vaccines in a conflict zone like Yemen, Dr Mere?

Dr Osama Mere (OM): The main issue is how to get vaccines into the country. The only way is through the UN flight via Djibouti, which needs the consent of the Arab Coalition. Fortunately, they let vaccines through.

Inside Yemen, the challenge is to distribute the vaccines across the country. In three or four districts, this is very difficult because of the ongoing conflict. But, in spite of this, we're able to get vaccines into places like Taiz City, which is under virtual siege.

What support do you receive from the Vaccine Alliance in Yemen?

OM: Gavi helps us overcome the main challenge, which is the cost of vaccines. In 2015, the problem was the Government had no funds. The cost of transporting the vaccines to the children that need them, things like transportation and wages, has also increased. Gavi helped us cover this.

How was Gavi's health system strengthening support (HSS) adjusted to address the unique challenges of working in Yemen?

OM: Without HSS, it would have been very difficult to cope with the situation. It was the only fund available to us. Gavi has been extremely flexible. They've accepted that we need to act, do outreach and distribute the vaccines.

Could you describe how Gavi HSS support is used in Yemen today and what are the results?

OM: In 2015, we had 67% coverage with DTP3, with outreach activities supported mainly by Gavi, our main financier. Instead of our normal four rounds of outreach, we did five. Outreach activities were carried out like a campaign. We rented around 1,000 cars and sent them out into the field for five days with people trained using Gavi funds.

In every round of outreach, working from eight to five o'clock, we managed 6,000 or more immunisations, even covering remote villages and reaching places where there was no electricity and we had to use generators and solar power. So, that's five rounds of outreach and 30,000 immunisation sessions. A big achievement in spite of everything.

Our people were also able to offer advice on nutrition, childhood illnesses and reproductive health.

Could you highlight any innovative approaches you've used in Yemen to reach communities on the frontlines?

OM: The Expanded Programme for Immunization (EPI) Task Force, the main body managing and leading immunisation activities during the crisis, was closely monitoring areas that required special care. They approached the local authorities and communities, who were very efficient in increasing accessibility.

How important is political support to the success of immunisation in Yemen?

OM: All the authorities on both sides have been very supportive. The de-facto vice-minister was attending most of the weekly meetings of the EPI Task Force in addition to the representatives of WHO and UNICEF. The whole country has worked to facilitate the delivery of vaccination services. But it has to be said that this hasn't translated into anyone actually paying for vaccines. We've had to rely on Gavi and the United Nations for that.

What challenges does your organisation continue to face in maintaining and increasing immunisation coverage in Yemen?

OM: What we need to do is revitalise health facilities, especially vaccine departments. We must maintain the quality of immunisation services by training new staff – basic training and effective vaccine management – and making sure they're supervised. We also have to guarantee the distribution and supply of vaccines into the country and distribute them properly.

But the main issue is to stick to five continuous rounds of outreach every year, based on very detailed microplans.

What are the strengths of the Gavi model and how has this helped the Alliance work in Yemen?

OM: The key things are that the funding is available at the local level for use by the Minister of Health for Yemen and there's flexibility in how it's used. It all comes down to Gavi's willingness to be flexible, which has been much appreciated in Yemen. It's good that the HSS makes sure funds are used well and monitors activity correctly.

Ultimately, what would you say has been your biggest achievement?

OM: Sustaining routine immunisation coverage in Yemen in 2015 in spite of the armed conflict and the political unrest. All the new vaccines offered by Gavi were introduced in Yemen, including pentavalent, pneumococcal, rotavirus, measles-rubella and inactivated polio vaccine.



To date Yemen has introduced five Gavi-supported vaccines

Gavi / 2013 / Alazz Alzain

PUNJAB PROVINCE'S DATA SUCCESS STORY: **CONNECTING THE DOTS**



Technology's potential to collect immunisation-related data has never been greater. However, it's not information alone that matters but how you use it – as Pakistan is fast learning.

It would be easy to attribute Punjab Province's dramatic increase in basic vaccine coverage in 2015 to modern technology. But while using smartphones to collect immunisation data undoubtedly played a critical role, the real reason behind this success story is the ability to use these data to build up a detailed picture of immunisation services – to connect the dots.

Between October 2014 and April 2015, the 3,750 vaccinators working across the province were provided with a smartphone, known as an E-vacc. These devices are equipped with an app, which allows vaccinators to register at rural checkpoints. It now also collects more granular detail through electronic immunisation cards, which log details of the vaccinations administered to children at clinics and centres on a daily basis. Back in Lahore, a dedicated team of analysts mine this wealth of data, drawing on other technologies to create a continuous feed of immunisation-related data which can be used to monitor attendance, the number of children vaccinated, the number and type of vaccine administered, and all importantly, area coverage.

Where the E-vacc package really excels is in its ability to identify areas of poor coverage and locate previously unreached communities and families by making use of satellite imagery and Google maps. This information is relayed back to vaccinators, who armed with exact locations of unimmunised children, are able to travel to these areas to offer vaccination services. On arrival, they register their location using the E-vacc and upload new data which allows the province's Extended Programme for Immunization (EPI) to plot an up-to-date picture of coverage.

"I think it's technology done right", said Dr Umar Saif, head of the Punjab IT Board, the organisation that has played a pivotal role in developing and rolling out the E-vacc package.

In 2015, the data analysis started to pay off. Vaccinator attendance rose by an impressive 67%, and helped deliver a substantial increase in coverage with the five-in-one pentavalent vaccine from 64% to 86% in just 12 months – equivalent to an additional 500,000 immunised children. "We have worked very closely with everyone involved in immunisation in Punjab Province," says Dr Saif, "from our partners all the way down to the vaccinators. They have been consulted and trained, and their feedback has been incorporated."



Vaccinators working in Punjab Province, Pakistan

Acasus / 2015

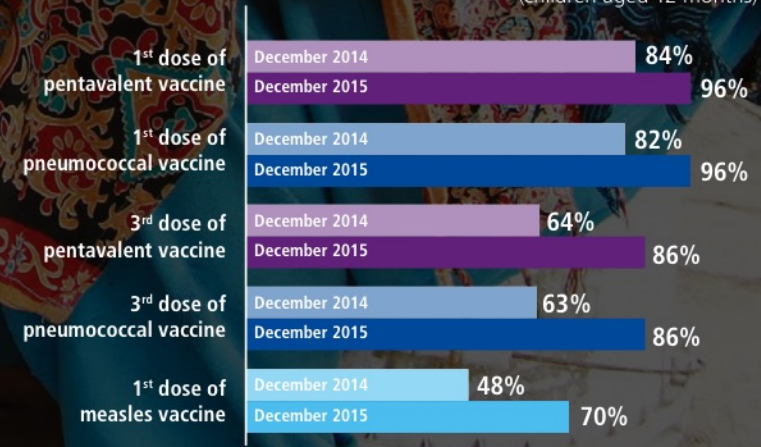
There has also been political buy-in from the very top. "The oversight of the Chief Minister has been essential," says Dr Saif. "Our monitoring data goes all the way to him, he looks at it personally to see where the gaps are. He makes sure that everyone continues to use the system."

Other provinces in Pakistan have recognised the benefits of data collection and analysis. Baluchistan, Khyber Pakhtunkhwa and Sindh have all formally requested help from the Punjab Government to replicate its E-vacc approach.

Khyber Pakhtunkhwa has progressed the furthest, and started deploying E-vaccs in 2015. "One of the challenges we've faced is ineffective outreach by vaccinators. Now, our EPI programme will train all vaccinators to develop outreach plans with support from WHO and Gavi," says Dr Nasreen, training coordinator for the province's EPI team. "District and provincial managers will then be able to check compliance using the E-vaccs. The approach will help managers to identify populated areas unreached by vaccinators."

Basic vaccination coverage (three doses of the five-in-one pentavalent vaccine) increased from 64% to 86% in just 12 months

Coverage rates in the Punjab Province, Pakistan, 2014 and 2015
(children aged 12 months)



Source: Nielsen (Dec 2014 & Dec 2015)

PUTTING COUNTRIES **FIRST**

A primary aim of our 2011–2015 strategy was to accelerate the introduction of new vaccines in developing countries which, despite having the greatest disease burden, have traditionally missed out on the latest and most effective vaccines.

By the end of 2015, all 73 Gavi-supported countries had introduced pentavalent vaccine and more than half had included pneumococcal and rotavirus vaccines in their routine immunisation programmes. In terms of introductions, this puts lower-income countries on a par with, and in some cases ahead of, middle- and high-income countries. However, inequities in coverage within these countries mean that many children are still unnecessarily missing out on life-saving vaccines.

Our new mission is more directly focused on reaching all children, regardless of whether their parents are rich or poor, whether they live in an urban slum or a wealthy neighbourhood, or whether their mothers are educated or not.

To pave the way for our 2016–2020 strategy, and recognising that barriers to immunisation are country specific, in 2015 we implemented four new ways to support countries. Collectively, these will ensure that countries' needs are at the core of everything we do.

More country-centric support

Central to our stronger country focus is the joint appraisal, which all countries completed in 2015 for the first time. As part of this new appraisal process, national immunisation teams and partners jointly review progress and identify country-level bottlenecks. The appraisals include visits to health facilities and immunisation sessions to ensure that final recommendations on future support take into account real-time challenges on the ground.

The appraisals are then examined by a high-level review panel, which assesses the performance of all Gavi's grants before the next tranche of funding is approved.

To ensure more proactive, country-centric grant management and better risk mitigation, Gavi has increased the number of country focal points (senior country managers). The number of countries managed by each focal point fell from approximately 14 in 2012 to 4 in 2015.

Priority countries

Approximately 80% of the underimmunised children in Gavi-supported countries live in just 20 countries, many of which are also large and classed as fragile states. While we continue to support all eligible countries, the Vaccine Alliance will increase its technical support to assist these priority countries. Given that it accounts for one fifth of all underimmunised children in Gavi-supported countries, India has been identified as a priority country; a country-specific strategy was developed in 2015 to guide our partnership with India in the coming five-year period.

Partners' engagement framework

The partners' engagement framework enables the Vaccine Alliance to plan, coordinate and budget the main activities of its key partners. In the past, technical support to countries from partners, such as WHO and UNICEF, was largely defined and funded at the global or regional level. To ensure this support is more suited to the specific needs of each country, Alliance partners will now offer technical support to countries according to their own priority areas. This support will be provided by nearly 200 permanent staff based in countries and, where possible, embedded in national EPI programmes.

Investments in strategic focus areas

Future health system strengthening funding will increasingly focus on sustainable improvements in coverage and equity, partly through investment in "strategic focus areas". By the end of 2015, two strategic focus areas had been identified: supply chain and data. Others are still being explored.

To inform our work in these strategic focus areas, we have started to conduct in-depth assessments in priority countries, identifying their most critical bottlenecks to coverage and equity. Together with governments and a wide range of partners, including the private sector, we then define the best solutions. By the end of 2015 this work had been piloted in five countries; Chad, India, Kenya, Madagascar and Pakistan; with another five to follow in 2016.

STRATEGIC FOCUS AREA: **IMMUNISATION SUPPLY CHAINS**

> My dream is to have a modern cold chain, delivering high quality vaccines to the most remote hamlets of Rajasthan. It's not only delivering the vaccine that is important but also the quality.
>
> **Dr Anil Agarwal**
> UNICEF health specialist, Rajasthan, India

The immunisation supply chain is critical to expanding access to safe and effective vaccines in developing countries. However, outdated equipment, poor distribution networks and unreliable electricity supply can hamper vaccine delivery systems. Today's supply chains frequently struggle to deliver the full schedule of all required vaccines.

It is no surprise then that countries place great importance on supply chain improvements in their HSS proposals. In the 2011–2015 period, over one fifth of the proposed investments focused on supply chain management and procurement.

Gavi's support for supply chain strengthening

Typically, supply chains are made up of four levels, all of which need to operate optimally to ensure that sufficient quantities of viable vaccines reach all the children who need them:

- A central (national) repository with cold rooms;
- Two levels of intermediate stores (regional, district) with their own cold rooms or refrigerators; and
- Health facilities, which may also have their own refrigerators.

Coolers and chilled water packs are used to transport vaccines between each level, with health workers relying on insulated carriers to keep vaccines cold in health facilities and during outreach sessions, and thus make the final link in the chain.

Developed in collaboration with WHO, UNICEF and the Bill & Melinda Gates Foundation in 2014, our immunisation supply chain strategy helps countries find innovative solutions to strengthen all levels of their delivery systems.

Supply chain support is provided in five main areas:

- **Leadership:** strengthening supply chain managers' capacity through training, tools and other resources.
- **Data:** providing assistance on data collection and use for tracking the quality of storage and transport facilities, and for stock management.
- **Design:** support to countries as they embark on redesigning their supply chains to make them more efficient, focusing on change management.
- **Equipment:** technical assistance and financial support to help countries plan for, select, install and maintain new cold chain equipment.
- **Continuous improvement:** support and guidance to countries as they adopt more effective approaches to evaluate, manage and improve their supply chains.



Nurse with HPV vaccines, stored in a cold room facility in a local hospital, Tanzania

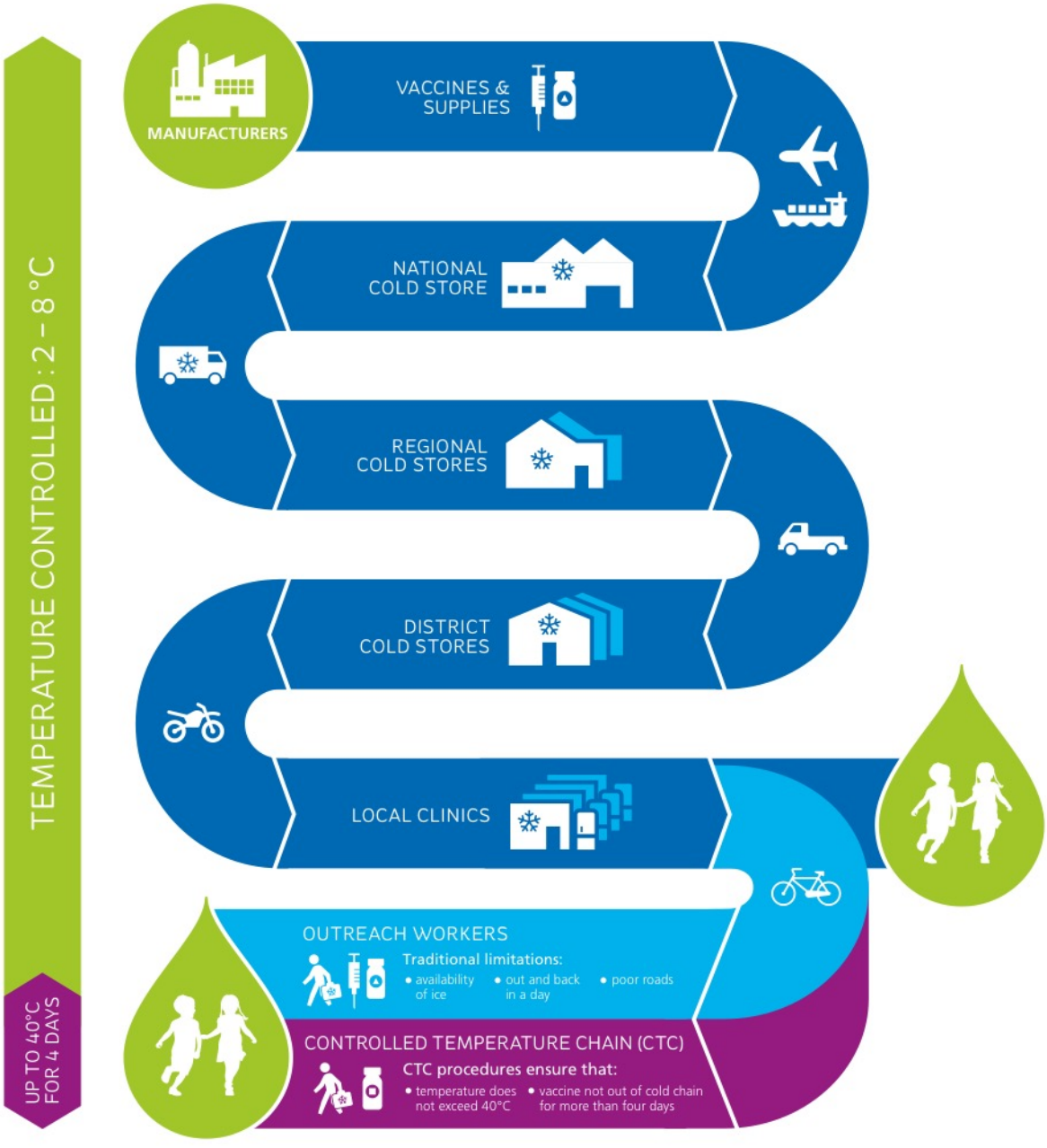
Gavi / 2014 / Karel Prinsloo

HOW THE **IMMUNISATION SUPPLY CHAIN WORKS**

Centre of Excellence for supply chain managers: a "STEP" in the right direction
p62-63

Solar future shines on Haiti's cold chain
p70-71

The immunisation supply chain is a system that moves temperature-sensitive vaccines on their journey from the point of manufacture to the point of administration. It links people, vaccine delivery points and supplies in all Gavi-supported countries. Where supply chains are inefficient or not well managed, vaccines can be exposed to damaging temperatures or pass their expiry date before reaching their destination, or clinics may run out of the vaccines they need.



> Within a short time frame, I have been able to accomplish so much with the help of my mentor.
>
> **Lucy Kanja**
> Nairobi, Kenya
> Student at the Rwanda Centre of Excellence

Supply chain investments are already starting to bear fruit, as the following highlights from 2015 demonstrate.

Cold chain equipment optimisation platform

A 2014 assessment of 57 low- and lower-middle-income countries found that just 2% of facilities had a fully functioning cold chain using optimal technology.

Our new cold chain equipment optimisation platform, approved by the Board in June 2015, is a significant step towards increasing access to reliable, modern cold chain equipment. While replacing outdated appliances with high-performing devices requires a high up-front investment, it saves money in the long term by increasing operating time and reducing running costs. Upgraded equipment, such as solar-driven fridges, is often more environmentally friendly.

Through joint investments in new technology, the platform aims to upgrade cold chain equipment in 135,000 health facilities. By modernising existing systems and extending the cold chain to communities that were previously "off-the-grid", the initiative will help to improve immunisation coverage and equity. It also incentivises manufacturers to accelerate innovations and provide countries with comprehensive maintenance services and long-term warranties.

Redesigning immunisation supply systems

Rethinking the design of supply chains can significantly cut costs as well as reduce the time spent on transporting vaccines from central stores to the most remote clinics and outreach posts.

In Nigeria, for example, where it has been implemented, a new stock management system has led to an increase in the proportion of facilities with adequate stock from 60% to 88%. Similarly, Mozambique has managed to improve its stock management performance in four provinces from 62% in 2012 to over 80% in 2015.

Centre of Excellence for supply chain management

The opening of The East African Community Regional Centre of Excellence for Vaccines, Immunisation and Health Supply Chain Management in November 2015 at the University of Rwanda will help train a new generation of skilled supply chain managers in the region. This initiative has been supported by a wide range of partners, including the German Development Bank, the International Federation of Pharmaceutical Wholesalers and the Bill & Melinda Gates Foundation.

The logistics specialist, United Parcel Services (UPS), has played a leading role in crafting the training course, which is coupled with an innovative mentoring programme.

Data and information systems

With support from Gavi, the Government of Nepal has developed a national eHealth strategy that integrates a logistics information system into the national health information system. Having such a system in place improves overall efficiency across the supply chain. In particular, it will help Nepal ensure sufficient vaccine stock throughout the country, including in the hard-to-reach foothills of the Himalayas, and minimise wastage.

Community engagement and demand generation

More efficient supply chains are only one part of the solution – if we are going to achieve our aim to reach all children we need to engage even more with communities to encourage them to request immunisation services. A healthy demand for immunisation, whereby individuals and communities actively search for, support and help sustain vaccination programmes, is fundamental to improving immunisation coverage and equity in the long term.

Children will miss out on potentially life-saving protection if their parents or other caregivers do not turn up for immunisation sessions, or do not return for a second or third dose. The reasons for non-attendance vary from competing priorities to a lack of awareness of immunisation schedules.

In 2015, countries worked with Gavi partners to further generate grassroots awareness of immunisation. For example, we co-funded a PATH-led initiative in the Afar region of Ethiopia. In this nomadic community, local leaders help spread the word about the benefits of vaccines through schools, religious ceremonies, theatre and dance performances.

In Pakistan, a Johns Hopkins-led initiative uses radio as a means of raising awareness of immunisation among both rural and urban communities. It also aims to increase political commitment, so that when increased awareness translates into increased demand, the right services are in place. This is taking place alongside a Gavi-supported pneumococcal vaccine impact study, which is evaluating different ways to generate demand for the vaccine across Pakistan.

STRATEGIC FOCUS AREA: **DATA**

Reliable data are essential to finding that all-important fifth child who is still missing out on a full course of basic vaccines. Despite investments to improve data quality, mainly through health system strengthening support, many countries still struggle to collect and use quality data to strengthen their immunisation programmes.

Under the new data strategic focus area, approved by the Board in 2015, we are introducing new ways to support priority countries to improve the availability, quality and use of immunisation-related data.

Our country-level work will focus on three areas:

- **Immunisation delivery, coverage and equity:** strengthening the quality of immunisation coverage data to help address bottlenecks;
- **Vaccine-preventable disease surveillance:** helping countries to strengthen their surveillance systems and use the data to improve immunisation programmes; and
- **Vaccine safety surveillance and response:** establishing and improving data systems to detect adverse events and implement effective response and communication strategies.

Funding will mainly be channelled through our health system and immunisation strengthening support, as well as the partners' engagement framework.

All countries in receipt of Gavi health system strengthening support need to meet specific data quality requirements, including having a data improvement plan and conducting at least one immunisation coverage survey every five years.

Improving data quality in Afghanistan: a case study

As one of the world's most fragile and conflict-ridden states, Afghanistan failed to qualify for 2014 performance-based funding after registering a 19-percentage point discrepancy between different sources of coverage data. Recognising the challenges of collecting and reporting reliable immunisation data in Afghanistan, Gavi agreed to allocate additional funding towards improving data quality.

With support from UNICEF, WHO and Gavi, Afghanistan has developed a data improvement plan, which will be implemented from 2016, to strengthen the availability, quality and use of key immunisation data. This includes training some 3,500 health staff, as well as making provincial and national health leaders more accountable. A new data management unit, which will oversee data collection and analysis and promote data-driven decision-making at government level, will be established.

This is no quick fix. With 40% of the country inaccessible because of conflict, there are extraordinary obstacles to collecting and using reliable data. Improving confidence in Afghanistan's immunisation coverage data will take time.

Health worker processing data for pneumococcal vaccine introduction in Kenya

Gavi / 2013 / Evelyn Hockstein



RISK MANAGEMENT

Gavi makes every effort to ensure effective use of its support

Throughout 2015, we continued to strengthen our risk management approach to allow us to take the appropriate level and type of risk needed to deliver on our mission and maximise our impact. Working in close consultation with our partners, including donors, we have enhanced the Vaccine Alliance's risk management capability in four key areas.

Three lines of defence: In 2015 we reorganised our risk management and fiduciary oversight around a best practice three-way separation of responsibilities as follows:

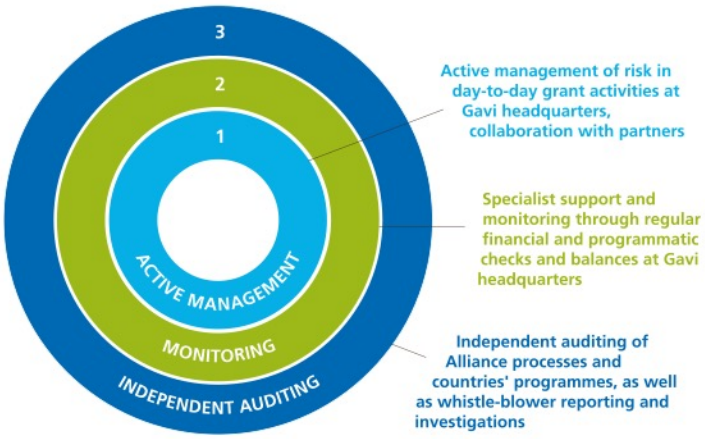
- **First line:** active management of risk in our grant activities through Gavi's Country Programmes department in collaboration with countries and partners on the ground;
- **Second line:** specialist support and independent monitoring through a number of control and oversight functions to provide an additional "check and balance" on the primary, first-line activities; and
- **Third line:** independent auditing of the first and second lines of defence to ensure they are effective.

Strengthening risk management: Gavi's grant management process is designed to ensure that its support, both vaccines and funds, is properly used, and that staff are well equipped to manage risk appropriately. Gavi's risk policy, effective from January 2015, sets out guiding principles for risk management, defines risk concepts, roles and responsibilities, and defines our risk appetite.

Resources: Gavi has recruited over 20 additional staff and reallocated others to support various aspects of risk management across the three lines of defence. A Head of Risk was appointed in June 2015 and a new risk committee, chaired by the Gavi CEO, has been established.

Collaboration: Gavi is reinforcing its cooperation with partners to enhance risk management practices at country level. In 2015, our Board approved the new partners' engagement framework. This includes an accountability framework, which details risk management responsibilities and will help to strengthen oversight. Collaboration and information exchange with other donors take place wherever possible, for instance with the Global Fund.

Three lines of defence



Source: Gavi, the Vaccine Alliance, 2015

Managing risk in the Democratic Republic of the Congo

The Democratic Republic of the Congo (DRC) continues to face political crises, civil conflict, weak governance and corruption. In order to safeguard Gavi funding and make a lasting impact, as of January 2015 a dedicated country focal point (senior country manager), backed by a multidisciplinary country team, is coordinating the use of Gavi's support to DRC.

In collaboration with the Ministry of Health, in-country partners and donors, we have taken a rigorous approach to grant and risk management which includes:

- **A fiduciary agent,** contracted directly by Gavi and shared with the Global Fund, to help mitigate risks as well as strengthen the financial and fiduciary capacity of the Ministry of Health. This has already improved financial oversight and reporting.
- **Close monitoring of the implementation of in-country activities** on a day-to-day basis. This means that delays can be anticipated more easily and the country is better able to meet crucial deadlines, for instance, for procurement.
- **A risk plan,** developed together with partners, to ensure essential services can continue regardless of any political unrest.
- **Regular monitoring of vaccine shipments and stocks,** which has helped to avoid vaccine stock-outs and contributed to reduced vaccine wastage.



FULL COUNTRY EVALUATIONS: BIG DATA ON A LOCAL SCALE

Gavi's ground-breaking full country evaluations (FCEs) gather high-quality, detailed data about national immunisation programmes while they are in progress. This is allowing countries like Uganda together with Vaccine Alliance partners to pinpoint problems as they arise and make near real-time improvements.

Recognising and overcoming bottlenecks in service delivery is a key part of evaluating immunisation programmes. However, most programme evaluations are retroactive and take place after an immunisation campaign or a routine vaccine introduction has been completed. In contrast, Gavi-supported full country evaluations (FCEs) allow countries to identify obstacles to improving immunisation coverage and to make adjustments while the programmes are in progress.

In 2015, when Uganda introduced human papillomavirus (HPV) vaccine to its routine schedule, a FCE revealed that some girls were missing out. By reviewing coverage at the district level, it quickly became clear that some areas had not introduced the vaccine because healthcare workers were not adequately trained.

"The FCE process has given us an insight into where to put our effort to achieve better coverage," says Dr Patrick Banura, a member of Uganda's Expanded Programme for Immunization (EPI). "Thanks to this innovative approach, the next lifespan of health system strengthening will bring more focused interventions. Equity remains a bottleneck, and we have to use data to improve access."

The FCE in Uganda is not only making a difference to immunisation delivery at the local level. As part of the evaluation, the team developed an immunisation resource tracking tool, which monitors the allocation of funding for immunisation – both government and donor. When it emerged that government vaccine spending was declining, Uganda's National Immunisation Technical Advisory Group (NITAG) used these data to advocate for changes in Uganda's National Immunisation Bill; the Bill was passed in December 2015.

"By using the FCE figures as evidence, we were able to ensure that two important issues were addressed: the Government's responsibility for funding basic immunisation services and the creation of a national immunisation fund," says Celia Nalwadda, Secretary of the NITAG.

Gilbert Asiimwe, a member of the FCE team in Uganda, believes the evaluation has even greater potential. "The FCE is extremely valuable for the immunisation system," says Asiimwe. "Our Minister of Health has made it categorically clear: this kind of work is just the beginning, we're now looking at how we can make it better and broader in the coming years."

> "The full country evaluation process has given us an insight into where to put our effort to achieve better coverage.
>
> **Dr Patrick Banura**
> Uganda's Expanded Programme for Immunization



Children at child health day at Kasana RC Primary School, Uganda

Gavi / 2014 / Tomrod Simensen

FULL COUNTRY EVALUATIONS: HOW THEY WORK

What are full country evaluations?
The full country evaluations use innovative methods to identify "drivers and bottlenecks" in immunisation programmes in virtually real time. This information is used to target resources and to make the necessary adjustments to programmes as they are being implemented. Lessons learnt are also used to guide the development of future programmes.

Where are they being conducted?
In 2013, evaluations commenced in Bangladesh, Mozambique, Uganda and Zambia.

Who are the partners involved?
The FCEs are led by the Institute for Health Metrics and Evaluation at the University of Washington in partnership with PATH and local institutions in four countries:

- International Centre for Diarrhoeal Disease Research (iccdr,b) in **Bangladesh**;
- The Eduardo Mondlane University, Health Alliance International and the Manhiça Health Research Centre in **Mozambique**;
- Infectious Disease Research Collaboration affiliated with the University of Makarere in **Uganda**; and
- University of Zambia in **Zambia**.

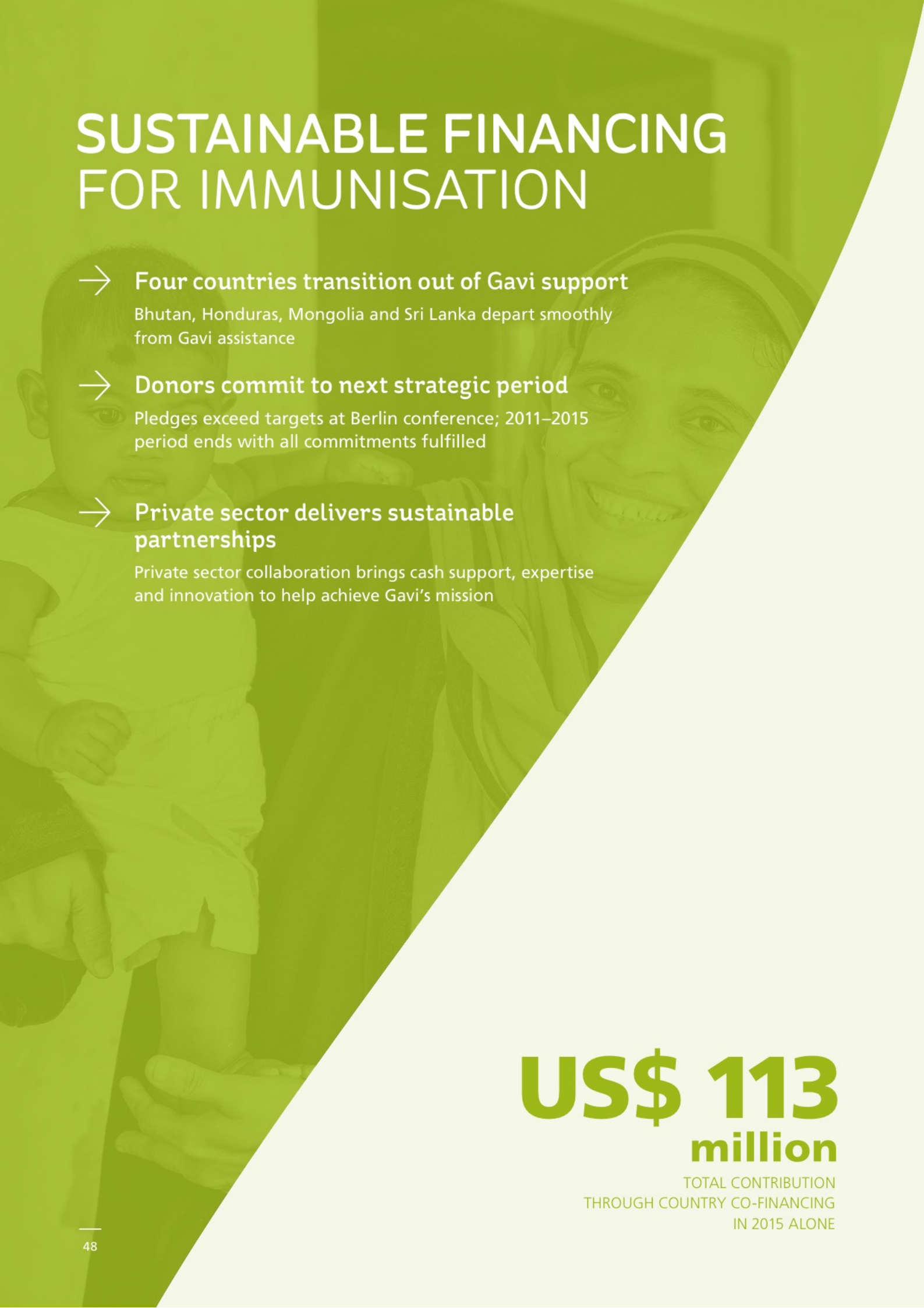
Researchers work with local institutions to collect data and strengthen local monitoring and evaluation.

How do they work?
The evaluations use a range of data sources and methods to create a detailed picture of how Gavi-supported immunisation programmes are being implemented at the provincial, district and sub-district levels. Experience has shown that these detailed local estimates are better than national-level figures at helping healthcare workers pinpoint inequities in vaccine coverage.

For example, sub-district estimates developed for Bangladesh showed significant variation in the number of children receiving a third dose of diphtheria-tetanus-pertussis (DTP3) vaccine across its 488 upazilas between 2000 and 2013.

What kind of methods are the FCEs using?
The data gathering methods and studies employed in the evaluations include interviews with programme managers and Vaccine Alliance partners (to aid understanding of how immunisation programmes are being implemented); health facility surveys, including interviews with parents exiting vaccination sessions (to assess the success of immunisation delivery); biomarker measurements (taken as part of household surveys and used in the estimation of immunisation coverage); and vaccine effectiveness studies (to track the impact of new vaccines).

SUSTAINABLE FINANCING FOR IMMUNISATION



Four countries transition out of Gavi support

Bhutan, Honduras, Mongolia and Sri Lanka depart smoothly from Gavi assistance

Donors commit to next strategic period

Pledges exceed targets at Berlin conference; 2011–2015 period ends with all commitments fulfilled

Private sector delivers sustainable partnerships

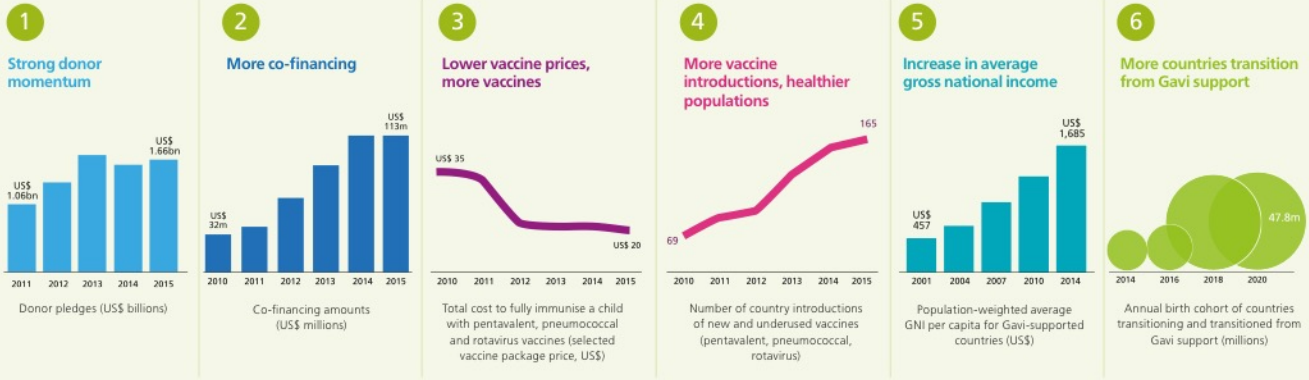
Private sector collaboration brings cash support, expertise and innovation to help achieve Gavi's mission

US$ 113 million

TOTAL CONTRIBUTION THROUGH COUNTRY CO-FINANCING IN 2015 ALONE

Gavi: a model of dynamic resource mobilisation





Our long-term vision for immunisation has always been one of self-sufficiency. Since its inception in 2000, Gavi support has been geared towards increasing countries' own investment in their immunisation programmes. Our funding model thus encourages national ownership and helps to ensure that programmes are sustainable after our financial support ends. By the end of 2015, just seven years after countries made their first co-financing contributions towards Gavi-supported vaccines, our funding model is coming into its own.

Countries are making great strides in taking over the full cost of their vaccines, demonstrating their commitment to investing in immunisation and the value of the Vaccine Alliance's assistance to countries as they prepare to transition out of Gavi support. 2015 was a litmus test for Gavi's funding model and shows what can be expected in the years to come.

Four countries – Bhutan, Honduras, Mongolia and Sri Lanka – have started to fully self-finance their vaccines introduced with Gavi support, while close to 20 others are preparing to transition by 2020.

Predictable, long-term donor support is another cornerstone of the Gavi funding model, giving countries the confidence to introduce new vaccines. By providing visibility of future demand, we enable manufacturers to better plan their production and supply vaccines at more affordable prices to developing countries. Greater immunisation coverage leads to healthier, more productive populations and increases economic prosperity. This, in turn, means that countries are better able to take over the full financing of their immunisation programmes.

Source: Gavi, the Vaccine Alliance, 2016

BUILDING A SUSTAINABLE PLATFORM FOR IMMUNISATION

The path to self-sufficiency

Gavi's co-financing policy, the first of its kind among global health funding agencies, enables developing countries to lay the foundations to continue delivering life-saving vaccines – originally introduced with Gavi support – to their population.

First implemented in 2008, the co-financing policy requires that all Gavi-supported countries contribute to the cost of purchasing vaccines. Co-financing payments are not made to Gavi, but directly to the supplier through the country's own procurement process. The size of the contribution is based on each country's ability to pay, as measured by their gross national income (GNI) per capita. For co-financing purposes, countries are divided into three groups: initial self-financing, preparatory transition and accelerated transition.

In the **initial self-financing** phase, country contributions are set at US$ 0.20 per dose – sufficient to build country ownership but not high enough to deter the lowest-income countries from introducing new vaccines. When a country moves to the **preparatory transition** phase, its co-financing payments increase by 15% each year.

As the national economy grows and the country surpasses Gavi's eligibility threshold (according to a three-year average of its GNI per capita), it enters the **accelerated transition** phase – a five-year period when co-financing rises to 100% of Gavi vaccine costs. Two additional years of preparation are allowed for countries whose GNI has increased exceptionally fast.

Throughout this process Vaccine Alliance partners work closely with countries, providing technical assistance to help prepare them for self-sufficiency. By the end of the transition period, governments are expected to fully self-finance their vaccines.

Understanding sustainability: glossary

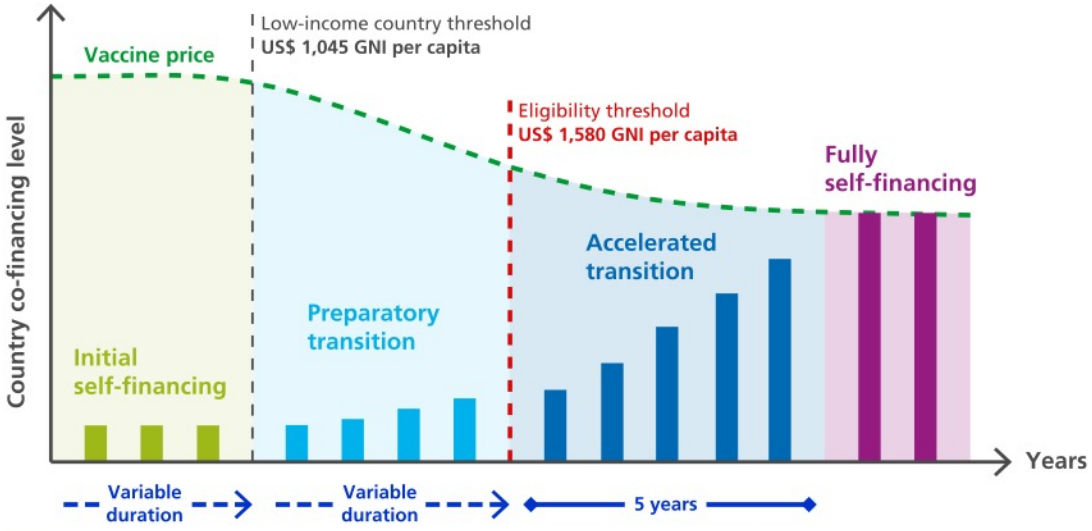
Eligibility: refers to a country's eligibility for Gavi support. This is based on their gross national income (GNI) per capita, as estimated by the World Bank. In 2015, countries with a per capita GNI of US$ 1,580 or less were eligible for new support.

Co-financing payment: the share of the cost of Gavi-supported vaccines and safe injection equipment that a country contributes through co-procurement. This rises over time as the country's economy grows.

Self-financing: countries are described as self-financing when they cover the full cost of a vaccine or programme.

Transitioning: the process by which a country prepares to leave Gavi support. Transitioning countries work towards paying for and procuring their own vaccines over a five-year period. Previously called "graduation".

Gavi's co-financing model



A landmark year for co-financing

2015 was our most successful year to date in terms of co-financing, a culmination of remarkable progress by countries across the 2011–2015 strategic period. By the end of the year, 14 countries had taken over full financing of 20 vaccine programmes previously supported by Gavi. Four of these countries – Bhutan, Honduras, Mongolia and Sri Lanka – were poised to transition out of Gavi support by 1 January 2016. In total, countries contributed US$ 113 million to the cost of Gavi-supported programmes in 2015 – a more than threefold increase since 2010.

Despite growing co-financing requirements, more countries made their contributions on time in 2015: 85% made timely payments, compared with 75% in 2014. This translates into a 40% reduction in the number of defaulting countries, from 17 in 2014 to 10 in 2015. These achievements reflect both countries' commitment to investing in vaccines and the value of the support and follow-up provided by Gavi and its partners during the transition period. Despite this progress, we did not achieve our ambitious target of 100% timely co-financing payments.

As shown below, countries are stepping up their total spend on vaccines, in which Gavi co-financing plays a part. The total amount spent on vaccines per child in Gavi-supported countries increased by 47% between 2013 and 2014, from US$ 4.30 to US$ 6.30. The 2015 figure will be available in October 2016.

Country investment in vaccine per child

Average expenditure per child (US$)



Sources: WHO/UNICEF Joint Reporting Form; Gavi Annual Progress Reports; Gavi's Adjusted Demand Forecast; UNPD data

Timely fulfilment of co-financing

Percentage of countries



Sources: UNICEF Supply Division, the PAHO Revolving Fund and invoices from self-procuring countries

Avoiding vicious cycle of missed payments

Of the 10 countries that defaulted on their 2015 payments, 6 had also defaulted the year before. Vaccine Alliance partners have started to work more intensively with defaulting countries to agree budgets and payment plans and thus avoid a vicious cycle of missed co-financing commitments.

Under an innovative new scheme, set up by UNICEF's Supply Division, defaulting countries are able to buy the vaccine doses they need without having to pay for them before submitting a purchase order. These "pre-financing" arrangements give countries more time to resolve cash flow issues and help to prevent vaccine stock-outs.

Angola and the Congo, defaulters in both 2014 and 2015, had fully paid their co-financing contributions by mid-2016, with the Congo also covering its 2016 contribution in advance. While the two countries continue to face significant challenges to their scheduled transition at the beginning of 2018, this is a positive first step. By mid-2016, 8 of the 10 defaulting countries had paid their 2015 arrears.

New policies for co-financing, eligibility and transition

Our revised policies for co-financing, eligibility and transition were approved by the Board in June 2015, and came into force in January 2016. The new policies will support our 2016–2020 strategy by adopting a broader approach to sustainability. This recognises the need to integrate sustainability into our engagement with countries right from the start of our support.

The new **co-financing policy** will help countries prepare for phasing out Vaccine Alliance support in a more sustainable way. For instance, by tying co-financing levels to vaccine prices in the preparatory transition phase, policy-makers will be more aware of the cost implications of their vaccine choices and will be able to budget and plan at an earlier stage.

In order to avoid a vicious cycle of default, defaulting countries will no longer be required to pay both their previous co-financing arrears and their current co-financing commitment in the same year. Instead, Gavi and the country will agree on a payment plan – giving the country the opportunity to pay in tranches – which allows the vaccine programme to continue while the country gets back on track.

The new **eligibility and transition policy** introduces two additional years of transition for countries whose GNI has risen exceptionally fast, to give them ample time to phase out our support. Going forward, Gavi eligibility will be determined by a three-year average of the per capita GNI, rather than just the latest annual estimate. This will help ensure that a country's timeline for transition is not determined by temporary upswings in the national economy.

In addition, countries with a basic immunisation coverage of less than 90% will be able to apply for Gavi health system strengthening support during the transition phase, to ensure that their programmes will be sustainable in the long term.

THE TRANSITION TO **SELF-FINANCING**

On track to transition: Laying the groundwork in Georgia
p54-55

First four countries transition out of Gavi support

In January 2016, four countries, Bhutan, Honduras, Mongolia and Sri Lanka, started fully self-financing all vaccines introduced with Gavi support – a sign that our catalytic model is working well. All four have successfully achieved high levels of routine immunisation coverage.

Not only are these four countries on track to fully finance their existing vaccines, but they are also starting to independently add new vaccines to their immunisation programmes. Mongolia fully financed its pneumococcal vaccine introduction in June 2015, at the set price of no more than US$ 3.50 per dose available through Gavi's Advance Market Commitment (AMC). Honduras and Sri Lanka are planning to introduce human papillomavirus (HPV) vaccines in 2016 with catalytic support from Gavi.

Experience has taught us that early engagement with countries leads to better results. In 2015 we continued to work with countries to develop comprehensive transition plans prior to their progression to the accelerated transition phase. Where possible, these efforts are combined with joint appraisals to reduce the reporting burden on countries. By the end of the year, we had supported 15 countries to develop such plans.

Principles of successful transition

Country ownership: helping countries take responsibility for vaccine financing from the onset of our support. This is critical to ensuring a successful transition to self-financing.

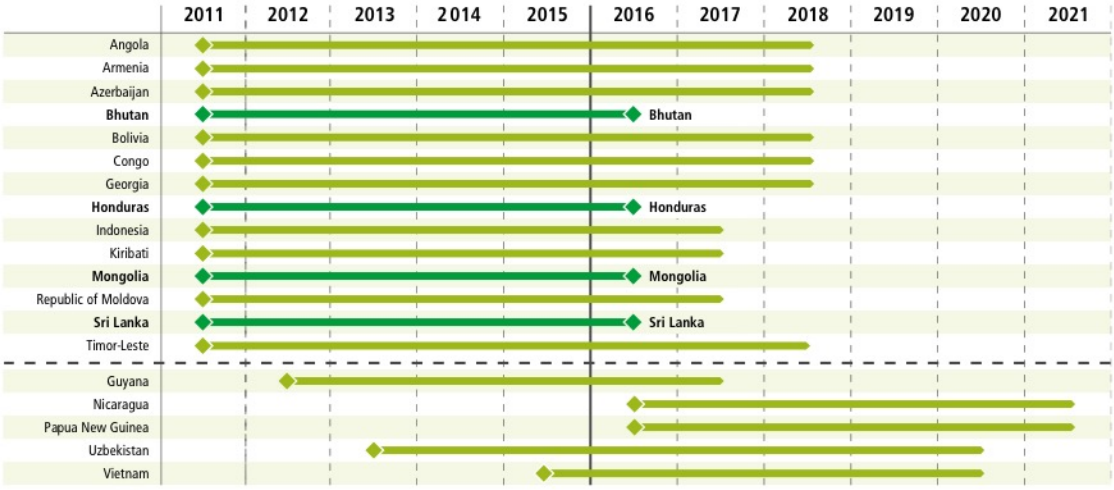
Early engagement: starting preparations earlier, when a country is still in the initial self-financing stage (previously the "low-income" stage), to ensure better results further down the line.

Progressive realisation: understanding that different transition stages require different interventions and engagement, all of which should be mutually supportive and timely.

Systematic assessment: providing an integrated framework to identify strengths, weaknesses, opportunities and threats to successful transition. This approach allows country tailoring, which is vital since not all countries will follow the same transition path.

Timeline: two waves of countries transitioning out of Gavi support

Green line represents the transition phase for vaccine support (status as of 31 December 2015)



Source: Gavi, the Vaccine Alliance, 2015

Cuba and Ukraine, which do not receive vaccine support will also transition from Gavi support in 2016.
As per the new co-financing and eligibility policy approved by the Board in June, Nicaragua and Papua New Guinea have been given one additional year in the preparatory transition phase.

HONDURAS: TRANSITIONING INTO TOMORROW

> I think vaccines are the only tools you really have control of, that you can give to a person and be sure they'll prevent disease.

Minister Yolani Batres
Secretary of State at the Bureau of Health, Honduras

Minister Yolani Batres became the Secretary of State at Honduras's Bureau of Health in January 2014. Since then, controlling, eliminating and eradicating vaccine-preventable diseases and introducing new vaccines have been key priorities for her. We talked to Dr Batres, who is also a Gavi Board member, about her country's transition out of Gavi support and what the future holds.

Gavi: Could you describe the situation in Honduras today, Dr Batres?

Dr Yolani Batres (YB): Honduras has improved economically. Now we're being looked at in the same way as Mexico, Brazil, Colombia and Argentina. These countries have greater resources than us, so in one way we're at a disadvantage.

In terms of vaccination, our coverage is above 95% and we're happy. It tells us our workers are doing the best for our children.

How does Honduras look at the rest of the world?

YB: Honduras is outward-looking. If we see something good that another country is doing, especially in the area of health, we always want to imitate it.

How long has Honduras worked with Gavi?

YB: Since 2004.

How would you describe the relationship with Gavi?

YB: Gavi respects our politics, programmes and laws. We've worked shoulder to shoulder and learned a lot. Now we have transitioned from Gavi but have the possibility to maintain the prices of vaccines so we can protect our people. We also want the chance to buy new vaccines at Gavi prices.

In transitioning, what were the challenges specific to Honduras?

YB: Our challenge was to achieve the highest possible level of coverage and maintain it. We also had to negotiate with Gavi to maintain current prices for vaccines and have the possibility to introduce new ones.

What factors made it possible for Honduras to transition?

YB: It's a tough process. We've succeeded because of strict planning and very good programming. We also passed a law in 2013 guaranteeing that all children have free access to vaccines. But we have to remember that, as a developing country, we have limited finances.

Now that Honduras has transitioned successfully, what advice would you give to countries that are about to start the same process?

YB: Any country's aim has to be to achieve financial sustainability. You can only do this by involving your ministry of finance as early as possible. Include them in discussions and make sure they understand the part they need to play. This is key.

Insisting the Ministry of Health does the necessary planning years, and not months, before transitioning is also essential. Transition can be a very long and challenging process.

What does the immediate future look like for Honduras? What work has to be done right away?

YB: The future looks good. What we have to do immediately is try to maintain vaccine prices not just for five years but for longer. We also need to keep Honduras in a position to be able to afford new vaccines.

And what is your long-term vision for Honduras?

YB: I want to maintain coverage above 95% in all cities, districts and rural areas and continue to use vaccines against preventable diseases.

How would you suggest that other transitioning countries work with Gavi?

YB: As I said, stick to a planned, programmed process. Negotiate with your ministries of health and finance. Reach out to people at the highest possible levels. For instance, we have a great relationship with our President Hernández. He's very switched on and wants even more vaccines, for things like dengue and malaria.

Now that Honduras has transitioned successfully, what relationship does your country have with Gavi?

YB: It's very good, for me personally and my country. Gavi listens, and respects our needs, culture, laws and ideas.

Why do you do what you do?

YB: I like working in health prevention, on preventable diseases. As a doctor, I think vaccines are the only tools you really have control of, that you can give to a person and be sure they'll prevent disease.

Also, I had polio when I was 11 years old. This makes me very aware of what can happen when you live in a rural area and don't have access to vaccines. I want to make sure this doesn't happen to other children. And I want to bring awareness of how hard life can be in a country like Honduras to people in richer countries.

Most of all, though, I want to build on the good things we've done and give my country even better possibilities to grow.

How would you describe the character of Honduras in one word?

YB: Humble.



Nurse speaks with a mother and her daughter before administering vaccines

Gavi / 2013 / Alazz Alzain





ON TRACK TO TRANSITION: LAYING THE GROUNDWORK IN GEORGIA

In 2017, after 15 years of Gavi support, Georgia will take on full responsibility for financing all of its vaccines. The country is well prepared and firmly on the road to transition. In 2016, Georgia received Gavi support for just one vaccine, pneumococcal, and independently financed the introduction of a new hexavalent vaccine. Five individuals – all working at the frontline of immunisation – explain what lies behind Georgia's success.

TRANSITION TIMELINE

1991	Georgia declares independence after break-up of the Soviet Union
1993–96	Diphtheria epidemic
2002	Gavi support begins with introduction of hepatitis B vaccine
2008	Vaccine hesitancy crisis undermines measles-rubella campaign
2009	Switch to pentavalent (5-in-1) vaccine
2011	Strong economic growth means that Georgia joins first wave of countries planning to transition out of Gavi support
2013	Rotavirus vaccine introduced with Gavi support
2014	Pneumococcal vaccine introduced with Gavi support; Georgia draws up transition action plan
2015	Georgia independently introduces a new hexavalent (6-in-1) vaccine
2016	Georgia takes over full funding of the rotavirus vaccine, leaving just one vaccine supported by Gavi, and also launches mobile app reminding parents of their children's vaccination schedule
2017	Georgia expected to transition out of all Gavi support

PRIORITISATION



Valeri Kvaratskhelia,
Georgia's Deputy Minister for Labour, Health and Social Affairs

Nothing underscores Georgia's commitment to transitioning out of Gavi support more than its recent programme of healthcare reform. By the end of 2017, the Government aims to be in a position to provide each of its citizens access to a primary healthcare centre.

"Immunisation is effective in countries where the primary healthcare system works well," says Valeri Kvaratskhelia, Deputy Minister for Labour, Health and Social Affairs, "In 2018, every little settlement, every village will have its own functioning primary healthcare centres."

Since 2013, Georgia's public health budget has almost doubled, ensuring universal health coverage for all citizens. "Immunisation has been given a high priority by the Ministry of Health and by the Government," says Kvaratskhelia, "Over the next two years, the state will continue to increase its share in purchasing vaccines so that by 2018 we are fully ready to cover all the costs."

MONITORING



Nana Jintcharadze,
regional immunisation manager, Adjara Region

Georgia's commitment to immunisation stretches all the way to the tiny villages which lie deep into the mountainous region of Adjara. Nana Jintcharadze and her team are responsible for delivering vaccines across this large area, where heavy snowfall can make it difficult to reach communities for up to 6 months of the year.

"When I started 18 years ago, there were many children around here who were unvaccinated," says Jintcharadze, the regional immunisation manager. "I remember we had an outbreak of diphtheria, and we were bringing people in off the street to test them. Now we see no diphtheria at all."

The nation-wide introduction of a regional immunisation registry in September 2013 has helped transform coverage rates in Adjara and is the single biggest reason why Nana and her team can keep tabs on the immunisation status of almost every child in the region.

"All family doctors were taught to fill in details about children – their name, surname, age, what type of vaccines they were given, when and in what dosage, as well as the doctor's name," she says.

"I can check how many children were vaccinated and calculate how many vaccines were used in that day or month. I also come to clinics every month to double-check that the electronic data and the clinic journal match, so there is no risk of making any kind of mistakes. The system also allows us to see which doctors are having difficulties so we can help to solve them."

BUDGETING



Ekaterine Kavtaradze,
deputy general director of the National Center for Disease Control and Public Health

When Georgia announced its plan to introduce the inactivated polio vaccine, parents signalled their preference for the 6-in-1 hexavalent vaccine over a separate vaccine for administering the polio antigen to their children. Ekaterine Kavtaradze, the deputy general director of the National Center for Disease Control and Public Health (NCDC), helped the health ministry convince the Government and Parliament to increase the immunisation budget by 40% to ensure universal access to the multivalent vaccine.

"It was a very big step for the budgeting process," recalls Kavtaradze, "we collaborated very closely with the health ministry and the Georgian Parliament, presenting evidence to demonstrate the importance of the hexavalent vaccine programme."

"When the Minister of Finance presented the budget to Parliament, he agreed to allocate the amount that the health ministry requested. It was a huge collective achievement that we managed to convince all the decision-makers that we should always give priority to budgeting for the national immunisation programme."

PREPARATION



Tamar Uglava,
health specialist, UNICEF Georgia

In 2008, Georgian parents were alarmed by a series of misleading media reports that linked measles and rubella vaccines to unwelcome side-effects. Widespread vaccine hesitancy meant that a measles and rubella immunisation campaign only achieved a 50% coverage rate. This experience marked a turning point in the Georgian Government's approach to immunisation.

"Following the events in 2008, we conducted several surveys showing that the most effective channel for communication with parents was doctors," says Tamar Uglava, a health specialist at UNICEF's Georgia office.

"We worked with the Government to deliver training for health professionals to address the specific concerns of the population transferring knowledge, presenting case studies and helping them to do role play. As time has gone on, we really have seen commitment from the Government in this field."

ADVOCATING



Amiran Gamkrelidze,
director general of the National Center for Disease Control and Public Health

The 2008 vaccine hesitancy incident highlighted the need for public health education campaigns to reinforce the message about the benefits of routine immunisation.

"The role of advocacy campaigns is huge. So speaking as much as possible in the media, on television and in newspapers, is very important," says Amiran Gamkrelidze, director general of the National Center for Disease Control and Public Health, "We must explain to the population that vaccination is the most significant intervention ever in the history of public health."

In 2015, Georgia developed a mobile phone application to keep parents and other caregivers informed about vaccination schedules and track the vaccines that their child has received. The app also provides easy-to-access information about vaccines and the diseases they are intended to prevent.

"Immediately after a baby is born, the mother receives this application free of charge," says Gamkrelidze, "They will get an SMS reminding them when they should go for the next vaccine to their primary healthcare doctors."

FUNDING FROM DONORS AND INVESTORS

Unprecedented achievement

By the end of the year Gavi had secured full funding for the 2011–2015 strategic period, with all pledges successfully delivered – an exceptional feat for a multilateral development agency.

By the end of 2015, cumulative funds received by Gavi since its inception in 2000 totalled US$ 12 billion. This includes contributions from national donor governments, the European Commission, the Bill & Melinda Gates Foundation and the private sector.

Most pledges in this period were in the form of multi-year commitments. Long-term funding means that developing countries can confidently plan their vaccine programmes and manufacturers, given assured, visible demand, are better able to invest in production, as well as reduce vaccine prices. A strong capital base also gives Gavi the flexibility to respond to urgent needs, such as the global roll-out of inactivated polio vaccine and the devastating Ebola epidemic.

Donors can support Gavi both directly and through funding mechanisms such as the International Finance Facility for Immunisation (IFFIm), the Advance Market Commitment (AMC) and the Gavi Matching Fund. In 2015, total donor funding in the form of direct contributions and proceeds from these three innovative finance mechanisms amounted to US$ 1.7 billion.

Direct contributions in 2015: nearly US$ 1 billion from 14 donor governments

In 2015, we received close to US$ 1 billion in direct contributions from 14 donor governments: Australia[a], Canada, France, Germany, India, Ireland, Japan, Luxembourg, the Netherlands, Norway, the Republic of Korea, Sweden, the United Kingdom (UK) and the United States of America (USA).

The cumulative value of direct contributions received from national governments and the European Commission since Gavi was set up in 2000 amounts to US$ 6.1 billion.

Signed grant agreements versus total pledges

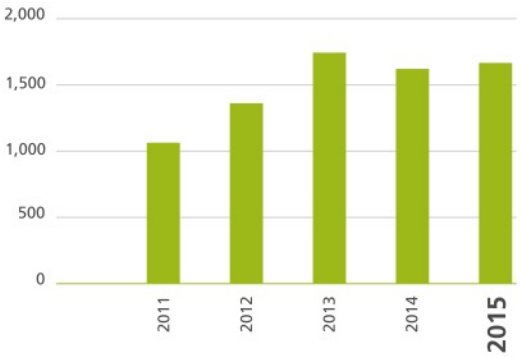
(US$ millions)



Source: Gavi, the Vaccine Alliance, 2016

Contributions pledged to Gavi and IFFIm

(US$ millions)



Source: Gavi, the Vaccine Alliance, 2016

[a]Australia's contribution was paid in 2014.

> Today's conference is an important milestone in the work of Gavi for the next few years to come.
>
> **Dr Angela Merkel**
> Federal Chancellor, Germany

Over US$ 7.5 billion pledged for 2016–2020 period

Our January 2015 pledging conference, held in Berlin and hosted by Chancellor Angela Merkel as part of the German G7 presidency, mobilised over US$ 7.5 billion in additional funding for the 2016–2020 strategic period. These bold commitments lay the foundation for immunising an additional 300 million children in the next five years.

Through the 2015 replenishment, we also managed to significantly widen our donor base. We welcomed four new government donors – China, Oman, Qatar and Saudi Arabia – who made pledges to Gavi for the first time. With China's contribution, we have now received pledges from all the BRICS countries (Brazil, Russian Federation, India, China and South Africa) and made important inroads into the Group of 20 (G20) countries. The new pledges also underline these countries' growing commitment to South–South collaboration.

Compared with the 2011–2015 period, some donors doubled or even tripled their contributions, a reflection of their confidence in our public-private partnership model. The contributions were also more evenly distributed. At our previous pledging conference in 2011, three donors pledged close to 70% of the total amount; another nine contributed 30%. In contrast, in Berlin our top-three donors pledged approximately half the total amount, with the next nine donors contributing nearly 50%.

Other welcome developments in 2015 include a new partnership between Agence Française de Développement, the Bill & Melinda Gates Foundation and Gavi, which was signed in June 2015 and aims to help boost vaccine coverage in Africa's Sahel region over the next five years. The three-way financing agreement will facilitate the introduction of new vaccines and strengthen health systems in six French-speaking countries in the region – Burkina Faso, Chad, Mali, Mauritania, the Niger and Senegal – and thus make an important contribution to regional health security.

German Federal Chancellor Angela Merkel addresses the Gavi pledging conference in Berlin

Gavi / 2015 / Oscar Seykens



INNOVATIVE FINANCING

> We encourage consideration of how... the International Finance Facility for Immunisation might be replicated to address broader development needs.
>
> **The Global Community at the Financing for Development Conference**
> Addis Ababa, Ethiopia

IFFIm: a decade of innovative finance

2015 marked a decade of Gavi's first innovative finance mechanism, the International Finance Facility for Immunisation (IFFIm). Over the past 10 years, IFFIm has leveraged long-term donor pledges to issue and sell vaccine bonds in the capital markets. 2015 was a landmark year, as the mechanism expanded its presence in emerging markets while continuing to demonstrate the strength of the partnership.

Following its 2014 success, IFFIm launched a second sukuk in 2015, a financial certificate that complies with Islamic law, raising US$ 200 million. This boosted our efforts to engage with donors and other partners in the Middle East.

By the end of the year, IFFIm had disbursed US$ 2.5 billion to support Gavi-funded immunisation programmes.

IFFIm's critical role in Gavi's success was again in evidence at the Berlin pledging conference. Additional pledges totalling approximately US$ 280 million were made by the governments of France (€150 million), the Netherlands (€60 million) and Australia (A$ 37.5 million) to support immunisation through IFFIm until 2020 and beyond. These pledges, combined with existing resources, will allow IFFIm to provide Gavi with approximately US$ 1.3 billion for the 2016–2020 period.

Since 2006, Australia, France, Italy, the Netherlands, Norway, South Africa, Spain, Sweden and the UK have all contributed to IFFIm.

Transforming the future of innovative finance

IFFIm reached another milestone in July 2015 when it was recognised at the International Conference on Financing and Development, held in Addis Ababa, Ethiopia. World leaders endorsed the Action Agenda, which highlighted IFFIm as an example of effective, innovative finance that could be replicated for other global development causes.

IFFIm's contributions to development were also acknowledged with several awards in 2015, including "Achievement in Transformational Finance" from the *Financial Times*, and *Euromoney*'s prize for "Innovation in Islamic Finance".



IFFIm has disbursed US$ 2.5 billion to support Gavi: vaccination session in Kinshasa, Democratic Republic of the Congo

Gavi / 2015 / Phil Moore

AMC: a game changer in global health

No single initiative has played a greater role in increasing access to pneumococcal vaccines in the world's poorest countries than the Advance Market Commitment (AMC). Launched in 2007, it has proven to be a game changer in global health by accelerating the introduction of new vaccines at reasonable prices.

Prior to the AMC it took more than a decade, on average, for the first children in the lowest-income countries to access the same, effective vaccines as children in rich countries. Through the AMC's unique approach, developing countries were able to access the pneumococcal vaccine less than 12 months after it was developed, and at a fraction of the price paid in high-income countries.

A recent independent evaluation recognised these achievements, and acknowledged the AMC's lead role in reducing mortality and morbidity by increasing access to the pneumococcal vaccine in developing countries. However, the evaluation found that while the AMC had helped to increase available supply of the vaccine, it had not managed to accelerate the development of new products. Nevertheless, it is expected that by 2020 nearly 1 million future child deaths will have been prevented thanks to the AMC.

By the end of 2015, 54 countries had introduced Gavi-supported pneumococcal vaccines as part of their routine childhood immunisation schedules – meaning that the Vaccine Alliance surpassed its 2015 target. Donors have contributed a total of US$ 1.1 billion in AMC funds via the World Bank, while an additional US$ 0.4 million is pledged for future Gavi-supported programmes.

The AMC model has proved so successful that it is now being considered as a tool to help spur innovation and build sustainable markets in other sectors, including agriculture and climate change.

How the AMC works

Manufacturers participating in the AMC must provide vaccines that offer protection against the most deadly pneumococcal disease strains prevalent in Gavi-supported countries.

The pneumococcal AMC uses donor commitments to incentivise production of pneumococcal vaccine for use in developing countries. Manufacturers, guaranteed a set price for a share of the doses sold through the AMC, enter into legally-binding commitments to supply the vaccine to developing countries for at least 10 years at a fraction of the cost paid by high-income countries.

Canada, Italy, Norway, the Russian Federation, the UK and the Bill & Melinda Gates Foundation have collectively pledged US$ 1.5 billion towards the AMC for pneumococcal vaccines.



Pneumococcal vaccine vial; the vaccine has been introduced in more than 50 countries thanks to the AMC

Gavi / 2013 / Bart Verweij

PARTNERING FOR IMPACT WITH THE **PRIVATE SECTOR**

Centre of Excellence for supply chain managers: a "STEP" in the right direction **p62-63**

Cash and collaboration save lives

Collaboration with the private sector has been essential to the Vaccine Alliance since our inception, when we partnered with vaccine manufacturers to provide a secure supply of vaccines at affordable prices to developing countries. In 2015, foundations, private individuals and organisations contributed a total of US$ 273 million to Gavi.

With the 2011 launch of the Gavi Matching Fund, we accelerated our private sector engagement. This financing mechanism not only doubled the impact of private sector contributions, but also helped to attract new investment in immunisation. Since then, our collaboration has extended beyond financial contributions to embrace mutually beneficial partnerships, leveraging private sector know-how to achieve our mission.

In 2015, Gavi focused on expanding its existing partnerships, while also seeking new private sector expertise and innovation in areas such as supply chain and demand generation.

At the Berlin pledging conference in January, we welcomed new partnerships with logistics leaders **United Parcel Services (UPS)** and the **International Federation of Pharmaceutical Wholesalers (IFPW).** Working with other Vaccine Alliance partners, such as UNICEF, these two organisations applied their expertise in supply chain management to help develop a training and mentoring programme for immunisation supply chain leaders at the University of Rwanda. The programme includes scholarships funded by the IFPW, as well as executive-level courses developed by UPS.

Gavi's supply chain work was further strengthened through our partnership with **The ELMA Vaccine and Immunization Foundation** to pilot a Supply Chain Fund (SCF). The SCF is a rapid response mechanism, designed to help countries faced with unexpected bottlenecks in their immunisation supply chain and no available funding to address them. ELMA's support, which was matched by the Gavi Matching Fund, has already made an important difference in Cameroon, Guinea-Bissau, Mali and the Niger. It has also played a key role in helping Gavi design its new cold chain equipment optimisation platform.

The Gavi Matching Fund

The Gavi Matching Fund, launched in 2011 by the Bill & Melinda Gates Foundation and the UK Department for International Development, matches private sector contributions in cash or in kind. In 2015, the Gates Foundation renewed its commitment to the Gavi Matching Fund, joined by the Netherlands, through to 2020.

Contributions through the Gavi Matching Fund, including matches, totalled US$ 210 million over the 2011–2015 period. Overall, the private sector now ranks among Gavi's top-15 donors.

"la Caixa" is one of Gavi's longest-standing private sector partners. The "la Caixa" Foundation raises funds and awareness for immunisation through its employee giving programme and its innovative Business Alliance for Child Vaccination, which draws contributions from more than 400 Spanish companies in support of Gavi programmes. In 2015, our partnership expanded to include a new campaign: "1=4, your donation is worth 4 times more", to mobilise the Spanish public and companies to donate to Gavi.

Lions Clubs International Foundation's (LCIF) innovative partnership with Gavi blends financial support with in-country advocacy and social mobilisation to strengthen measles and rubella programmes. LCIF's financial support of US$ 7.5 million in 2015, coupled with contributions to the Gavi Matching Fund, meant that approximately 2.5 million children in eight countries could be immunised against these diseases.

LCIF also supported measles-rubella campaigns in Nigeria and Zimbabwe through social mobilisation efforts, helping to increase demand for these critical vaccination campaigns.

Building upon its strong support for Gavi in the UK, **Comic Relief** launched its first ever **Red Nose Day** in the USA in 2015. This successful event secured significant funding for and awareness of Gavi-supported immunisation programmes among a new audience. Comic Relief raised over US$ 23 million in the United States, of which more than US$ 1 million was used to help fund Gavi-supported pentavalent vaccine programmes in Malawi and Mozambique.

> We look forward to sharing our industry's knowledge, expertise and resources with Gavi and its partners to strengthen developing countries' medical supply chains.
>
> **Ornella Barra**
> Chair, IFPW, and Co-Chief Operating Officer, Walgreens Boots Alliance

Another 2015 highlight was our collaboration with the **Children's Investment Fund Foundation (CIFF),** which helped finance human papillomavirus (HPV) vaccine introductions and demonstration projects in 16 sub-Saharan African countries. CIFF's contribution will be critical for Gavi-supported countries to reach 30 million girls in 40 countries with HPV vaccine by 2020. We also continued to leverage our partnership with **LDS Charities,** which supported yellow fever and pneumococcal vaccine programmes in Africa. Both of these partnerships bring vital resources and visibility to immunisation efforts across several Gavi programmes.

New and innovative approaches are critical to improving immunisation coverage and equity – the key focus of our next five-year strategy. By maximising synergies with the private sector we aim to drive innovation, cut costs and increase operational efficiency to achieve our mission. As more countries transition out of Gavi support, private sector collaboration with government leaders is also becoming increasingly important to ensure the long-term sustainability of national immunisation programmes.

In 2015, pledges and contributions were received from these private sector partners:

- The Bill & Melinda Gates Foundation
- The Children's Investment Fund Foundation
- Comic Relief
- "la Caixa" Foundation
- LDS Charities
- The Lions Clubs International Foundation
- The A&A Foundation



Children in a rural community of Ghana receive vaccinations during a monthly health clinic

CRS / 2013 / Laura Elizabeth Pohl

CENTRE OF EXCELLENCE FOR SUPPLY CHAIN MANAGERS: A "STEP" IN THE RIGHT DIRECTION



United Parcel Service (UPS), a global logistics company whose business it is to deliver packages to the far flung corners of the world, offers some potentially life-saving lessons to immunisation supply chain managers in developing countries.

When vaccines arrive in a developing country, their safe consignment to clinics and outreach centres – some of which are located in extremely remote areas – lies in the hands of a few dedicated health care workers. Specialised supply chain management training is rarely offered to staff responsible for the safe keeping and delivery of vaccines – that is until global logistics leader, United Parcel Service (UPS), offered a course at the recently opened Regional Centre of Excellence for Vaccines, Immunisation and Health Supply Chain Management in Kigali.

"While hardware, infrastructure and technology are important, the successful implementation and management of the supply chain relies on strong managers," says Kevin Etter, a UPS logistics executive. "Developing dedicated and competent leaders and skilled, motivated and empowered personnel at all levels of the health system is critical."

After introducing more than 100 new vaccines in the past five years, Africa's supply chains are stretched to maximum capacity. Distribution managers – from large central depots and small local warehouses alike – need higher levels of expertise to hone their skills. Gavi's partnership with UPS was set up in 2014 with the express purpose of drawing on the company's 100 years of experience in logistics to help improve the efficiency of developing countries' vaccine supply chains. "UPS has a long history of innovative management development programmes and we are honoured to share some of our best practices with Gavi," says Etter.

Between 2015 and 2020, Gavi and UPS expect to train 200 supply chain managers at the Centre of Excellence, which has the potential to become a regional hub for education and innovation. In addition to a traditional classroom experience and distance learning, course participants are paired up with mentors from UPS and AmerisourceBergen, a member firm of a second Gavi private sector partner, IFPW – see "Prospectus" insert. With this expert guidance, they are able to put their new skills into practice, as well as build a network of co-leaders to share knowledge.

"We presented a very non-traditional training experience," says Etter. "Participants were very excited to learn in a new way and then to implement those learnings in their areas of responsibility."

One of STEP's first graduates, Lucy Kanja, a vaccine depot manager at Dagoretti in Nairobi County in Kenya, is already applying what she has learned. "At Dagoretti, there's a high turnover of workers and I used to wonder how we could keep everything going," she says. "At STEP, I learnt about team building and how to attract and retain top talent. Today, I am mentoring three health workers. I teach them supply chain skills that help ensure effective vaccine management."

Operations director, Joshua Obel, has returned to his office at the Kenya Medical Supplies Authority (KEMSA) convinced that the training course is a "STEP" in the right direction toward countries' long-term goal of building self-sustaining immunisation systems. "I have been to a lot of trainings during my career and this is the only one that I will really be able to put into practice," he says.



A step in Kilifi's cold chain, Kenya

Gavi / 2014 / Duncan Graham-Rowe

CENTRE OF EXCELLENCE PROSPECTUS

Location: The East African Community (EAC) Regional Centre of Excellence for Vaccines, Immunisation and Health Supply Chain Management (RCESCM) is based at the University of Rwanda in Kigali. It brings together the Universities of Tanzania, Rwanda, Burundi, Uganda and Kenya to foster regional expertise in health supply chain management.

Founded: October 2015

Courses: Gavi/UPS Strategic Training for Executive Programme (STEP) offers training and postgraduate certificates for supply chain managers

Funders: The Bill & Melinda Gates Foundation; Gavi, the Vaccine Alliance; International Federation of Pharmaceutical Wholesalers (IFPW); KfW (a German Development Bank); UNICEF; United Nations Population Fund; United Parcel Service (UPS); WHO

IFPW is an industry association which represents over 30 companies from around the world including GlaxoSmithKline, Imperial Health Sciences and AmerisourceBergen. It has committed to providing technical expertise and US$ 1 million in funds to the Centre to support seven Masters' level scholarships and provide the quality of staff needed to help the Centre achieve its vision.

WHAT ALUMNI SAY



Name: **Lucy Kanja**
Position: Vaccine depot manager at Dagoretti in Nairobi County

"In the hard-to-reach areas, there's a high turnover of workers and I used to wonder how we could keep everything going. At STEP, I learnt about team building and how to attract and retain top talent. Today, I am mentoring three health workers. I teach them supply chain skills that help ensure effective vaccine management."



Name: **Joshua Obel**
Position: Operations director at Kenya Medical Supplies Authority (KEMSA)

"I'm using what I learnt at STEP to integrate vaccine delivery into the same supply chain used to distribute other medicines handled by KEMSA."

SHAPING VACCINE MARKETS

Key market shaping targets met or exceeded

Cost of pentavalent, pneumococcal and rotavirus vaccines significantly reduced

Fast-tracked development of Ebola vaccine

Strong collaboration with partners means a new Ebola vaccine will be available for emergency use from mid-2016

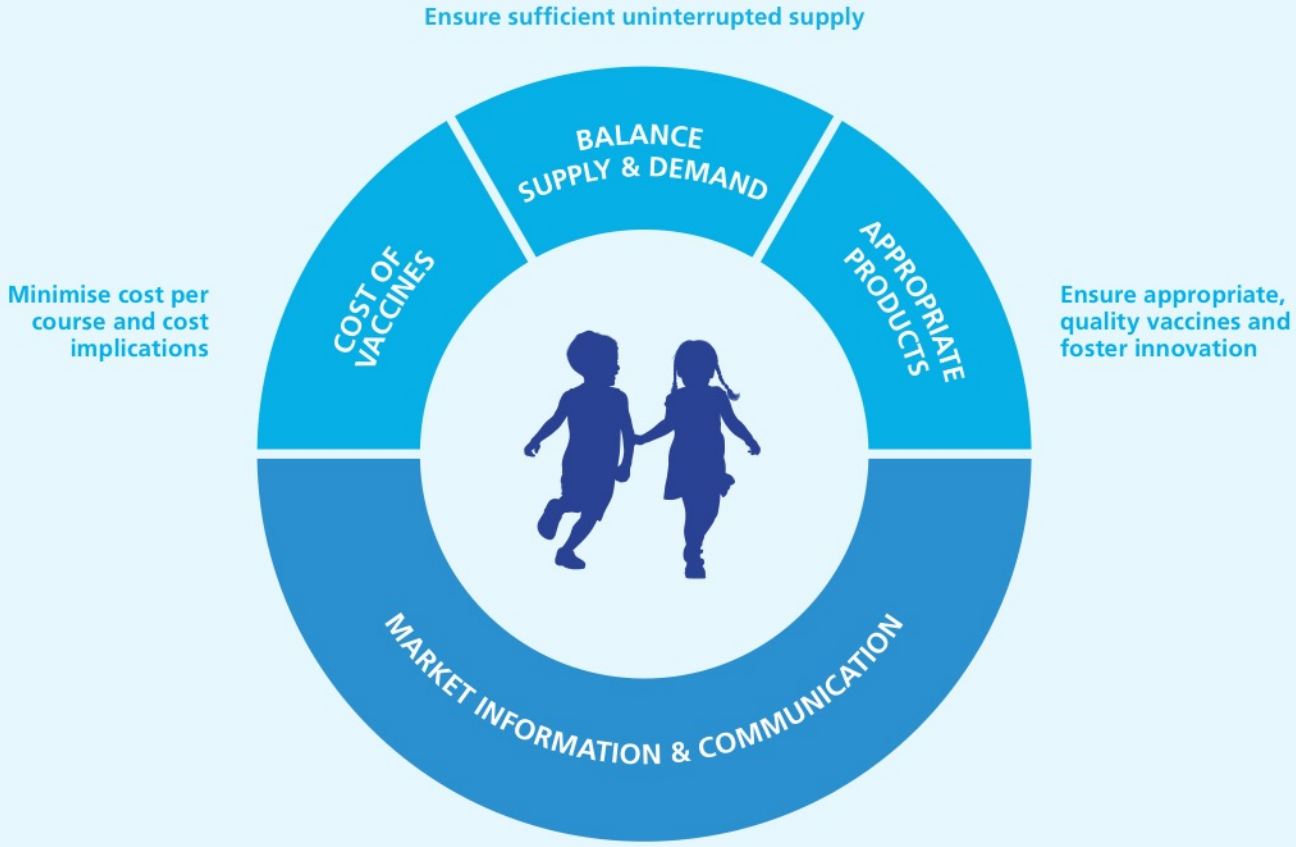
Widened scope for Gavi's market shaping work

New cold chain equipment optimisation platform extends market shaping model to immunisation-related products

> In vaccines, from those people who work at the most local level to those people who develop, who invent, who create vaccines, we all have the power to change the world.

Prof. David Salisbury
Chair, Jenner Vaccine Foundation

How Gavi's supply and procurement strategy works



43% REDUCTION IN PRICE FOR PENTAVALENT, ROTAVIRUS AND PNEUMOCOCCAL VACCINES **2010–2015**

2001 5 VACCINE MANUFACTURERS IN 5 COUNTRIES

2015 16 VACCINE MANUFACTURERS IN 11 COUNTRIES

In order to reach all children with life-saving vaccines, vaccine markets need to be made to work better for lower-income countries. This means putting in place mechanisms that allow manufacturers to plan production based on known demand, donors to maximise their investments and, most importantly, developing countries to buy suitable vaccines at prices they can afford and to eventually transition out of Gavi support.

In 2015, Gavi achieved its market shaping goals for appropriate prices and improved supply security for many life-saving vaccines. However, supply shortages remain, particularly for yellow fever, cholera and inactivated polio vaccines.

Collaboration between Alliance partners and vaccine manufacturers led to the launch, in January 2016, of an advance purchase commitment for Ebola vaccine. Thanks to this commitment, 300,000 doses of the vaccine will be available from mid-2016 for use in clinical trials and emergencies.

During 2015, plans to expand Gavi's market shaping work took a step closer to fruition. In the next five-year strategic period, 2016–2020, our market shaping goals will extend beyond vaccines to include other immunisation-related products, such as cold chain equipment.

SHAPING VACCINE MARKETS

Working together for healthy vaccine markets

Our goal is to immunise more children against preventable diseases while ensuring that vaccines are safe and effective and vaccine wastage and supply chain costs are kept to a minimum. Healthy vaccine markets help us to achieve that goal.

We use a number of criteria to define the health of vaccine markets. These include having sufficient supply of affordable, high-quality vaccines to meet countries' needs, a secure base of suppliers, and an environment that is conducive to product innovation and long-term competition.

Together with our market shaping partners, notably the Bill & Melinda Gates Foundation and UNICEF, we are committed to making vaccine markets work better and harder for the world's lowest-income countries. Aggregating demand and responding to countries' needs for appropriate and affordable vaccines is an important part of our business model. As we provide predictable funding and visibility on long-term demand from countries, manufacturers are better able to plan and invest in production. We also encourage manufacturers to offer tiered pricing, whereby prices are set according to countries' income levels, and we support innovation in formulations and packaging.

As we continue to expand our portfolio of vaccines and intensify our efforts to increase immunisation coverage and make it more equitable, the need for healthy vaccine markets is now more critical than ever.

Vaccine supply and procurement strategy

Gavi's strategy for vaccine supply and procurement, which has guided our market shaping work since early 2012, came to an end in December 2015. This strategy was focused on securing a sufficient and uninterrupted supply of vaccines, minimising vaccine costs, ensuring appropriate products and fostering innovation. Delivery of timely, transparent and accurate market information to all partners underpinned these objectives.

Thanks to strong collaboration with manufacturers and partners, in this period we helped to improve supply security and reduce prices in several key vaccine markets. We did this with the help of vaccine "roadmaps", which set out specific strategies and priorities for each market, as well as innovative procurement methods and strategic demand forecasts to ensure transparency and predictability of country demand.

Despite good progress, our work is far from done and there are still challenges to address. Not only has the vaccine market landscape evolved significantly since 2011, but our vaccine portfolio has doubled from 6 to 12 vaccines. Our response to these developments is a new supply and procurement strategy, which will direct our market shaping efforts in the 2016–2020 period.

The new strategy will focus on identifying and assessing key building blocks for healthy markets. This will include how well countries' preferences for specific vaccine presentations are being met or if there is sufficient competition in a market.

The strategy takes a long-term approach to shaping markets, focusing particularly on creating the conditions necessary for countries to successfully transition out of our support. It also defines a greater role for Gavi in product innovation.

The manufacturing base in 2015

16 manufacturers[a] in 11 countries of production

Gavi suppliers and manufacturers of prequalified, appropriate Gavi vaccines (parent companies in brackets):

Biological E
Bio-Manguinhos[c]
Chengdu Institute of Biological Products (China National Biotec Group)
Berna Biotech (Janssen/Johnson & Johnson)
Chumakov Institute
GlaxoSmithKline
Institut Pasteur Dakar
LG Life Sciences
Merck & Co.
Panacea Biotec
Pfizer
PT Bio Farma
Sanofi Pasteur
Shantha Biotechnics (Sanofi Pasteur)
Serum Institute of India
Bilthoven Biologicals (Serum Institute of India)



[a]Includes 15 Gavi suppliers and 1 manufacturer of prequalified Gavi vaccines.
[b]One US manufacturer also produces in the Netherlands.
[c]Manufacturers of prequalified, appropriate vaccines that did not supply vaccines to Gavi in 2015.

Note: country of production refers to the country hosting the national regulatory agency responsible for vaccine lot release.
Sources: UNICEF Supply Division; WHO list of prequalified vaccines

ENSURING SUFFICIENT, **UNINTERRUPTED SUPPLY**

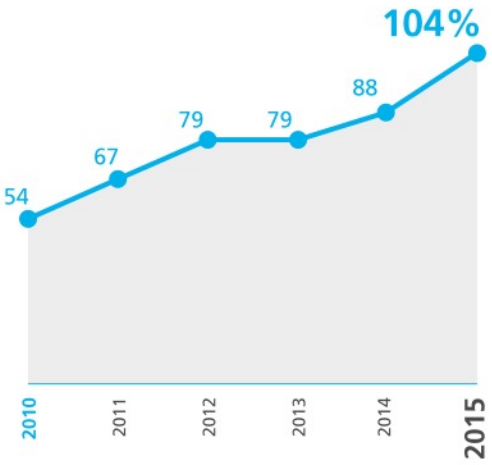
Efforts by Vaccine Alliance partners to foster healthy vaccine markets have led to increased competition and a more diversified manufacturing base. In 2001, there were only 5 Gavi vaccine suppliers; by the end of 2015, 16 manufacturers were producing prequalified vaccines suited to the needs of Gavi-supported countries.

Gavi currently measures supply security using an indicator based on the number of products that manufacturers offer in response to tenders for the vaccines we support. Between 2010 and 2015 the value of this increased from 54% to 104% of the target, meaning that we not only met our 2015 objective but surpassed it.

Another way in which we quantify supply security is by tracking the number of vaccines that fail to meet shipment plans agreed with UNICEF. Three inactivated polio vaccines were temporarily not available to meet shipments in 2015, along with four pentavalent vaccines and one yellow fever vaccine.

Security of supply

Number of products offered as % of 5-year target



Source: UNICEF Supply Division

Meningitis A vaccine

In December 2015, WHO prequalified a conjugate meningitis A vaccine for use in routine immunisation programmes aimed at infants. Prior to this, meningitis A vaccine was only prequalified for use in campaigns that target children and adults aged 1–29 years. Together with our partners, we moved forward with a forecasting and tender process that will enable countries to introduce this new vaccine as part of their national programmes from 2016 onwards.

Oral cholera vaccine

Earlier in the year, UNICEF concluded a tender for oral cholera vaccine. The supply shortage of this vaccine is beginning to ease, following WHO's prequalification of an additional oral cholera vaccine at the end of 2015. Addressing supply constraints in this market has been one of the key objectives of our investment in the global oral cholera vaccine stockpile, which is now starting to pay off.

Yellow fever vaccine

While the global supply of yellow fever vaccine is sufficient to cover routine immunisation and normal emergency response, it does not meet the needs for immediate preventive campaigns in all countries at risk. We anticipate that the situation will improve in the long term, as several manufacturers have invested in expanding their production, but much will depend on the course of the ongoing yellow fever epidemic. We are working with WHO to update the yellow fever control strategy; this will be presented to our Board in 2016.

Inactivated polio vaccine

Current supply shortages of inactivated polio vaccine (IPV) has meant that many countries were forced to postpone their plans to introduce the vaccine in 2015. Two manufacturers are supplying IPV to Gavi-supported countries; both have experienced delays in expanding their production due to technical issues. Supply is expected to remain constrained for the near future, and continues to negatively impact country introductions.



Nurse handles vials of polio vaccine in a newly opened health centre in the village of Mbankana, Democratic Republic of the Congo

Gavi / 2015 / Phil Moore

EBOLA VACCINE: RESTARTING THE PROCESS

As the Ebola epidemic swept across West Africa in 2014 and 2015, vaccine manufacturers stepped up their efforts to develop a safe, effective vaccine not only to control the existing outbreak but also to prevent future devastating epidemics. Although early-stage development of a vaccine to protect against bioterrorism threats had started more than a decade earlier, trials were stalled as there was no perceived market for such a product.

In the final days of 2014, however, the Gavi Board sent a clear signal to manufacturers that there was indeed demand, by committing up to US$ 300 million for Ebola vaccine procurement. An additional US$ 90 million was made available to help countries introduce the vaccine and rebuild health systems to bring immunisation levels back up in the aftermath of the crisis.

This support helped encourage manufacturers to invest in the accelerated development of candidate vaccines and begin advanced trials.

We were able to sign an advance purchase commitment with Merck, whose rVSV-ZEBOV vaccine was the most advanced of the candidates, in January 2016.

As a first step, 300,000 doses will be available from mid-2016 for use in emergencies and further clinical trials.

The advance purchase commitment will help create incentives for Merck to complete the development of its vaccine, and ultimately allow the creation of a stockpile against future outbreaks. Once the vaccine has been licensed and WHO recommended, it will be supplied to Gavi-supported countries at a not-for-profit price.

Because of the urgency of the outbreak, Merck worked with regulatory authorities and was able to develop the vaccine 10 times quicker than is normally the case. Other manufacturers, including GlaxoSmithKline (GSK) and Janssen have also engaged in fast-track development of their candidate vaccines in the wake of the outbreak.



Mohamed Melvim Conteh, 25 years old, received the Ebola vaccine as part of the ring vaccination campaign in Magburaka, Sierra Leone

Gavi / 2016 / Kate Holt

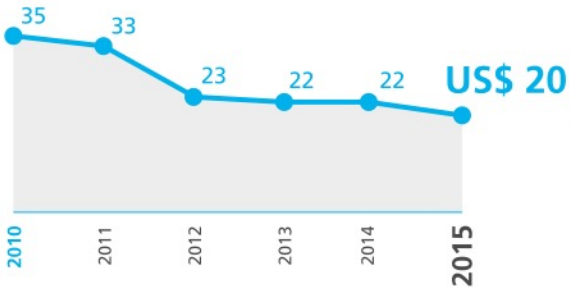
PARTNERING FOR APPROPRIATE, QUALITY VACCINES AND MINIMISING COST

Through its proactive market shaping efforts, Gavi has been successful in reducing vaccine prices for the world's lowest-income countries. The weighted average price of immunising a child with a full course of pentavalent, pneumococcal and rotavirus vaccines – one of our key performance indicators – fell to US$ 20 in 2015. This represents a decrease of 7% from 2014 and 43% from 2010.

Much of this is due to the reduction in the price of rotavirus vaccine, which has fallen by 70% since 2010, and the decrease in the price of the pentavalent vaccine, which reduced by 44% over the same period. The weighted average price of pneumococcal vaccine dropped by just 3% in the five years to 2015.

Total cost to fully immunise a child with pentavalent, pneumococcal and rotavirus vaccines

Selected vaccine package price (US$)



Source: Procurement partner manufacturer offers

During 2015, a number of manufacturers, including Biological E, GlaxoSmithKline, Janssen, Merck, Panacea Biotech, Pfizer, Sanofi Pasteur and Serum Institute of India, made welcome price announcements.

These commitments will help to secure the long-term sustainability of national vaccine programmes and ensure that transitioning countries have access to affordable vaccines after Gavi support ends.

In addition to tracking the total cost of immunisation with the three above-mentioned vaccines, we also monitor changes in the highest and lowest prices of all the vaccines we support. The most significant changes in 2015 were seen in the cost of pentavalent, rotavirus and Japanese encephalitis vaccines.

- The highest price paid per dose for pentavalent vaccine dropped from US$ 2.95 in 2014 to US$ 2.35 in 2015. This contributed to a 12% reduction in the weighted average price of the vaccine.
- Because of changing exchange rates, the lowest price per course of rotavirus vaccine (three-dose equivalent) fell from US$ 5.68 in 2014 to US$ 4.80 in 2015 leading to a 15% decrease in the weighted average price for the vaccine.
- Both the highest and lowest price per dose of Japanese encephalitis vaccine increased, largely because of the rising costs of goods. As a result, the weighted average price of the vaccine was 56% higher than it was in 2014.

On the upside, we saw a positive price trend for safe injection equipment, including autodisable syringes and safety boxes. These devices are vital to efforts to reduce the risk of infection and ensure that children receive their shots safely.

By bundling deliveries to countries, a new tendering approach adopted by UNICEF has helped to reduce the number of shipments of safety equipment by 30%. The weighted average price of the equipment also fell by 9%, with anticipated savings in the region of US$ 5.5 million. Other benefits of this new approach include a healthier and more reliable market for these products. At present Gavi funds more than 50% of all safe injection equipment procured through UNICEF.

SOLAR FUTURE SHINES ON HAITI'S COLD CHAIN





As the first country to be approved for Gavi's new cold chain equipment optimisation platform support, Haiti is poised to improve immunisation coverage.

Platon Malanga, in the west of Haiti, is at least 10 gruelling hours away from the nearest health centre by foot or on horseback.

Haiti is extremely poor; it simply doesn't have the money for new motorcycles or rough terrain vehicles which are what is needed to deliver vaccines to places like Platon Malanga. But when it comes to immunisation, by far the most pressing problem is not being able to pay for the propane gas that currently keeps the cold chain equipment running. This results in a considerable quantity of precious vaccines being wasted through temperature damage.

As Francois Jeannot, manager for Haiti's Expanded Programme for Immunization (EPI), puts it, "Because of this, vaccine coverage in the country is low. For example, if we consider delivering three doses of DTP or pentavalent vaccine as an indicator, the country never reaches 86%."

Having solar refrigerators would do away with the need for transporting expensive, heavy propane gas cylinders to hard-to-reach places like Platon Malanga, and would alleviate much of the pressure on Haiti's cold chain.

When Gavi's cold chain equipment optimisation platform (CCE) support was announced in 2015, the Haitian Health Ministry, UNICEF, WHO and the US Centers for Disease Control and Prevention were quick to take advantage of an opportunity to modernise the country's ailing cold chain.

Thanks to strong collaboration between the EPI team, technical partners and other stakeholders, Haiti became the first Gavi-supported country to be approved for CCE platform support, securing funds to cover the purchase of over 700 solar-powered refrigerators.

"Haiti's application ticked all the boxes," says Homero Hernandez, Gavi's focal point for Haiti. "It reflected a comprehensive approach to strengthening the efficiency and effectiveness of the cold chain and was fully aligned with overall national immunisation priorities. The application also demonstrated how support could complement existing investments in the supply chain."

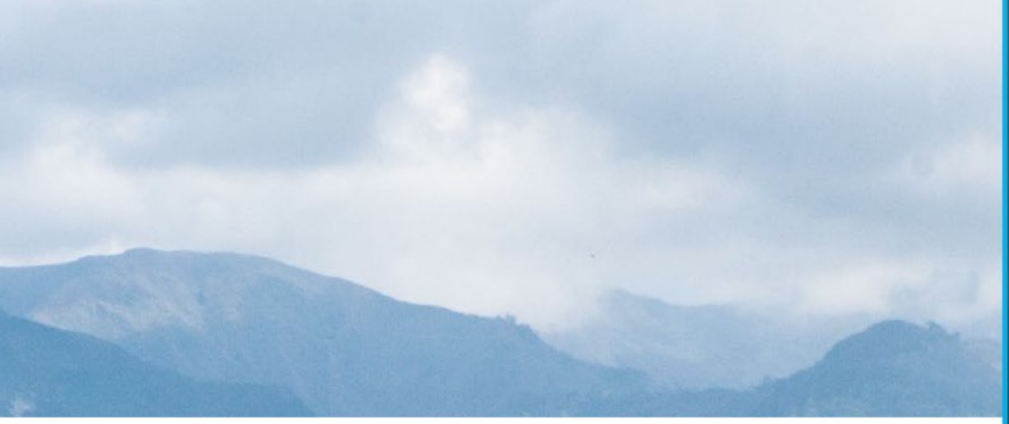
To qualify for support, countries need to show that they have considered what would be the most appropriate type of cold chain equipment for a given health facility. Luckily, Haiti was able to draw on its 2013 effective vaccine management (EVM) survey, which included an assessment of the country's cold chain management system – tracking vaccines from the time they arrive at Port-au-Prince through to the point of delivery in clinics.

"The EVM gave us a bit of a head start," says Jeannot, who coordinated the working group tasked with preparing the application. "We used this valuable data to help prepare our proposal, drafting an improvement plan that outlined our needs and what we had to do to reinforce the vaccine supply chain, including cold chain equipment."

Haiti was also able to provide a detailed budget for the long-term maintenance and sustainability of its entire cold chain. This included requests for over 1,000 spare part kits and more than 4,500 temperature monitoring devices. New solar-powered refrigerators and other pieces of cold chain equipment will not solve all of Haiti's problems with vaccine storage and safety, but it's an excellent place to start.

"The CCE can be used as a way to strengthen the EPI as a whole and address other related issues like vaccine distribution and monitoring, data management and vaccine-preventable diseases surveillance," says Jeannot.

"Once we have the cold chain equipment working properly, it's up to us to motivate people to be vaccinated and train our health workers properly," says Derline Mentor, a Haitian UNICEF cold chain and logistics officer. "In the next five years I hope we'll be able achieve 90% coverage with life-saving vaccines."



HOW GAVI SUPPORT WILL HELP HAITI'S COLD CHAIN

721 solar refrigerators

2,518 distance temperature monitoring units

1,010 spare parts kits

2,142 continuous temperature monitoring devices

420 cold boxes

Q&A

What is the cold chain equipment optimisation platform?
It applies Gavi's ground-breaking market shaping approach to buying cold chain equipment.

How does it work?
The platform generates reliable demand for cold chain equipment, resulting in predictable funding. This gives manufacturers confidence to invest in new technology and production. In the long term, innovation will be encouraged and lifetime running costs of equipment eligible for platform support will be reduced.

Why was Haiti successful?
Haiti's was a model application. The country used a systematic decision-making process to identify their main cold chain needs, including the most appropriate equipment. They also considered how the new equipment would support improvements across four areas critical to supply chain management: continuous improvement planning, system optimisation, reliable cold chain equipment, quality data and strong leadership.

When will Haiti receive the first set of equipment?
The first equipment is expected to arrive in Haiti during the first half of 2017.

What does Gavi aim to achieve with the platform?
Gavi-supported countries will have the opportunity to upgrade the cold chain equipment in 90,000 existing facilities and fully equip 45,000 new facilities. The pay-back is likely to be significant: improving immunisation coverage and equity by ensuring life-saving vaccines reach communities that were previously "off-the-grid".

Delivering vaccines to regional facilities in Haiti
Gavi / 2013 / Evelyn Hockstein

INNOVATING TO IMPROVE VACCINE TECHNOLOGY

2015 marked a pivotal point in Gavi's market shaping work, with plans to expand its remit to cover cold chain equipment, such as refrigerators. This will take place alongside the roll-out of the cold chain equipment optimisation platform, commencing in 2016. The new platform and Gavi's associated market shaping efforts will help countries improve the efficiency and safety of vaccines by increasing their cold chain equipment's operating time, reducing running costs and improving temperature control.

The year also saw the adoption of a new way of working that makes it easier for countries to opt for those products that can best help them improve immunisation coverage and equity, as well as facilitate decision-making based on additional factors such as wastage and storage.

We now seek more rapid feedback from countries on the types of vaccine presentations they prefer; this information is then systematically passed back to partners and manufacturers. With two additional presentations for pentavalent vaccine prequalified in 2015, countries now also have a greater choice in terms of number of products.

Nurses prepare syringes for vaccines kept in a new solar fridge in a health centre in the village of Mbankana, 150 km from Kinshasa, in the Democratic Republic of the Congo

Gavi / 2015 / Phil Moore



ETHIOPIA: PROCUREMENT MEANS PROGRESS



> Gavi has been our largest donor for the past 16 years and they play a vital role in helping us create equity.
>
> **Liya Woldegiorgis**
> Coordinator, Expanded Programme on Immunization, Ethiopia

One of the world's poorest countries, Ethiopia receives support from Gavi for seven life-saving vaccines. Liya Woldegiorgis has been coordinator of the Expanded Programme on Immunization (EPI) at the Ethiopian Ministry for Health for the past two years. Her background is in nursing. We talked to Woldegiorgis about the vital role Gavi plays in procuring essential vaccines.

Gavi: What is the situation in Ethiopia today with regard to immunisation?

Liya Woldegiorgis (LW): Our biggest success has been the great improvement in coverage. Political commitment to immunisation from the ministry down to the regions grows all the time. Right now, as per our five-year strategic plan, we're concentrating on equity and quality. We're also working on cold chain expansion and capacity-building activities.

Our greatest challenge is increasing immunisation in places like the Somali region, where there's low coverage and poor quality of service.

How would you describe what Gavi does in Ethiopia?

LW: Gavi has been our largest, most reliable donor for the past 16 years. Apart from creating vital access to immunisation, Gavi plays a significant role in continuing to strengthen our health system.

If you hadn't had Gavi funding, would you have been able to introduce new vaccines?

LW: The Government would have been forced to find another source, which would have been challenging to say the least. Don't forget, another advantage of working with Gavi is benefiting from the prices they negotiate with manufacturers.

Could you explain the advantages to Ethiopia of being able to introduce new vaccines like pentavalent and human papillomavirus (HPV) with Gavi support?

LW: These vaccines help to reduce mortality and morbidity. In addition, pentavalent, which protects against five diseases in one shot, reduces the overall number of injections that children need. We've successfully introduced the HPV vaccine via demonstration projects in Gomma and Ahferom. Over 6,000 girls have benefited.

How has Gavi helped you deal with outbreaks of meningitis in your country?

LW: We've been carrying out a preventive meningitis A mass vaccination in phases since 2013, targeting people aged 1–29. With Gavi's financial and technical support, we've reached over 60 million people considered at high risk of being infected.

Could you describe what you do in your role as the EPI manager for Ethiopia?

LW: I managed the development of our five-year plan and now help implement it. I'm involved with and monitor all EPI-related activities like introducing new vaccines, and managing logistics. My other duties include supplemental immunisation activities and overseeing developmental partner work.

How exactly does the procurement of vaccines work in Ethiopia? What are the stages of the process and how are you involved?

LW: With government-purchased vaccines, the Health Minister will take the best cost estimate from a supplier. When the budget is approved, the money is transferred to a contractor's account. The vaccine arrives and the procurement pharmaceutical supply agency responsible distributes it. For Gavi-supported vaccines, UNICEF is the procurement agency.

How is Gavi helping you meet the vision of the fully immunised child?

LW: Gavi has funded 80% of the cost of the vaccines that we have introduced and they help educate our people about their benefits. Every time a life-saving vaccine is used, the community sees its effect, which increases demand. Gavi was pivotal in helping us meet the UN Millennium Development Goal targets for reducing under-five mortality three years ahead of time.

We understand that Ethiopia is keen to be part of Gavi's cold chain equipment optimisation platform support. Why is this?

LW: There are many reasons. We're a large country. We've constructed a lot of new facilities – 16,500 health posts, more than 3,500 health centres and almost 400 hospitals. These all need to be fully equipped with modern equipment. Being part of the platform will help improve our service quality and increase coverage. It will improve quality and reduce vaccine stock-outs.

Ethiopia has done an enormous amount of work to vaccinate hard-to-reach groups like the nomadic population. Why do you personally think this is so important?

LW: Immunisation is the most cost-effective public health service. Every child and community has a right to receive vaccines.

How do you see the immediate and long-term future for immunisation in Ethiopia?

LW: Our five-year strategy is all about sustaining the gains – maintaining the coverage we have currently, working towards better quality and creating equity.

What part do you think Gavi will play in this?

LW: Gavi will continue to be a reliable donor that contributes a lot, not just financially but also through technical support and by helping us carry out health system improvements.

Why do you do what you do?

LW: For many reasons. When you work with a community, you can personally reach people and see the results over the years. I'm happy to do my bit to create a healthy community. Community-focused activity is really impressive. Seeing healthy children gives me great pleasure and meaning in life.

EBOLA CONTACT TRACER: LIFE ON THE FRONTLINE





Emmanuel Lasanah, outpatient supervisor at Monrovia's Redemption Hospital, became one of the lead contact tracers during the recent Ebola outbreak, tracking down more than 900 potentially infected people. Given his high-risk status, he was also the first person in Liberia to receive the new vaccine against Ebola.

This is his story.

> We had nurses, physician assistants, nurse aids, medical doctors dying from Ebola, a lot of them. So it was quite terrifying.

Fear was unavoidable. Fear was the hallmark. Always at the back of our minds. It was really tough, because the cases were too many. The cases overwhelmed the health facilities. People would call and you'd say there's no space. So the families used to come and just drop them outside Redemption Hospital and then leave. Sometimes they would leave more than 15 dead bodies at once. They were dying in every home. It was quite terrible.

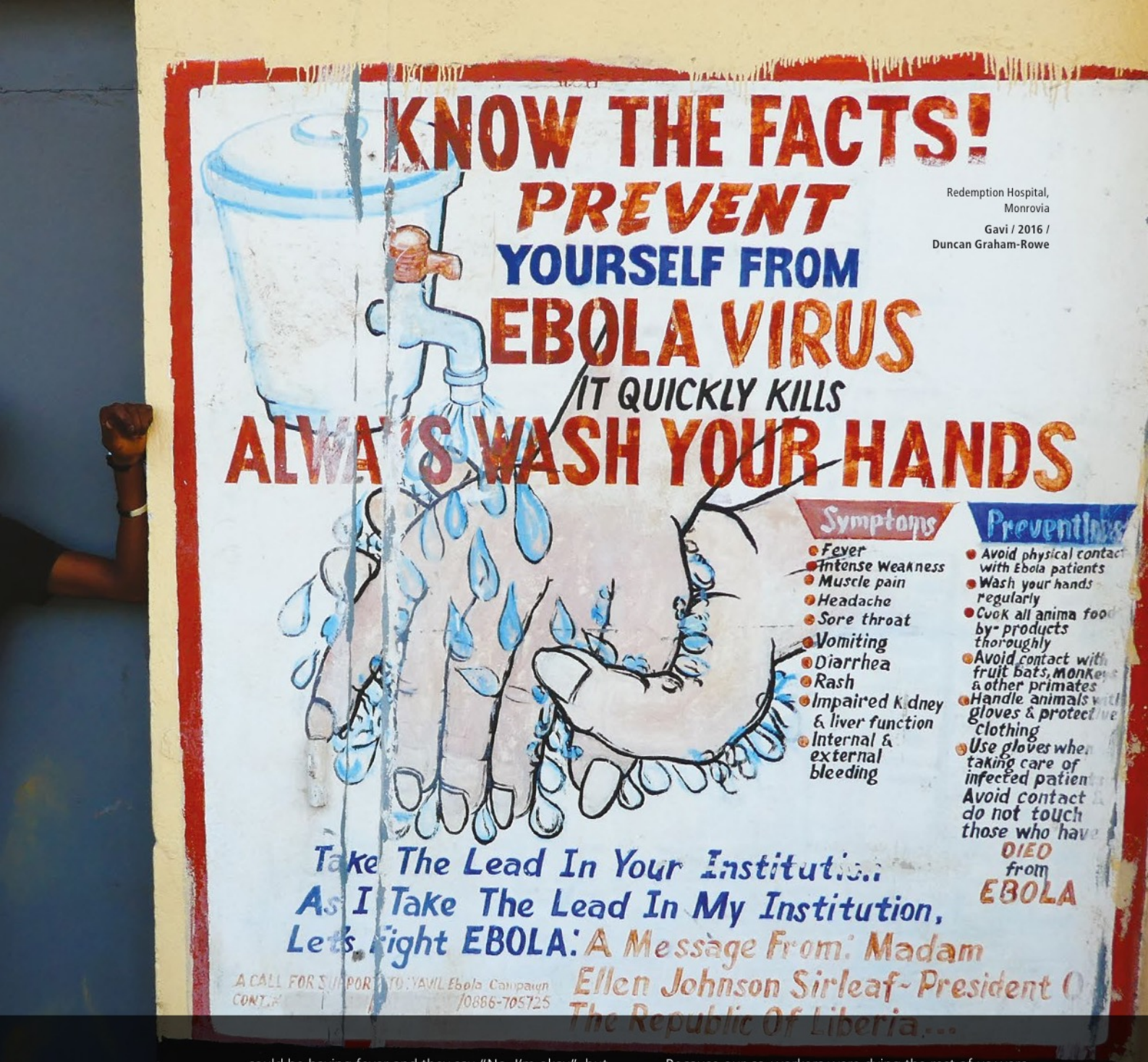
At the peak of Ebola, Redemption Hospital suffered a heavy blow and health services collapsed. The medical director responsible for the hospital died of Ebola. We had nurses, physician assistants, nurse aids, medical doctors dying from Ebola. It was quite terrifying. Everyone was afraid and ran away. But I was still available. So I thought that the best thing I could do was to help my country; I had the knowledge for contact tracing. Let me use this, instead of sitting and being afraid. So I volunteered to take the lead.

When someone came to the hospital with fever, vomiting, diarrhoea, sometimes bleeding we would immediately go to their home and complete the case-base investigation form. We would then submit this to the ministry. In that form we listed all those who had come into contact with the person. That included the name, the age, address and occupation of those people. So for a single case of Ebola we would have to trace a minimum of 15 contacts. In the zone I was assigned people lived in clusters. You have one house with five, six or even eight families. Each family has up to seven or eight members. So if there's a house of that nature, then you sometimes have to trace up to 50 contacts.

Tracing contacts was a very challenging task. We were afraid of getting Ebola and we didn't want to enter the homes. In some communities, we were targeted, because people felt that we were trying to make up a story that their relative had Ebola. Many were in a state of denial. Sometimes we even had to contact the Liberian National Police, to prevent families from taking a body and burying it.

I was really, really worried. And my team was worried. I had to encourage them. If we had got afraid and didn't do anything about this and didn't intervene, what would happen? We could also get infected, it might spread to our families, our friends and our relatives. My family didn't want me to go out. I said no, I'm a health worker I have to go out, to save the population. Someone has to take the lead.

The early symptoms of Ebola are like symptoms of malaria. So when one begins to experience fever, headache, joint pains, the first thing that comes to mind is "I must have malaria". The introduction of the thermal scan helped us a lot. Before then, someone



Redemption Hospital, Monrovia

Gavi / 2016 / Duncan Graham-Rowe

could be having fever and they say "No, I'm okay", but you could see clinically this person is not okay. But then the thermometer was introduced and we started using it in the field. When people have fever, then you can start to tell them "You are not well, your temperature is high. You have been in contact with someone who has been admitted to the Ebola Treatment Unit (ETU) or someone who has died. So it's very dangerous if you start developing symptoms and you hide the sickness, because you are exposing other family members. So the earlier you go to the ETU the better it is for you."

It was a strange disease for Liberia. We had not experienced Ebola before. We were not prepared to fight it. Whenever someone is sick in Liberia, everyone comes round and touches the person, and that's one of the reasons why Ebola spread. When patients were brought to this hospital, health workers came into contact with these patients without protection. We were not used to wearing gloves, wearing gowns or boots in the hospital. That's how a lot of our co-workers in the hospital died.

Because our co-workers were dying the rest of us were afraid, nobody wanted to touch a patient again. You and a colleague work together today and then two or three days later he is dead. You are afraid, but the patients were still being brought to the hospital. Later we were trained in how to behave and given equipment to wear, masks, gowns and boots, things we never knew about before. Later partners came in and started constructing ETUs.

The decision to be the first to take the Ebola study vaccine was made when suddenly I started thinking back on the number of family members, the number of friends, the number of health workers, the number of community persons that died from Ebola. I knew that I was exposed because I was doing contact tracing. I was afraid because I didn't know what the effects of the vaccine would have been, but I decided that I needed to take part in this study to benefit. Seeing as I took the lead on contact tracing I also wanted to take the lead for the Ebola vaccine, even though this was a study. Since I took it I've been feeling very well. I am so grateful.

ANNEXES

CONTRIBUTIONS TO GAVI
Annex 1 → p78

GOVERNANCE STRUCTURE
Annex 2 → p80

CONTRIBUTIONS PLEDGED
Annex 3 → p82

COMMITMENTS FOR COUNTRY PROGRAMMES
Annex 4 → p84

BOARD APPROVALS FOR COUNTRY PROGRAMME EXPENDITURE
Annex 5 → p86

COMMITMENTS AND BOARD APPROVALS FOR INVESTMENT CASES
Annex 6 → p88





Recipients of pentavalent vaccine in Madagascar

Gavi / 2011 / Ed Harris

ANNEX 1: CONTRIBUTIONS TO GAVI, THE VACCINE ALLIANCE

Cash received by the Vaccine Alliance as of 31 December 2015 (US$ millions)

Donor governments and the European Commission	2015	Total 2010–2015
Australia		270.8
Canada	8.0	271.3
Denmark		45.7
European Commission	22.3	92.7
France	5.9	120.9
Germany	63.3	224.3
India	1.0	3.0
Ireland	3.3	45.3
Japan	17.4	53.5
Luxembourg	0.9	11.9
Netherlands	33.9	364.6
Norway	157.5	1,137.7
Oman	0.6	0.6
Republic of Korea	4.0	7.0
Spain		43.2
Sweden	41.5	377.5
United Kingdom	442.5	1,622.3
United States of America	200.0	1,379.5
Subtotal	1,002.0	6,071.7

Foundations, organisations and corporations[a]	2015	Total 2010–2015
Bill & Melinda Gates Foundation	245.0	2,499.4
His Highness Sheikh Mohammed bin Zayed Al Nahyan		33.0
OPEC Fund for International Development (OFID)		1.1
Subtotal	245.0	2,533.5

Foundations, organisations and corporations[a]	2015	Total 2010–2015
A & A Foundation		1.0
Anglo American plc		3.0
Absolute Return for Kids (ARK)		1.6
Comic Relief	4.9	20.8
Dutch Postcode Lottery		3.2
ELMA Vaccines and Immunization Foundation		2.0
"la Caixa" Foundation	1.3	26.8
LDS Charities	1.0	7.0
Lions Clubs International	7.5	15.0
JP Morgan		2.4
The Children's Investment Fund Foundation (UK)	12.5	31.8
Other private	0.9	17.7
Subtotal	28.1	132.2
IFFIm proceeds[b]		2,475.7
AMC proceeds[c]	123.0	969.6
Total contributions	1,398.1	12,182.8

[a] Includes some contributions received via the Gavi Campaign.

[b] IFFIm proceeds: cash disbursements from the World Bank: to the GFA (2006–2012), to Gavi (2013–2015).

[c] AMC proceeds: cash transfers from the World Bank to Gavi.

Cash received by Gavi in support of the Polio Eradication Endgame strategy and plan, 2013-2018, as of 31 December 2015 (US$ millions)

Donor governments		2015	Total
Norway		24.3	55.0
United Kingdom		4.7	4.7
Donor governments	Subtotal	29.0	59.7
Bill & Melinda Gates Foundation		105.0	105.0
Private contributions	Subtotal	105.0	105.0
	Total	134.0	164.7

Innovative finance mechanisms: AMC and IFFIm

AMC commitments	2009–2020 (US$ millions)
Italy	635.0
United Kingdom	485.0
Canada	200.0
Russian Federation	80.0
Bill & Melinda Gates Foundation	50.0
Norway	50.0
Total	1,500.0

IFFIm commitments[a]	Length of commitment (years)[b]	Amount (in millions)	Total (equivalent US$ millions[c])
United Kingdom	23	£ 1,618.6	2,845.6
France	20	€ 1,227.6	1,645.9
Italy	20	€ 492.30	608.0
Norway[d]	10	US$ 26.0	26.0
		NOK 1,479.80	223.3
Australia	20	A$ 249.1	249.1
Spain	20	€ 186.70	232.4
Netherlands	6	€ 78.30	101.7
Sweden	15	SEK 271.1	35.6
South Africa	20	US$ 20.0	20.0
		Total	5,987.6

[a]Brazil made a new pledge to IFFIm in 2011. Negotiations are currently under way to formally sign this grant agreement.

[b]Duration is defined as number of years during which a contribution has been (or is expected to be) paid by the donor.

[c]Amounts as at 31 December 2015.

[d]The Kingdom of Norway granted an initial commitment in US$ and a further commitment in Norwegian kroner.

Additional 2016-2020 commitments pledged at the Berlin Pledging conference, January 2015

IFFIm commitments	Length of commitment (years)[b]	Amount (in millions)	Total (equivalent US$ millions[c])
France	5	€ 150	€ 176.6
Netherlands	4	€ 60	€ 70.7
Australia	5	A$ 37.5	A$ 28.6
		Total	275.9

Country co-financing commitments, as of 31 December 2015 (US$ millions)

	2015	2000–2014
Voluntary payments[a]		31.0
Co-financing[b]	113	388.0

[a]Voluntary payments prior to the implementation of the co-financing policy (2000–2007).

[b]Co-financing since the implementation of the co-financing policy (2008–2015).

Source: Gavi, the Vaccine Alliance, 2016

ANNEX 2: GOVERNANCE STRUCTURE AS OF **31 DECEMBER 2015**

The Gavi Board

There are 28 seats on the Board:

- 4 permanent members representing UNICEF, WHO, the World Bank, and the Bill & Melinda Gates Foundation
- 5 representing developing country governments
- 5 representing donor country governments
- 1 member each representing civil society organisations, the vaccine industry in developing countries, the vaccine industry in industrialised countries, and research and technical health institutes (4 in total)
- 9 independent individuals with a range of expertise
- The CEO of Gavi (non-voting)

Institutions

WHO
Flavia Bustreo
Vice Chair of the Board

UNICEF
Geeta Rao Gupta

The World Bank
Tim Evans

The Bill & Melinda Gates Foundation
Orin Levine

Independent members

Dagfinn Høybråten, Board Chair
Wayne Berson
David Sidwell
William Roedy
H.R.H. The Infanta Cristina of Spain
Yifei Li
Richard Sezibera
George W. Wellde Jr.
Stephen Zinser

Non-voting member

Seth Berkley, CEO Gavi, the Vaccine Alliance

Constituencies[a]

Developing country government representatives

Constituency 1
Bahar Idriss Abu Garda (Sudan)

Constituency 2
Khaga Raj Adhikari (Nepal)

Constituency 3
Andrei Usatii (Republic of Moldova)

Constituency 4
Awa Marie Coll-Seck (Senegal)

Constituency 5
Seif Seleman Rashid (United Republic of Tanzania)

Donor government representatives

USA/Australia/Japan/ Republic of Korea
Katherine Taylor (United States)

Canada/Ireland/United Kingdom
Donal Brown (United Kingdom)

Italy/Spain
Angela Santoni (Italy)

France/Luxembourg/ European Commission/ Germany
Marian Diallo (France)

Denmark/Netherlands/ Norway/Sweden
Eivind Homme (Norway)

Research and technical health institutes
Zulfiqar A. Bhutta (Aga Khan University, Karachi, Pakistan)

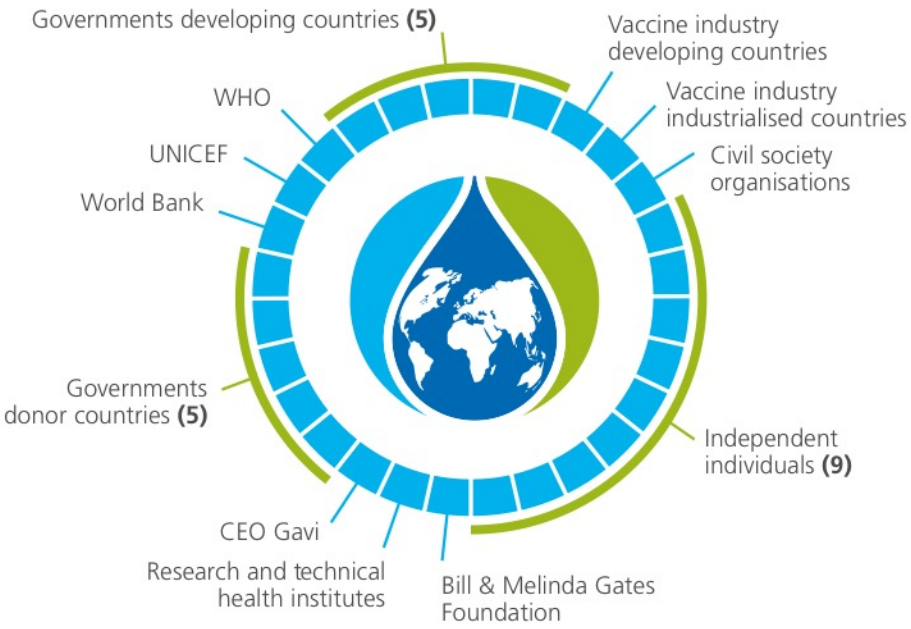
Developing country vaccine industry
Adar Poonawalla (Serum Institute of India Limited)

Industrialised country vaccine industry
Olivier Charmeil, Sanofi Pasteur

Civil society organisations
Naveen Thacker (Indian Academy of Pediatrics)

[a]For the full list of constituency members please refer to: www.gavi.org/ about/ governance/gavi-board/ composition/developing-country-governments

Governance structure



Other Gavi-related governance structures

THE INTERNATIONAL FINANCE FACILITY FOR IMMUNISATION (IFFIm) COMPANY

René Karsenti
(Chair) President, The International Capital Market Association (ICMA)

Didier Cherpitel
Former Secretary General, International Federation of Red Cross and Red Crescent Societies

Cyrus Ardalan
Chairman, Oak North Bank

Marcus Fedder
Former Vice Chair, TD Securities

Christopher Egerton-Warburton
Partner, Lion's Head Capital Partners

Fatimatou Zahra Diop
Former Secretary General, Central Bank of West African States (BCEAO)

Doris Herrera-Pol
Former Global Head of Capital Markets, the World Bank

GAVI CAMPAIGN

Paul O'Connell
(Chair) President and Founding Member, FDO Partners, LLC

Steven Altschuler
President and CEO, The Children's Hospital of Philadelphia

Daniel Schwartz
CEO, Dynamica Inc.

Seth Berkley (Honorary)
CEO, Gavi, the Vaccine Alliance

Source: Gavi, the Vaccine Alliance, 2016

ANNEX 3: CONTRIBUTIONS PLEDGED (US$ MILLIONS)

Includes pledges made as of 31 December 2015

General notes: Non-US$ contributions for 2000–2015 are expressed in US$ equivalents using the exchange rates on the dates of receipt. For 2014 and 2015, where contributions were hedged, these have been expressed using the rates applicable to the hedge agreement. Non-US$ direct contribution and Matching Fund pledges for years 2016 and beyond are expressed in US$ equivalents using the forecast rates from Bloomberg as at 31 December 2015 (for the year 2016: using the forecast for Q4 2016; and for the years 2017 onwards: using an average of the available yearly forecast rates), except for those contributions shown in the column "2016–2020" (see note C re: those pledges). Pledges for years for which contributions have already been received are expressed in US$ equivalents using the exchange rates on the dates of receipt. Non-US$ pledges for these years that have been hedged to mitigate currency risk exposure are expressed in US$ equivalents using the exchange rates stated in the hedge agreements. Signed non-US$ IFFIm pledges are expressed in US$ equivalents using the exchange rates at the time of signing the respective donor grant agreements. Unsigned non-US$ IFFIm pledges are expressed in US$ equivalents using an average of the available yearly forecast rates from Bloomberg. These contributions have not been reduced by a notional 3% provision to allow for any potential reduction arising from the High Level Financing Condition of the IFFIm Finance Framework Agreement

Source: Gavi, The Vaccine Alliance, 2016

DONOR	Contributions/pledges[a]											
	2000–2010						2011–2015					
	Direct contribution	Matching Fund	AMC	IFFIm	Total	As % of grand total[b]	Direct contribution	Matching Fund	AMC	IFFIm	Total	As % of grand total[b]
Donor governments and the European Commission												
Australia	29				29	<1%	242			26	269	4%
Brazil[c]												
Canada	152		125		277	7%	120		75		194	3%
China												
Denmark	32				32	<1%	13				13	<1%
European Commission	58				58	1%	35				35	<1%
France[f]	19			191	209	5%	126			305	430	6%
Germany	22				22	<1%	185				185	2%
India							3				3	<1%
Ireland	30				30	<1%	15				15	<1%
Italy			158	107	265	6%			266	151	417	6%
Japan							54				54	<1%
Luxembourg	6				6	<1%	5				5	<1%
Netherlands	216			14	230	5%	149			68	216	3%
Norway	526		2	41	569	14%	612		48	89	749	10%
Oman												
Qatar												
Republic of Korea	0.4				0.4	<1%	7				7	<1%
Russian Federation			8		8	<1%			40		40	<1%
Saudi Arabia												
South Africa				4	4	<1%				5	5	<1%
Spain	43			58	101	2%				55	55	<1%
Sweden	123			10	132	3%	255			11	266	4%
United Kingdom[g]	137		22	152	312	7%	1,424	61	317	481	2,283	31%
United States of America[h]	647				647	15%	733				733	10%
Donor governments and the European Commission total:	2,039		316	576	2,931	70%	3,977	61	746	1,190	5,974	80%
Foundations, organisations and corporations												
Alwaleed Philanthropies												
Bill & Melinda Gates Foundation[i]	1,213		20		1,233	29%	1,237	50	30		1,316	18%
His Highness Sheikh Mohamed bin Zayed Al Nahyan							33				33	<1%
OPEC Fund for International Development (OFID)							1				1	<1%
Subtotal:	1,213		20		1,233	29%	1,271	50	30		1,350	18%
A & A Foundation								2			2	<1%
Absolute Return for Kids (ARK)								2			2	<1%
Anglo American plc								3			3	<1%
Children's Investment Fund Foundation								32			32	<1%
Comic Relief								21			21	<1%
Dutch Postcode Lottery								3			3	<1%
ELMA Vaccines and Immunisation Foundation								2			2	<1%
International Federation of Pharmaceutical Wholesalers												
JP Morgan								2`			2	<1%
"la Caixa" Foundation	16				16	<1%		11			11	<1%
LDS Charities								7			7	<1%
Lions Clubs International								15			15	<1%
Other private donors	12				12	<1%	5				5	<1%
Subtotal:	28				28	<1%	5	99			105	1%
Foundations, organisations and corporations total[j]:	1,241		20		1,261	30%	1,276	149	30		1,455	20%
GRAND TOTAL:	3,280		336	576	4,191	100%	5,253	210	776	1,190	7,429	100%

[a] Some contributions may be received by Gavi in years different to those for which the pledges were made.
[b] The percentages in this column refer to each donor's share of the total amount pledged rather than a percentage share of the expected need for the period.
[c] The column "2016-2020" shows Direct Contribution and Matching Fund pledge amounts for donors who have yet to indicate how their pledge(s) should be allocated to (a) specific year(s) within this period. These amounts are expressed in USD equivalents using an average of available yearly forecast rates for years 2016 through 2020, from Bloomberg.
[d] Future IFFIm proceeds from new pledges made at the Berlin pledging conference are indicative and are based on certain assumptions including future interest rates and foreign exchange rates generated from financial market data, and donor payment schedules. These assumptions may differ from conditions prevailing at the time of grant and legal agreement signing, which may result in different projected and realised IFFIm proceeds.
[e] In June 2011, Brazil pledged US$ 20m to IFFIm. Grant agreement discussions are still on-going and hence no proceeds can be currently attributed.
[f] The Agence française de développement (AFD, French Development Agency), Gavi, the Vaccine Alliance and the Bill and Melinda Gates Foundation signed an innovative partnership worth €100m over the 2016–2020 period. The partnership aims to increase vaccine coverage in six French-speaking countries of the Sahel region: Burkina Faso, Mali, Mauritania, Niger, Senegal and Chad.
[g] Matching Fund (UK): of the GBP 38.1m (equiv. US$ 61m) received, all funding has been matched by other / private sector donor contributions, as at 31 December 2015.
[h] The US pledge of US$ 1.0 billion announced at the Berlin replenishment meeting is for the years 2015–2018 and includes US$ 800m for 2016–2018
[i] Matching Fund (Bill & Melinda Gates Foundation): of the US$ 125m received or to be received, a total of US$ 66.5m is yet to be matched by other / private sector donor contributions, as at 31 December 2015
[j] In-kind contributions are not included in the foundations, organisations and corporations total above. As of 31 December 2015, the following organisations have contributed (or pledged) in kind contributions: Lions Club International Foundation, UPS and Vodafone.

DONOR	Contributions/pledges[a]											
	2016–2020						2021–2035					
	Direct contribution[c]	Matching Fund[c]	AMC	IFFIm[cd]	Total	As % of grand total[b]	Direct contribution	Matching Fund	AMC	IFFIm[cd]	Total	As % of grand total[b]
Donor governments and the European Commission												
Australia	162			103	265	3%				149	149	6%
Brazil[e]				5	5	<1%				15	15	<1%
Canada	417				417	4%						
China	5				5	<1%						
Denmark												
European Commission	242				242	3%						
France[f]	106			501	607	6%				826	826	34%
Germany	688				688	7%						
India	1				1	<1%						
Ireland	17				17	<1%						
Italy	115		211	175	501	5%				175	175	7%
Japan												
Luxembourg	5				5	<1%						
Netherlands	207	12		91	309	3%						
Norway	850			119	969	10%						
Oman	3				3	<1%						
Qatar	10				10	<1%						
Republic of Korea	8				8	<1%						
Russian Federation			32		32	<1%						
Saudi Arabia	25				25	<1%						
South Africa				5	5	<1%				6	6	<1%
Spain				60	60	<1%				60	60	2%
Sweden	191			13	204	2%				3	3	<1%
United Kingdom[g]	1,577		146	1,030	2,753	29%				1,183	1,183	49%
United States of America[h]	800				800	8%						
Donor governments and the European Commission total:	5,430	12	388	2,102	7,932	83%				2,416	2,416	100%
Foundations, organisations and corporations												
Alwaleed Philanthropies	1				1	<1%						
Bill & Melinda Gates Foundation[i]	1475	75			1,550	16%						
His Highness Sheikh Mohamed bin Zayed Al Nahyan												
OPEC Fund for International Development (OFID)												
Subtotal:	1476	75			1,551	16%						
A & A Foundation												
Absolute Return for Kids (ARK)												
Anglo American plc												
Children's Investment Fund Foundation		0.03			0.03	<1%						
Comic Relief		2			2	<1%						
Dutch Postcode Lottery												
ELMA Vaccines and Immunisation Foundation												
International Federation of Pharmaceutical Wholesalers	2				2	<1%						
JP Morgan												
"la Caixa" Foundation												
LDS Charities												
Lions Clubs International		15			15	<1%						
Other private donors	5				5	<1%						
Subtotal:	7	17			23	<1%						
Foundations, organisations and corporations total[j]:	1,483	92			1,575	<17%						
GRAND TOTAL:	6,913	104	388	2,102	9,506	100%				2,416	2,416	100%

ANNEX 4: COMMITMENTS FOR COUNTRY PROGRAMMES 2000–2020[a]

As of 31 December 2015 (US$ millions)

Country	NVS	HSS	ISS	OS	INS	VI grant	CSO[b]	HPV	PS grant	Transition grant	Ebola EPI recovery grant	Total
Afghanistan	153.1	89.9	14.0	3.6	1.7	2.5	3.6					268.4
Albania	2.1				0.1	0.3						2.5
Angola	100.9		3.0		1.3	2.6				1.2		108.9
Armenia	4.2	0.3	0.1		0.1	0.5			0.04			5.2
Azerbaijan	11.9	0.6	0.7		0.2	0.5						13.8
Bangladesh	390.5	13.7	23.3	33.6	6.1	8.3		0.4				475.9
Benin	99.1	9.3	0.2	1.7	0.03	0.5		0.2				111.3
Bhutan	1.2	0.2			0.03	0.3				0.2		2.0
Bolivia	24.9	2.1	0.3		0.9	0.6						28.8
Bosnia & Herzogovina	2.1				0.1	0.1						2.3
Burkina Faso	137.0	9.5	9.8	5.2	0.9	3.1		0.2				165.6
Burundi	81.4	23.8	3.7		0.4	1.3	0.5	0.2				111.1
Cambodia	45.5	28.4	2.0	5.9	0.6	1.5						83.8
Cameroon	148.2	7.0	8.0	8.3	1.0	2.9		0.2				175.6
Central African Republic	21.1	3.2	1.9		0.1	0.6						26.9
Chad	41.4	5.0	2.6	4.9	0.04	0.7						55.0
China	22.0				15.9	0.8						38.7
Comoros	1.4	1.8	0.1		0.04	0.3						3.6
Congo	19.3	4.4	1.7		0.2	0.6				0.4		26.6
Congo DRC	435.5	201.8	25.8	21.4	2.7	5.1	9.8		0.4			702.4
Côte d'Ivoire	89.2	8.2	8.9	5.5	1.6	2.3		0.2				116.0
Cuba	1.0	2.4			0.4	0.1						3.8
Djibouti	3.9	3.4	0.2		0.03	0.4						7.9
Eritrea	14.0	2.8	0.4		0.1	0.6						18.0
Ethiopia	620.5	137.9	23.4	45.6	2.7	6.0	3.3	0.2				839.6
Gambia	22.5	4.6	0.7	1.2	0.1	1.1		0.2				30.4
Georgia	4.0	0.4	0.1		0.1	0.4				0.6		5.7
Ghana	217.0	27.7	5.3	9.5	0.9	2.5	0.8	0.2				263.9
Guinea	28.7	2.1	2.9	2.3	0.3	0.6					6.1	43.1
Guinea-Bissau	8.4	1.4	0.5	0.8	0.1	0.5						11.8
Guyana	3.6		0.1			0.4				0.3		4.4
Haiti	17.7	3.3	1.3		0.4	0.9						23.6
Honduras	30.0	8.0	0.1		0.5	0.4				0.4		39.3
India	320.4	107.0			18.4	0.4						446.2
Indonesia	68.7	24.8	12.6		9.9	7.6	3.9					127.5
Kenya	409.4	9.9	6.4	12.3	1.1	4.3		0.2				443.6
Kiribati	0.3					0.3						0.6
Korea DPR	23.3	30.4	2.2		0.7	0.6						57.2
Kyrgyzstan	13.5	5.8	0.8		0.2	0.4						20.7

CSO, civil society organisation support; HPV, human papillomavirus vaccine demonstration cash support; INS, injection safety support; ISS, immunisation services support; HSS, health system strengthening support; NVS, new and underused vaccine support; OS, operational support; PS grant, product switch grant; VI grant, vaccine introduction grant

[a]Commitments represent endorsements of multi-year programme budgets made by the Gavi Board (or Executive Committee). These endorsements do not constitute a liability to pay but instead send a positive signal that Gavi intends to fund a programme over its entire life span subject to performance and availability of funds.

Country	NVS	HSS	ISS	OS	INS	VI grant	CSO[b]	HPV	PS grant	Transition grant	Ebola EPI recovery grant	Total
Lao PDR	21.1	4.4	1.4	1.0	0.3	0.8		0.2				29.3
Lesotho	4.9	2.7	0.1		0.1	0.4						8.3
Liberia	20.9	8.4	2.2		0.4	0.6		0.2			2.8	35.5
Madagascar	134.3	27.6	4.1		0.6	2.3		0.2				169.0
Malawi	163.6	25.5	2.0		0.7	2.0		0.2				194.1
Mali	135.5	24.7	5.0		0.7	1.5		0.2				167.6
Mauritania	19.3	2.4	0.7	1.0	0.2	0.6						24.2
Mongolia	6.0	0.5	0.5		0.1	0.2						7.3
Mozambique	168.0	25.0	1.7		0.8	3.8		0.2				199.5
Myanmar	87.6	32.8	7.7	11.4	2.1	5.7						147.2
Nepal	70.4	59.7	3.3	2.4	1.2	2.6		0.2				139.8
Nicaragua	29.1	3.4	0.3		0.5	0.3						33.6
Niger	99.7	44.0	8.1		0.9	2.8		0.3				155.7
Nigeria	479.6	42.5	47.3	101.5	12.6	15.9						699.4
Pakistan	731.6	23.5	48.8	21.7	7.4	10.4	7.7					851.1
Papua New Guinea	24.2	3.1	0.4	2.0		0.9						30.6
Republic of Moldova	4.9				0.1	0.5				0.5		6.0
Rwanda	121.2	15.0	3.0	3.3	0.4	1.7						144.4
São Tomé	1.1	3.0	0.1		0.02	0.6		0.2				5.0
Senegal	85.4	17.0	2.6	6.7	0.6	2.2		0.2				114.8
Sierra Leone	45.8	3.9	2.7		0.3	0.8		0.2			4.3	57.9
Solomon Islands	2.5	2.0		0.1		0.3		0.2				5.2
Somalia	10.2	11.5	1.2		0.2	0.7						23.8
South Sudan	11.7	34.8	5.9	3.5	0.2	0.7						56.8
Sri Lanka	22.2	4.5			0.7	0.5				0.1		28.0
Sudan	261.9	51.0	11.2	35.1	1.3	2.6						363.1
Tajikistan	21.2	1.3	2.4		0.3	0.6						25.9
Timor-Leste	1.1	3.1				0.2						4.3
Togo	34.6	4.9	3.0	1.7	0.3	0.9		0.2				45.7
Turkmenistan	1.0				0.2	0.1						1.2
Uganda	263.5	19.2	9.2		1.2	4.2						297.3
Ukraine	2.7				0.7	0.1						3.5
United Republic of Tanzania	294.9	14.3	11.4	12.8	1.0	8.5		0.2				343.2
Uzbekistan	59.2	17.2			0.7	2.4						79.5
Vietnam	116.4	40.7	1.9	14.9	3.2	3.2						180.3
Yemen	177.3	24.0	5.0	7.5	1.2	2.1						217.1
Zambia	110.4	6.2	3.9		0.7	2.3						123.5
Zimbabwe	72.8	5.9	1.6	3.4	0.9	1.7		0.2				86.5
Total	7,556.4	1,390.8	361.9	391.8	113.5	150.5	29.4	5.1	0.4	3.8	13.2	10,016.9

[b] CSO Type A not included as these approvals are not country specific.

General note: values have been adjusted to the final actual disbursement values.

Source: Gavi, the Vaccine Alliance, 2016

ANNEX 5: BOARD APPROVALS FOR **COUNTRY PROGRAMME EXPENDITURE 2000–2016**[a]

As of 31 December 2015 (US$ millions)

Country	NVS	HSS	ISS	OS	INS	VI grant	CSO[b]	HPV	PS grant	Transition grant	Ebola EPI Recovery grant	Total
Afghanistan	152.4	61.8	14.0	3.6	1.7	2.5	3.6					239.5
Albania	2.1				0.1	0.3						2.5
Angola	99.6		3.0		1.3	2.6				1.0		107.4
Armenia	4.1	0.3	0.1		0.1	0.5			0.01			5.1
Azerbaijan	10.8	0.6	0.7		0.2	0.5						12.8
Bangladesh	384.2	13.7	23.3	33.6	6.1	8.3						469.6
Benin	83.7	4.5	0.2	1.7	0.4	0.5		0.3				91.2
Bhutan	1.1	0.2			0.03	0.3		0.2				1.9
Bolivia	24.1	2.1	0.3		0.9	0.6				0.2		27.9
Bosnia & Herzogovina	2.1				0.1	0.1						2.3
Burkina Faso	136.1	8.1	9.8	5.2	0.9	3.1		0.1				163.3
Burundi	80.4	23.8	3.7		0.4	1.3	0.5	0.2				110.2
Cambodia	44.7	18.1	1.8	5.9	0.6	1.5						72.6
Cameroon	147.2	7.0	8.0	8.3	1.0	2.9		0.2				174.6
Central African Republic	21.0	3.2	1.6		0.1	0.6						26.5
Chad	40.3	5.0	2.6	4.9	0.4	0.7						53.9
China	22.0				15.9	0.8						38.7
Comoros	1.4	1.8	0.1		0.04	0.3						3.6
Congo	19.0	3.9	1.7		0.2	0.6				0.4		25.8
Congo DRC	431.8	141.4	25.8	21.4	2.7	5.1	9.8		0.4			638.3
Côte d'Ivoire	88.3	8.2	8.9	5.5	1.6	2.3		0.2				115.0
Cuba	0.6	2.4			0.4	0.1						3.5
Djibouti	3.8	1.4	0.2		0.03	0.4						5.8
Eritrea	13.8	2.8	0.4		0.1	0.6						17.8
Ethiopia	583.5	137.9	23.4	45.6	2.7	6.0	3.3	0.2				802.6
Gambia	22.4	1.1	0.7	1.2	0.1	1.1		0.2				26.8
Georgia	4.0	0.4	0.1		0.1	0.4				0.4		5.5
Ghana	204.4	17.4	5.3	9.5	0.9	2.5	0.8	0.2				241.0
Guinea	28.5	2.1	2.9	2.3	0.3	0.6					6.1	42.8
Guinea-Bissau	6.9	1.4	0.5	0.8	0.1	0.5						10.3
Guyana	3.5		0.1			0.4				0.3		4.3
Haiti	12.3	3.3	1.3		0.4	0.9						18.2
Honduras	29.6	8.0	0.1		0.5	0.4				0.4		38.9
India	320.4	68.4			18.4	0.4						407.6
Indonesia	68.7	24.8	12.6		9.9	7.6	3.9					127.5
Kenya	373.7	9.9	6.4	12.3	1.1	4.3		0.1				407.9
Kiribati	0.3					0.3						0.6
Korea DPR	22.5	15.5	2.2		0.7	0.6						41.6
Kyrgyzstan	13.0	3.1	0.8		0.2	0.4						17.6

CSO, civil society organisation support; HPV, human papillomavirus vaccine demonstration cash support; INS, injection safety support; ISS, immunisation services support; HSS, health system strengthening support; NVS, new and underused vaccine support; OS, operational support; PS grant, product switch grant; VI grant, vaccine introduction grant

[a]Approvals are a subset of commitments that have been approved by the Board. Only such approved amounts can be disbursed subject to all other conditions for disbursement being met by the countries. Approvals are typically granted for the current year and one further year.

Country	NVS	HSS	ISS	OS	INS	VI grant	CSO[b]	HPV	PS grant	Transition grant	Ebola EPI Recovery grant	Total
Lao PDR	20.8	4.4	1.4	1.0	0.3	0.8		0.2				28.9
Lesotho	4.0	1.4	0.1		0.1	0.4						6.0
Liberia	20.8	8.4	2.2		0.4	0.6		0.2			2.8	35.3
Madagascar	133.0	22.5	4.1		0.6	2.3		0.2				162.5
Malawi	163.5	18.9	2.0		0.7	2.0		0.2				187.3
Mali	134.7	13.2	5.0		0.7	1.5		0.2				155.2
Mauritania	19.1	0.8	0.7	1.0	0.2	0.6						22.4
Mongolia	5.3	0.5	0.5		0.1	0.2						6.6
Mozambique	138.7	10.7	1.7		0.8	3.8		0.2				155.9
Myanmar	86.6	32.8	7.7	11.4	2.1	5.7						146.2
Nepal	70.4	38.8	3.3	2.4	1.2	2.6		0.2				118.9
Nicaragua	28.7	3.4	0.3		0.5	0.3						33.2
Niger	98.6	28.8	8.1		0.9	2.8		0.2				139.4
Nigeria	466.7	42.5	47.3	101.5	12.6	15.9						686.5
Pakistan	727.3	23.5	48.8	21.7	7.4	10.4	7.7					846.7
Papua New Guinea	23.9	1.1	0.4	2.0		0.9						28.4
Republic of Moldova	4.8				0.1	0.5						5.9
Rwanda	110.5	13.0	3.0	3.3	0.4	1.7				0.5		131.8
São Tomé	1.1	1.4	0.1		0.0	0.6		0.1				3.3
Senegal	84.5	9.3	2.6	6.7	0.6	2.2		0.1				106.1
Sierra Leone	45.5	1.2	2.7		0.3	0.8		0.2			4.3	54.8
Solomon Islands	2.0	1.0		0.1		0.3		0.1				3.6
Somalia	9.7	11.5	1.2		0.2	0.7						23.4
South Sudan	11.3	18.9	5.9	3.5	0.2	0.7						40.4
Sri Lanka	21.5	4.5			0.7	0.5				0.1		27.3
Sudan	236.4	32.0	11.2	24.1	1.3	2.6						307.7
Tajikistan	19.6	1.3	2.4		0.3	0.6						24.2
Timor-Leste	1.0	1.5				0.2						2.7
Togo	34.2	3.7	3.0	1.7	0.3	0.9		0.2				43.9
Turkmenistan	1.0				0.2	0.1						1.2
Uganda	260.6	19.2	9.2		1.2	4.2						294.5
Ukraine	2.7				0.7	0.1						3.5
United Republic of Tanzania	291.0	11.7	11.4	12.8	1.0	8.5		0.2				336.7
Uzbekistan	55.2	7.4			0.7	2.4						65.6
Vietnam	115.2	40.7	1.9	14.9	3.2	3.2						179.1
Yemen	176.4	17.3	5.0	7.5	1.2	2.1						209.5
Zambia	109.6	2.6	3.9		0.7	2.3						119.0
Zimbabwe	71.9	4.1	1.6	3.4	0.9	1.7		0.2				83.8
Total	7,316.3	1,057.1	361.4	380.8	113.5	150.5	29.4	4.5	0.4	3.4	13.2	9,430.5

[b] CSO Type A not included as these approvals are not country specific.

General notes: Approvals for Gavi Phase I (2000–2006) have been adjusted to reflect the actual disbursement values. Approvals totalled US$ 6,741 million through 2014, US$ 1,486 million in 2015 and US$ 1,203 million in 2016.

Source: Gavi, the Vaccine Alliance, 2016

ANNEX 6: COMMITMENTS AND BOARD APPROVALS FOR INVESTMENT CASES

COMMITMENTS FOR **INVESTMENT CASES 2003–2018**[a] as of 31 December 2015 (US$ millions)

Programme	Vaccines	Operational costs	Total
Measles	60.4	115.6	**176.0**
Measles & Rubella Initiative	22.0	33.0	**55.0**
Meningitis	60.5	25.6	**86.1**
Maternal and Neonatal Tetanus	16.3	45.3	**61.6**
Polio	143.3	48.0	**191.3**
Yellow fever	120.8	36.4	**157.2**
Cholera	114.5		**114.5**
Ebola	**5.0**		**5.0**
Other	**5.0**	0.5	**5.5**
Total	**547.7**	**304.5**	**852.2**

BOARD APPROVALS FOR **INVESTMENT CASE EXPENDITURE 2003–2015**[b] as of 31 December 2015 (US$ millions)

Programme	Vaccines	Operational costs	Total
Measles	60.4	115.6	**176.0**
Measles & Rubella Initiative	14.0	21.0	**35.0**
Meningitis	60.5	25.6	**86.1**
Maternal and Neonatal Tetanus	16.3	45.3	**61.6**
Polio	143.3	48.0	**191.3**
Yellow fever	120.8	36.4	**157.2**
Cholera	16.7		**16.7**
Ebola	**5.0**		**5.0**
Other	**5.0**	0.5	**5.5**
Total	**442.0**	**292.5**	**734.4**

[a] Commitments represent endorsements of multi-year programme budgets made by the Gavi Board (or Executive Committee). These endorsements do not constitute a liability to pay but instead send a positive signal that Gavi intends to fund a programme over its entire life span subject to performance and availability of funds.

[b] Approvals are a subset of commitments that have been approved by the Board. Only such approved amounts can be disbursed subject to all other conditions for disbursement being met by the countries. Approvals are typically granted for the current year and one further year.

Source: Gavi, the Vaccine Alliance, 2016

DETAILED TABLE OF CONTENTS

1 The Vaccine Alliance

2–3 Our four goals

4–5 Q&A with Gavi's executive leaders

6–75 MEASURING OUR PROGRESS

8–9 Our mission indicators





10–31 THE VACCINE GOAL

12–13 Gavi-supported vaccine launches and new campaigns in 2015

14–15 Vaccine introduction targets reached ahead of schedule

16 Rotavirus vaccine introductions exceed target

17 HPV vaccine: fighting cervical cancer

18–19 Preventing cervical cancer: out-of-school lessons learnt

20–21 Moving forward with support for IPV and oral cholera vaccine

22 Stopping the main cause of viral encephalitis

23 Preventing measles through routine immunisation and campaigns

24 Protecting children against measles and rubella

25 New measles and rubella strategy

26 Preventing meningitis through routine immunisation and campaigns

27 Fighting pneumonia in Nepal: making numbers count

28 Yellow fever: new areas at risk

29 Tanzania: coverage at a crossroads

30–31 Mission Rainbow promises a brighter future for India's underimmunised children

32–47 THE HEALTH SYSTEMS GOAL

34 Health systems In Gavi-supported countries

35 Health system strengthening

36 Growing the role of civil society

37 Yemen: adaptability in adversity

38–39 Punjab Province's data success story: connecting the dots

40 Putting countries first

41 Strategic focus area: immunisation supply chains

42–43 How the immunisation supply chain works

44 Strategic focus area: data

45 Risk management

46–47 Full country evaluations: big data on a local scale





48–63 THE FINANCING GOAL

50–51 Building a sustainable platform for immunisation

52 The transition to self-financing

53 Honduras: transitioning into tomorrow

54–55 On track to transition: laying the groundwork in Georgia

56–57 Funding from donors and investors

58–59 Innovative financing

60–61 Partnering for impact with the private sector

62–63 Centre of Excellence for supply chain managers: a "STEP" in the right direction

64–75 THE MARKET SHAPING GOAL

66 Shaping vaccine markets

67 Ensuring sufficient, uninterrupted supply

68 Ebola vaccine: restarting the process

69 Partnering for appropriate, quality vaccines and minimising cost

70–71 Solar future shines on Haiti's cold chain

72 Innovating to improve vaccine technology

73 Ethiopia: procurement means progress

74–75 Ebola contact tracer: life on the frontline

76–88 ANNEXES

78–79 Contributions to Gavi

80–81 Governance structure

82–83 Contributions pledged

84–85 Commitments for country programmes

86–87 Board approvals for country programme expenditure

88 Commitments and Board approvals for investment cases

NOTES

Credits
Chief editor: Chris Endean
Deputy editor: Åsa Fridh
Contributors: Alister Bignell, Roice Fulton, Duncan Graham-Rowe, David Holzer, Emily Loud, Alice Mevel
Graphic concept and design: Mike Harrison, Draw
Director of publications: Pascal Barollier

Cover photography credit: Gavi / 2013 / Manpreet Romana

Gavi prepares an Annual Financial Report (AFR) for the year ended 31 December 2015. The AFR combines the audited financial statements for the Gavi "Alliance", IFFIm, the IFFIm Sukuk Company and the Gavi Campaign. It will be published in September 2016 following Board approval and available on the Gavi website: www.gavi.org/funding/financial-reports
© the Gavi Alliance. All rights reserved. This publication may be freely reviewed, quoted, reproduced or translated, in part or in full, provided the source is acknowledged.

The material in this publication does not express any opinion whatsoever on the part of Gavi, the Vaccine Alliance concerning the legal status of any country, territory, city or area or its authorities, or of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by Gavi, the Vaccine Alliance.

Cover printed on Heaven 42 Softmatt, FSC labelled paper. Inside document printed on Heaven 42 Softmatt, FSC labelled paper.

USE THIS SPACE TO MAKE YOUR OWN NOTES



Mother receives information from health worker during routine immunisation session in Ghana

Gavi / 2012 / Olivier Asselin


PHONE



Gavi
The Vaccine Alliance

2, Chemin des Mines
1202 Geneva
Switzerland

Tel: +41 22 909 65 00
Fax: +41 22 909 65 50

www.gavi.org
info@gavi.org

www.gavi.org/progress-report

Together, we make #vaccineswork

facebook.com/gavi

@gavi @gavi_fr @vaccines

linkedin.com/company/gavi

instagram.com/gavialliance

youtube.com/gavialliance

www.vaccineswork.org