

THE GLOBAL
VACCINE ACTION
PLAN 2011-2020

Strategic Advisory
Group of Experts
on Immunization

REVIEW AND LESSONS LEARNED



World Health
Organization



THE GLOBAL
VACCINE ACTION
PLAN 2011-2020

Strategic Advisory
Group of Experts
on Immunization

REVIEW AND LESSONS LEARNED

WHO/IVB/19.07

© World Health Organization 2019

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Suggested citation. Strategic Advisory Group of Experts on Immunization. The Global Vaccine Action Plan 2011-2020. Review and lessons learned. Geneva: World Health Organization; 2019 (WHO/IVB/19.07). Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed 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 WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

This publication contains the collective views of Strategic Advisory Group of Experts on Immunization and does not necessarily represent the decisions or the policies of WHO.

Layout by Paprika.

Printed in Switzerland.



CONTENTS

Preface.....	v
Executive summary	vii
High-level recommendations	ix
I. History of the Global Vaccine Action Plan	1
II. Progress during the Decade of Vaccines	5
III. Reflections and lessons learned	15
IV. Conclusions	23
V. Technical recommendations	24
Annex 1: SAGE Decade of Vaccines Working Group membership and contributors	28
Annex 2: SAGE membership	29
Annex 3: Supplemental information sources	30





PREFACE

The Global Vaccine Action Plan 2011–2020 (GVAP) was developed to help realize the vision of the Decade of Vaccines, that all individuals and communities enjoy lives free from vaccine-preventable diseases. As the decade draws to a close, it is time to take stock of the progress made under GVAP and to apply the lessons learned to the global immunization strategy for the next decade.

This report has been prepared for the Strategic Advisory Group of Experts on Immunization (SAGE) by the SAGE Decade of Vaccines Working Group (Annex 1).

This report expands on the annual assessment reports prepared by the SAGE Decade of Vaccines Working Group. It considers the entire decade, drawing on a review of progress toward GVAP's goals and objectives as well as the perceptions of stakeholders captured through three surveys, which elicited 310 responses from immunization stakeholders, and two sets of semi-structured interviews with 80 stakeholders undertaken in 2017–2019. It also incorporates valuable insights from Working Group members and the representatives of partner organizations and WHO regional offices who have made important contributions to annual assessments. Annex 3 provides links to the full body of evidence used to generate this report.

This document reflects on the lessons learned from GVAP, and makes recommendations for the development, content and implementation of the next global immunization strategy.

**The vision of the Decade of Vaccines
(2011–2020) is a world in which all individuals
and communities enjoy lives free from
vaccine-preventable diseases**





EXECUTIVE SUMMARY

Much progress, but unmet objectives

During the past decade, great strides have been made in immunization. More children are being vaccinated than ever before, ever-growing numbers of countries have introduced new vaccines, and the global research and development (R&D) community is generating a steady stream of new and improved vaccines.

Nevertheless, many Global Vaccine Action Plan (GVAP) targets have not been met. Globally, coverage of essential vaccines has stagnated. Despite intensive efforts, polio has not been eradicated and measles is undergoing an alarming resurgence. The benefits of immunization are still unequally shared, both within and between countries.

However, GVAP included ambitious targets to catalyse action. Focusing only on the binary distinction between 'met/not met' does not do justice to the significant progress made during the decade in a wide range of countries, often under highly challenging circumstances. Lack of progress in a relatively small number of countries, generally affected by chronic conflict or political instability, masks major advances achieved elsewhere.

A comprehensive global strategy

GVAP was developed through an extensive global consultation with an unprecedentedly wide range of stakeholders, including countries. It created a comprehensive global framework for addressing key issues in immunization. It established a common vision and a forum in which immunization stakeholders could collectively discuss matters of concern, as well as a mechanism to connect the activities of global partners. And it acted as a key focal point, maintaining the high global profile of immunization.

GVAP was a comprehensive global strategy spanning both disease elimination/eradication initiatives and national immunization programme activities. For the first time, it also included a focus on R&D of new vaccines and vaccine technologies.

Limited scope to drive change

Despite these strengths, in practice GVAP had limited capacity to influence the actions of countries and partners in order to achieve its goals.

Global–country disconnects

GVAP is widely seen as a top-down strategy, focused on global goals and targets. Furthermore, as GVAP adhered to the principle of equity, it aspired to achieve similar goals for all countries, irrespective of their current status. In addition, contrary to many expectations, GVAP did not come with additional resources. This led to targets and timelines that were perceived by some countries to be unrealistic, limiting buy in to GVAP's aims.

In addition, countries and partners often adopted a 'pick and choose' approach to GVAP goals, according to their own priorities, rather than fully committing to all aspects of GVAP.

Partial implementation

Implementation of GVAP was envisaged to occur at a country level through updating of national immunization plans, supported by development partners. This happened to only a limited extent, and resourcing was often not sufficient to achieve national aspirations or GVAP goals.

Later in the decade, Regional Vaccine Action Plans played a key role in bridging the strategy and planning gap between global and country levels. However, they took time to develop, creating a lag in translation of GVAP into action in regions and countries.

Integration of immunization and other health services and relationship-building outside the health sector were limited. While many productive partnerships were established, activities were not always fully coordinated at either global or national levels. Groups such as civil society organizations (CSOs) and the private sector have the potential to play a wider range of roles. In the absence of a specific organizational structure for GVAP, opportunities to establish closer ties with emerging health priorities, such as global health security, were not fully grasped.

Extensive communications and advocacy activities were undertaken at the launch of GVAP. However, they were not sustained throughout the decade, and GVAP's low visibility, particularly among country stakeholders, may also have lessened its impact.

Extensive monitoring but limited accountability

GVAP developed an innovative and comprehensive monitoring, evaluation and accountability framework. It established a common set of metrics to assess progress and to enable countries to benchmark their achievements. Similarly, it focused attention on the value of quality data, and raised awareness of inequities in coverage within countries.

However, extensive annual reporting was not sufficient to achieve accountability, or to influence the activities of countries and partners to the extent needed to achieve GVAP goals. In countries, data collected in GVAP reporting often had limited to no impact on programme planning and operations.

A focus on global averages masked considerable national variation, obscuring exceptional progress in many countries and regions. Global averages also provided limited insight into underlying causes and potential appropriate corrective actions. In addition, attention to national-level indicators masked significant disparities at sub-national levels. Some indicators were complicated and hard to interpret, or did not capture the full complexity of the GVAP objectives.

Continuing relevance amid changing contexts

Most of the goals and objectives identified by GVAP remain relevant today, and its targets are globally agreed upon commitments that will advance progress towards the Sustainable Development Goals (SDGs).

The past decade has been characterized by considerable volatility. Accelerating urbanization, migration and displacement, conflict and political instability, unaffordability of newer vaccines in middle-income countries, unexpected vaccine supply shortages both locally and globally, and rising vaccine hesitancy all presented major challenges through the decade. While these challenges were recognized, GVAP had limited 'levers' to influence global, regional and national responses to them.

The world is continuing to experience vaccine-preventable infectious disease outbreaks, and disease elimination goals have not yet been achieved. GVAP covered both disease-specific initiatives and strengthening of national immunization programmes; both approaches have their merits, but the experience of the past decade suggests that elimination is ultimately dependent on the platform provided by strong national immunization programmes.

These insights argue in favour of a renewed global immunization strategy, building on GVAP's strengths and the lessons learned during the past decade.





HIGH-LEVEL RECOMMENDATIONS

A post-2020 global immunization strategy should:

1. Build on GVAP's lessons learned, ensuring more timely and comprehensive implementation at global, regional and national levels

2. Have a key focus on countries:

- 2a. Place countries at the centre of strategy development and implementation to ensure context specificity and relevance
- 2b. Strengthen country-led evidence-based decision-making
- 2c. Encourage the sourcing and sharing of innovations to improve programme performance
- 2d. Promote use of research by countries to accelerate uptake of vaccines and vaccine technologies and to improve programme performance

3. Maintain the momentum towards GVAP's goals:

- 3a. Incorporate key elements of GVAP, recognizing its comprehensiveness and the need to sustain immunization's successes each and every year
- 3b. Add a specific focus on humanitarian emergencies, displacement and migration, and chronic fragility
- 3c. Encourage stronger integration between disease-elimination initiatives and national immunization programmes
- 3d. Encourage greater collaboration and integration within and beyond the health sector

4. Establish a governance model better able to turn strategy into action:

- 4a. Create a robust and flexible governance structure and operational model based on closer collaboration between partners at all levels
- 4b. Incorporate the flexibility to detect and respond to emerging issues
- 4c. Develop and maintain a strong communications and advocacy strategy

5. Promote long-term planning for the development and implementation of novel vaccine and other preventive innovations, to ensure populations benefit as rapidly as possible

6. Promote use of data to stimulate and guide action and to inform decision-making

7. Strengthen monitoring and evaluation at the national and sub-national level to promote greater accountability

More detailed technical recommendations can be found on page 24.



I. HISTORY OF THE GLOBAL VACCINE ACTION PLAN

The catalyst for GVAP was the call by Bill and Melinda Gates at the 2010 World Economic Forum for the next decade to be the 'Decade of Vaccines'. Following the launch of the Expanded Programme on Immunization in 1974 and the commitment to Universal Childhood Immunization in 1984, global immunization coverage with the three-dose series of DTP (diphtheria–tetanus–pertussis) vaccine quadrupled, climbing to 84% by 2010. Smallpox had been eradicated and use of vaccines was making significant inroads into other infectious diseases. Gavi, the Vaccine Alliance, established in 2000, was making newer vaccines accessible to the poorest countries, while the Global Immunization Vision and Strategy, launched in 2006, provided a common vision and specific strategies for protecting more people against more diseases. New vaccines were being developed that held even greater promise.

Even so, not all people were benefiting equally from immunization's advances. Major inequities in access and coverage existed both between and within countries. These inequities led to the vision of the Decade of Vaccines – 'A world in which all individuals and communities enjoy lives free from vaccine-preventable diseases'.

Development of GVAP

The Decade of Vaccines Collaboration was launched in 2010 to develop a shared plan to realize this vision. The Collaboration was led by WHO, UNICEF, Gavi, the US National Institute of Allergy and Infectious Diseases, and the Bill & Melinda Gates Foundation, coordinated by the Instituto de Salud Global Barcelona, Spain, and funded by the Bill & Melinda Gates Foundation. A Leadership Council, comprising executives of the lead organizations and a representative of the African Leaders Malaria Alliance, provided sponsorship and strategic guidance.

The Collaboration established a steering committee and assembled several working groups to draft GVAP and a series of consultations were conducted with a diverse array of experts to refine its content – including elected officials, health professionals, academics, manufacturers, global agencies, development partners, CSOs and media from more than 140 countries and 290 organizations. An additional working group subsequently developed a monitoring, evaluation and accountability framework.

Ministers of health unanimously endorsed GVAP at the 2012 World Health Assembly; the monitoring

and evaluation framework was endorsed a year later. In the following years, Regional Vaccine Action Plans and national multi-year plans were developed or updated to align with GVAP. African stakeholders went further to build political will for immunization, convening the Ministerial Conference on Immunization in Africa in 2016. This meeting launched the Addis Declaration on Immunization, through which heads of state and ministers of health, finance, education and social affairs as well as local leaders made ten specific commitments to promote health on the African continent through continued investment in immunization.

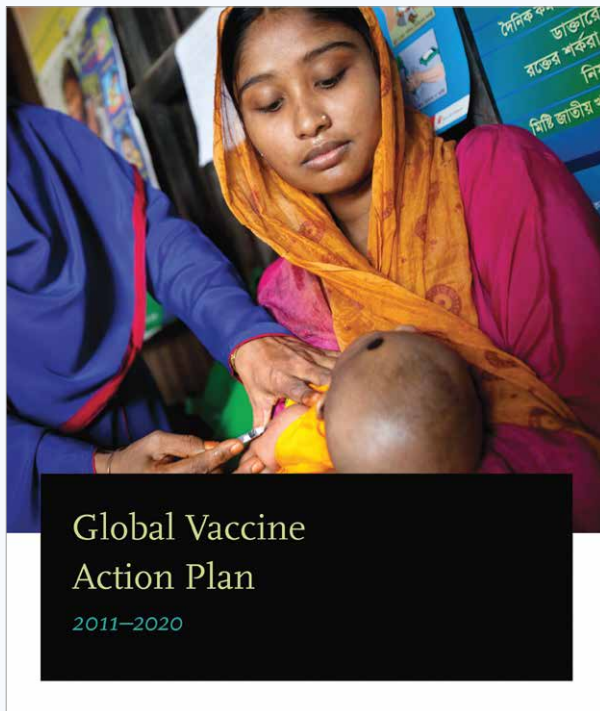
Input from more than 140 countries was gathered during GVAP development

Design of GVAP

GVAP drew together immunization goals already endorsed by the World Health Assembly and set ambitious new targets in other areas. Pre-existing goals included eradicating polio, eliminating measles and rubella region by region, eliminating maternal and neonatal tetanus from priority countries, and achieving high and equitable vaccination coverage. GVAP also called for action to reduce inequities in coverage due to geographic location, age, gender, disability, educational level, socioeconomic level, ethnic group or work condition and to reduce dropout rates. In addition, a range of input and process indicators were developed to assess country ownership, financing, service integration, data quality and vaccine availability. Similarly, indicators were also developed to track progress in the development and deployment of new vaccines and innovative technologies.

To guide countries and partners, GVAP defined a comprehensive set of activities to achieve these ambitions and described how each immunization stakeholder, from families and communities to global agencies, could contribute to its success. GVAP looked to stakeholders, including national governments, to take responsibility for implementing these activities, including translating the strategy into detailed operational plans and mobilizing the human and financial resources needed to carry them out.

GVAP AT A GLANCE



Vision

A world in which all individuals and communities enjoy lives free from vaccine-preventable diseases.

Guiding principles

1. **Country ownership** – Countries have primary ownership and responsibility for establishing good governance and for providing effective and quality immunization services for all
2. **Shared responsibility and partnership** – Immunization against vaccine-preventable diseases is an individual, community and governmental responsibility that transcends borders and sectors
3. **Equity** – Equitable access to immunization is a core component of the right to health
4. **Integration** – Strong immunization systems, as part of broader health systems and closely coordinated with other primary health care delivery programmes, are essential for achieving immunization goals

5. **Sustainability** – Informed decisions and implementation strategies, appropriate levels of financial investment, and improved financial management and oversight are critical to ensuring the sustainability of immunization programmes
6. **Innovation** – The full potential of immunization can only be realized through learning, continuous improvement and innovation in research and development, as well as innovation and quality improvement across all aspects of immunization

Goals

1. Achieve a world free of poliomyelitis
2. Meet vaccination coverage targets in every region, country and community
3. Exceed the Millennium Development Goal 4 target for reducing child mortality
4. Meet global and regional elimination targets
5. Develop and introduce new and improved vaccines and technologies

Strategic objectives

1. All countries commit to immunization as a priority
2. Individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility
3. The benefits of immunization are equitably extended to all people
4. Strong immunization systems are an integral part of a well-functioning health system
5. Immunization programmes have sustainable access to predictable funding, quality supply, and innovative technologies
6. Country, regional, and global research and development innovation maximize the benefits of immunization

Implementation

GVAP implementation took two forms. First, GVAP encompassed the ongoing work of national immunization programmes and existing global partnerships and alliances. The global partnerships and alliances included well-resourced programmes such as Gavi and the Global Polio Eradication Initiative, as well as less well-resourced initiatives such as the Measles and Rubella Initiative and the Maternal and Neonatal Tetanus Elimination Initiative.

Second were the actions that arose directly from GVAP. These included the development or updating of Regional Vaccine Action Plans and the **Addis Declaration on Immunization**; the global monitoring, evaluation and accountability process; and **World Immunization Weeks** and other activities undertaken to increase the visibility of immunization.



The global monitoring, evaluation and accountability process was the only aspect of GVAP with dedicated resources. In this effort, GVAP indicators were added to the WHO/UNICEF Joint Reporting Form and SAGE established the Decade of Vaccines Working Group to assess progress and draft recommendations for course corrections. Through the decade, countries reported annually, WHO and partner agencies compiled progress reports, and the **SAGE independent assessment report** and its recommendations were reviewed annually as a standing agenda item at the World Health Assembly.

Additional immunization-related World Health Assembly resolutions calling for price transparency and greater affordability for vaccines, and for accelerated progress toward GVAP targets, were adopted in 2015 and 2017, respectively.





II. PROGRESS DURING THE DECADE OF VACCINES

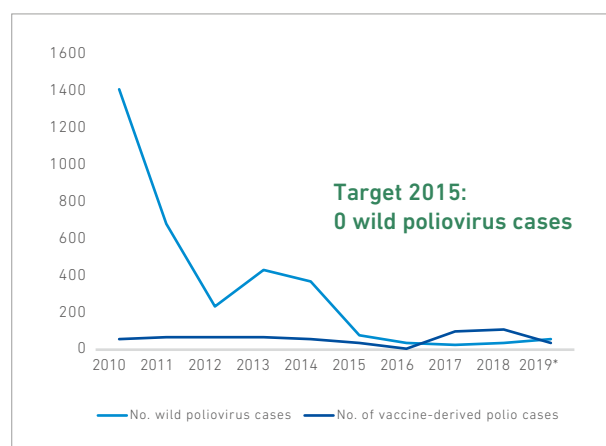
Most GVAP goals are not likely to be achieved by 2020 (see Annex 3 for links to full data). Even so, the 'off track' label masks steady progress in many areas.

Goal 1: Polio eradication

In spite of tremendous progress (Figure 1), polio eradication efforts face major security and community acceptance challenges in the last remaining sites of wild poliovirus transmission. Wild poliovirus type 2 was certified as eradicated in 2015 and wild poliovirus type 3 has not been detected since 2012. Wild poliovirus type 1 currently appears to be circulating only in Afghanistan and Pakistan.

Vaccine-derived poliovirus remains in circulation in a number of countries. These cases highlight the importance of maintaining high vaccine coverage within national immunization programmes.

Figure 1. Global wild poliovirus cases and circulating vaccine-derived poliovirus cases 2010-2019 (as of 17 July 2019)



Goal 2: Meet global and regional elimination targets

Measles elimination. Vaccination has reduced the reported incidence of measles by 83% since 2000, preventing 21.1 million deaths. However, measles cases have recently rebounded in all regions, and global incidence has doubled from 2017 to 2018; this trend is continuing in 2019. All six WHO regions committed to measles elimination by 2020. The Americas was certified as having eliminated measles in 2016, only to suffer outbreaks in multiple countries starting in 2017 and a loss of regional certification in 2018.

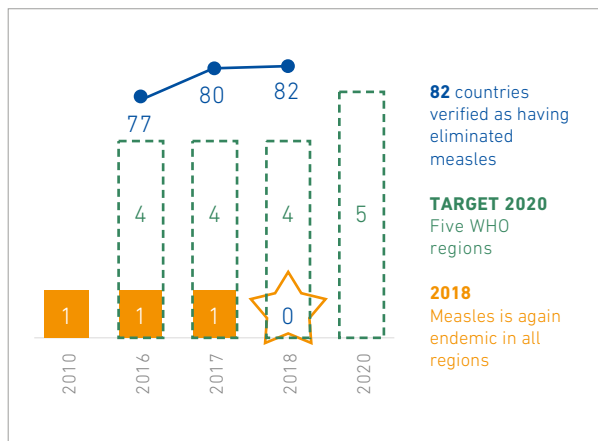
Multiple countries have managed to interrupt transmission of measles and sustain measles-free status. However, measles continues to circulate uninterrupted in all regions of the world (Figure 2).

Global coverage with the first dose of measles vaccine has plateaued at around 86%, too low to achieve elimination, with major variations in coverage across and within countries. While global coverage with the second dose of measles vaccine in national immunization programmes has increased steadily, from 42% in 2010 to 69% in 2018, nearly one-third of all children still do not receive the two doses needed to maximize protection.

Even in countries with high coverage, clusters of unvaccinated children and adults perpetuate the risk of measles outbreaks. Outbreaks, especially from importations, have affected high-, middle- and low-income countries, reflecting the need for cross-border coordination at regional and global levels. Issues of immunization programme performance and vaccine hesitancy are also challenges.

A total of 82 countries have eliminated measles, but large outbreaks occurred in all WHO regions in 2018.

Figure 2. Number of regions and countries verified for measles elimination

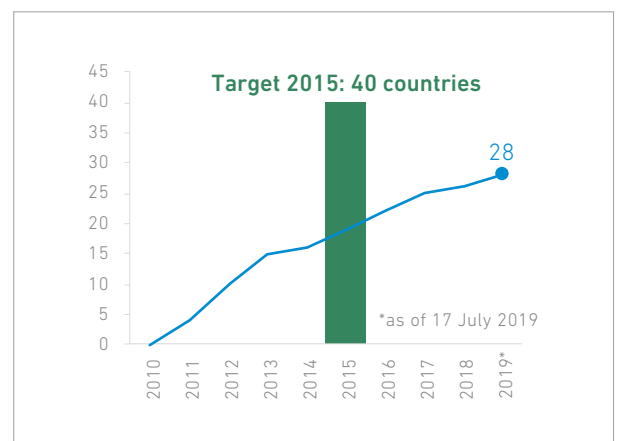


82 countries have eliminated measles, but large outbreaks occurred in all WHO regions in 2018

Rubella and congenital rubella syndrome (CRS) elimination. Rubella is not as infectious as measles and requires only a single dose of vaccine for prevention, so should be easier to eliminate. Even so, the GVAP target – rubella and CRS elimination in five WHO regions by 2020 – will not be met. As of 2018, 168 out of 194 countries have implemented rubella vaccination and one WHO region is rubella-free.

Maternal and neonatal tetanus elimination. Progress has been steady but the global target – elimination in 40 priority countries – is unlikely to be met by 2020 (Figure 3). As of July 2019, only 28 of these countries have eliminated the disease. Although more than 30 000 neonates died of tetanus infections in 2017, this represents an 85% reduction since 2000.

Figure 3. Number of priority countries having validated maternal and neonatal tetanus elimination



Goal 3: Meet vaccination coverage targets in every region, country and community

Coverage with three doses of DTP has plateaued at about 86% globally between 2010 and 2018. However, because of population growth, more children than ever are receiving the recommended three doses of DTP before their first birthday: in 2018, 116 million infants received three doses of DTP, about 4.9 million more than in 2010. Nevertheless, every year, nearly 20 million infants do not receive the full set of recommended vaccines.

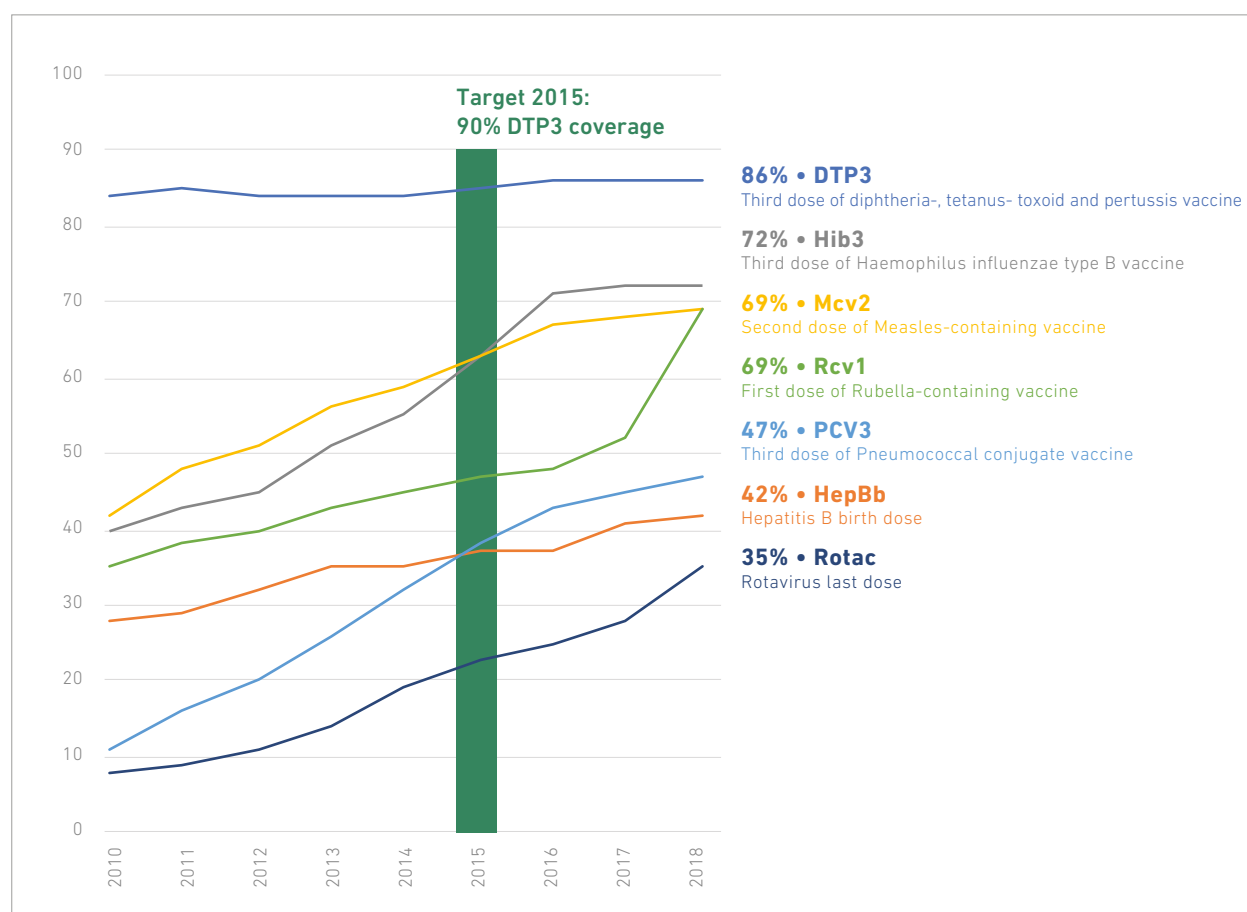
Globally, coverage has increased for many vaccines (Figure 4). Vaccine coverage rates vary substantially

between countries and regions, and while national wealth is an important factor, it is not the only driver of success – some low-income countries have achieved high and equitable coverage while several high-income countries are lagging. Low coverage has persisted in several countries over the decade, and coverage has declined in some countries, including several affected by conflict and economic and social crises.

While coverage has improved for numerous vaccines, many inequities remain within as well as between countries. Only about one-third of countries in 2018 meet the target of 80% or greater DTP3 coverage in every district.

Global vaccine coverage for DTP3 has plateaued at 86% since 2010

Figure 4. Global coverage for selected vaccines (percent)



Goal 4. Develop and introduce new and improved vaccines and technologies

A total of 116 low- and middle-income countries have introduced at least one vaccine between 2010 and 2017. The GVAP target to introduce at least one new vaccine by 2020 in all 139 low- and middle-income countries will likely be missed but only by a small margin (Figure 5).

Nevertheless, countries introduced new vaccines more rapidly in the past decade than ever before. Since 2011, over 470 vaccine introductions have occurred in low- and middle-income countries and several of these countries have introduced as many as six or seven vaccines.

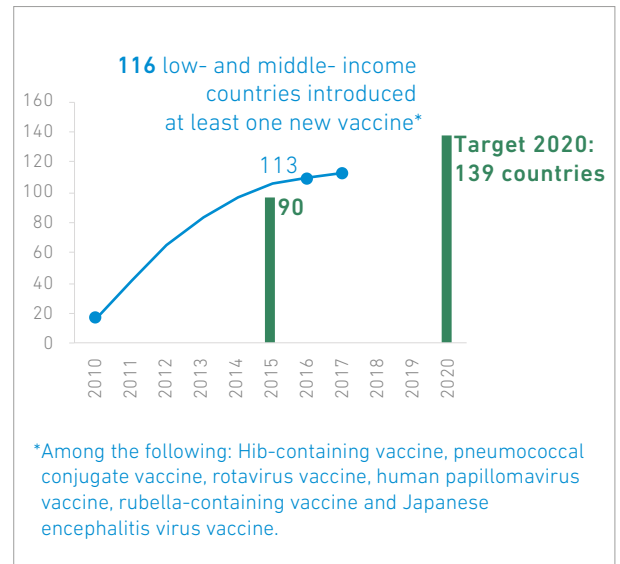
Middle-income countries that are not eligible for Gavi support have introduced fewer vaccines due in part to slow adoption of newer, more costly vaccines.

Particularly notable over the decade was the widespread introduction of a meningococcal group A vaccine ('MenAfriVac'), designed specifically for use in Africa. Use of the vaccine has virtually eliminated meningitis A disease in the 26 countries of the African 'meningitis belt', where a 2016 outbreak affected 250,000 people and claimed 25 000 lives.

As of 31 December 2018, Haemophilus influenzae type b (Hib) vaccine has been introduced in 191 out of 194 countries, pneumococcal conjugate vaccine (PCV) in 140 countries, and rotavirus vaccine in 97 countries. Human papillomavirus (HPV) vaccine is now being delivered to adolescent girls in 90 countries. The globally coordinated introduction of inactivated poliovirus vaccine (IPV) – now used in

192 countries – was a major achievement during the decade. Reinforcing the trend toward life-course vaccination, the global recommendation for tetanus is for vaccination at multiple ages to ensure lifelong protection.

Figure 5. New vaccine introductions between 2010 and 2017 in low- and middle-income countries



Over 80% of low- and middle-income countries have introduced new vaccines since 2010

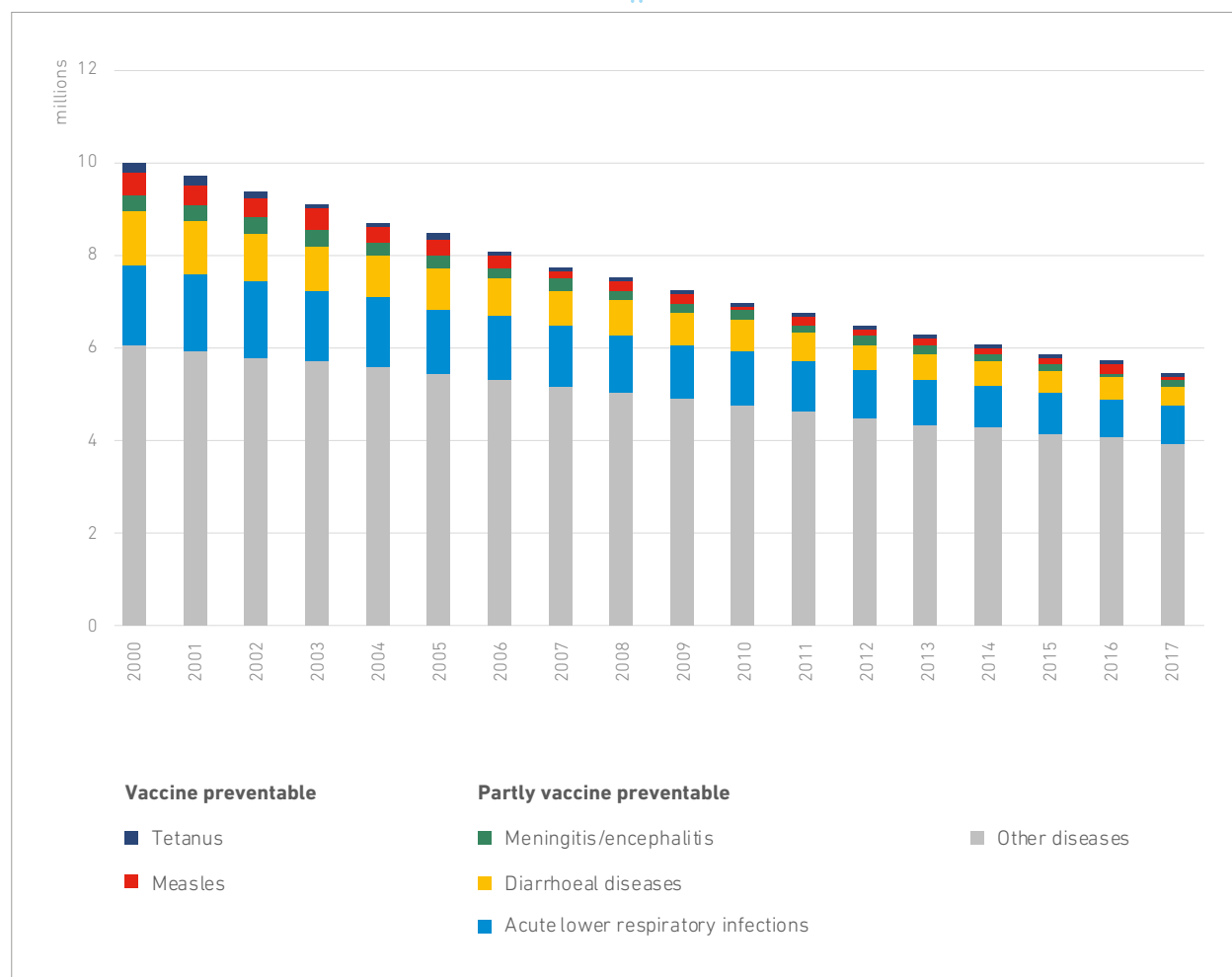


Goal 5: Exceed the Millennium Development Goal 4 (MDG4) target for reducing child mortality

The mortality rate among children under five years has fallen substantially in recent decades, and much of the decline in child deaths since 1990 has been

due to reductions in vaccine-preventable disease (Figure 6). Between 2010 and 2017, the mortality rate declined by 24%, from 52 to 39 deaths per 1000 live births. The MDG4 target was to reduce the rate of under-five deaths by two-thirds between 1990 and 2015; with recent progress, this reduction is very close to being achieved.

Figure 6. Global number of child* deaths per year - by cause of death preventable or partly preventable by vaccines between 1990 and 2017



*Under five years. Source: WHO, Global Health Observatory data, November 2018.

Since 2010, global child mortality has declined by a quarter

Strategic objectives

Significant progress has been made towards GVAP's six strategic objectives.

Prioritizing immunization

Government expenditure on national immunization programmes has increased by about one-third between 2010/11 and 2017/18 in low- and middle-income countries reporting data. However, newer vaccines are typically more expensive and availability is currently heavily dependent on Gavi funding, raising questions about the long-term sustainability of access. In addition, government expenditure has shown great year-by-year volatility over the decade, and has declined in a dozen countries.

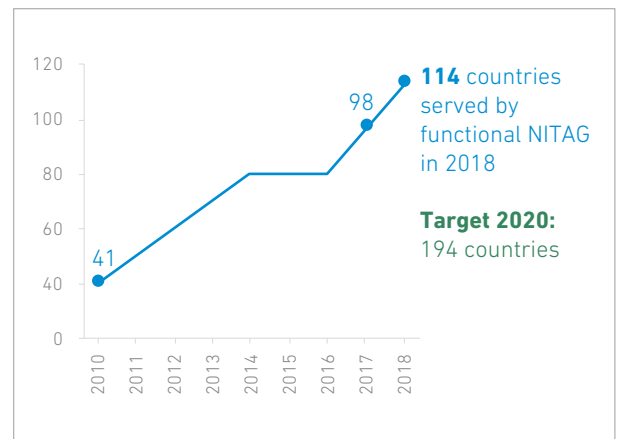
Countries have invested in strengthening their **evidence-based decision-making capacity**. The number of countries with National Immunization Technical Advisory Groups (NITAGs) meeting all GVAP process criteria has nearly tripled, from 41 in 2010 to 114 in 2018 (Figure 7). Now, 85% of the world's population is served by such NITAGs, up from 52% in 2010.

85% of the world's population is served by a NITAG meeting defined functionality criteria

Stimulating demand

More countries are routinely reporting data on **vaccine hesitancy** (161 countries as of 2017). The causes of hesitancy are varied, with no single factor accounting for more than a third of issues, and are often highly context-specific. WHO has recommended a multi-pronged strategy to address hesitancy, and UNICEF, Gavi and many countries are developing programmes to proactively counter vaccine hesitancy.

Figure 7. Numbers of functional NITAGs globally



Addressing inequities and emergencies

The nature and extent of inequities vary between and within countries. Economic status and social marginalization remain key factors associated with low coverage, while growing poor urban communities as well as remote rural communities are still often underserved. Existing strategies such as Reach Every Community are being used to address sub-national inequities in coverage but do not address the needs of those in transit.

In addition, new initiatives have been launched to ensure that people affected by disease outbreaks and humanitarian crises receive immunization services. In recognition of the burden of outbreak-prone diseases, Gavi has extended its support to vaccines for emergency use to control cholera, meningococcal meningitis, yellow fever and Ebola.

With conflict, displacement and migration creating the largest population of vulnerable people in human history, and climate change likely to compound disruption, a 'humanitarian mechanism' has been developed for procurement of affordable vaccines for populations facing humanitarian emergencies. In addition, Gavi has established a policy for fragility, emergencies and refugees.

Health system strengthening and integration

Immunization system capacity has been strengthened in many countries, for example by redesigning supply chains in countries as diverse as Ethiopia, Benin and Canada. As of 2017, 69 countries have been approved for health system strengthening support from Gavi to enhance immunization programme functions. Stockouts have declined since 2016, but the number of countries reporting national-level stockouts remains well above the 2020 target, and distribution/delivery systems remain weak in many countries.

The decade has seen a trend towards more **integrated disease control strategies** that combine immunization with other interventions such as enhancing surveillance, reducing risks and improving treatment. Unfortunately, limited progress has been achieved in the implementation of some long-standing strategies.

New global control strategies have been developed for cholera and yellow fever, and integrated strategies for meningitis and malaria are being formulated, anticipating the availability of new vaccines for these diseases.

GVAP envisaged greater coordination between immunization and other aspects of **primary health care**. Some integration of service delivery has occurred, such as antenatal care and maternal immunization (e.g. diphtheria/tetanus/pertussis and influenza vaccination of pregnant women) and school-based HPV vaccination. Immunization continues to have a greater reach than other services, suggesting there is scope to use immunization to improve access to other health services.



Sustainable funding and vaccine supply

Global donor support for immunization has increased, from just under half a billion dollars in 2010 to more than one billion dollars in 2018. With development assistance budgets under pressure in some donor countries, multiple competing interests for donor support, more countries transitioning out of eligibility for Gavi support, and funding for polio eradication beginning to decline, immunization is likely to face increasingly significant challenges securing external financial support. Effective polio transition planning will be vital to maintain essential functions within national immunization programmes.

Global donor support for immunization exceeded US\$1bn in 2018

To improve **vaccine markets**, Gavi has created incentives for new manufacturers to enter the market, improving access to PCV, HPV and Ebola vaccines. Innovative procurement and funding mechanisms developed by UNICEF and Gavi have reduced the weighted average price of pentavalent vaccine for Gavi countries from US\$2.98 in 2010 to US\$0.79 in 2019, saving hundreds of millions of dollars. Notably, greater clarity on likely future needs has encouraged more companies to begin manufacturing pentavalent and rotavirus vaccines. However, shortages of several vaccines have been experienced, including BCG, IPV and yellow fever vaccine. Growing diversity in vaccine formulations and combinations is also raising issues about countries' increasing reliance on a relatively small number of manufacturers for some products.

The price of pentavalent vaccine for Gavi countries fell by over 70% between 2010 and 2019

Middle-income countries still report that the cost of vaccines is a major obstacle to their introduction. Such countries pay higher prices for vaccines, in part because of a lack of procurement capacity and suboptimal regulatory processes within countries. To help address their needs, the **Market Information for Access to Vaccines** initiative aims to enhance vaccine-pricing transparency, better link global supply and national needs, and improve countries' vaccine procurement capacities.

Research and development

During the decade, **improved vaccines** for typhoid and rotavirus and **novel vaccines** for dengue, meningitis B and cholera have been licensed and begun to be used. In addition, exciting progress has been made in vaccine development for other diseases. The most advanced malaria vaccine is undergoing pilot implementation studies in three African countries, alongside continuing promotion of vector control and insecticide-treated bed net use. A novel tuberculosis vaccine was recently shown to reduce progression from latent infection to active disease. Pivotal efficacy trials are underway for two HIV vaccine candidates. Progress towards a universal influenza vaccine has been slower, although several candidates are in early clinical evaluation, and key priorities for future research have been identified.

The West Africa Ebola outbreak and Zika virus infections in the Americas refocused the world on the threat of **emerging and re-emerging infections**. Mechanisms have been established to coordinate and support global responses, including the WHO Research and Development Blueprint for Action to Prevent Epidemics, and the Coalition for Epidemic Preparedness Innovations (CEPI). Highly promising efficacy data were obtained on Ebola vaccine candidates during the West Africa Ebola outbreak, and an Ebola vaccine was deployed under compassionate use provisions in the Democratic Republic of the Congo in 2019.

Three African countries have launched malaria vaccine pilot implementation studies

Multiple new **delivery technologies**, such as needle-free administration, blow-fill-seal primary containers, and improved vaccine vial monitors have been licensed and WHO-prequalified. However, field implementation has been slow, in part because of the costs associated with transitioning to new technologies. Similarly, while three vaccines have been licensed for use under controlled-temperature chain conditions, their implementation at scale has been limited.

Awareness of the importance of implementation and operations research has increased. Notable **implementation research** programmes have been organized for HPV and malaria vaccination. Even so, the potential of implementation and operations research to accelerate the introduction of new products and processes, and to improve programme performance, has yet to be fully exploited.

MAJOR SHIFTS IN THE GLOBAL CONTEXT OF IMMUNIZATION 2010-2019

Demographic changes

Global population has increased from 6.96 billion in 2010 to 7.71 billion in 2019, with the fastest growth in the African and Eastern Mediterranean regions. The proportion of people living in urban areas has increased from 50.7% of the global population in 2010 to 55% in 2018.

Humanitarian crises and population migration

In 2010 the population of forcibly displaced people, according to the United Nations High Commissioner for Refugees, was 33.9 million. In 2018 it was 70.8 million, an all-time high. This included 25.9 million refugees, 41.3 million internally displaced persons, and 3.5 million asylum seekers. One of every 108 people worldwide is displaced.

Increased focus on emerging infectious diseases, epidemic preparedness, and global health security.

Recent years have seen major outbreaks of infectious diseases such as Zika virus in the Americas, Ebola in Africa, cholera in Yemen and Syria, and diphtheria in Rohingya refugees in Bangladesh. In addition, antimicrobial resistance is increasingly a threat.

Sustainable Development Goals succeeding Millennium Development Goals in 2016.

Immunization contributes to 14 of the 17 SDGs and plays an especially important role in SDG3, good health and wellbeing. Immunization is less prominent in the SDG measurement framework as it is monitored through a composite measure of access to medicines.

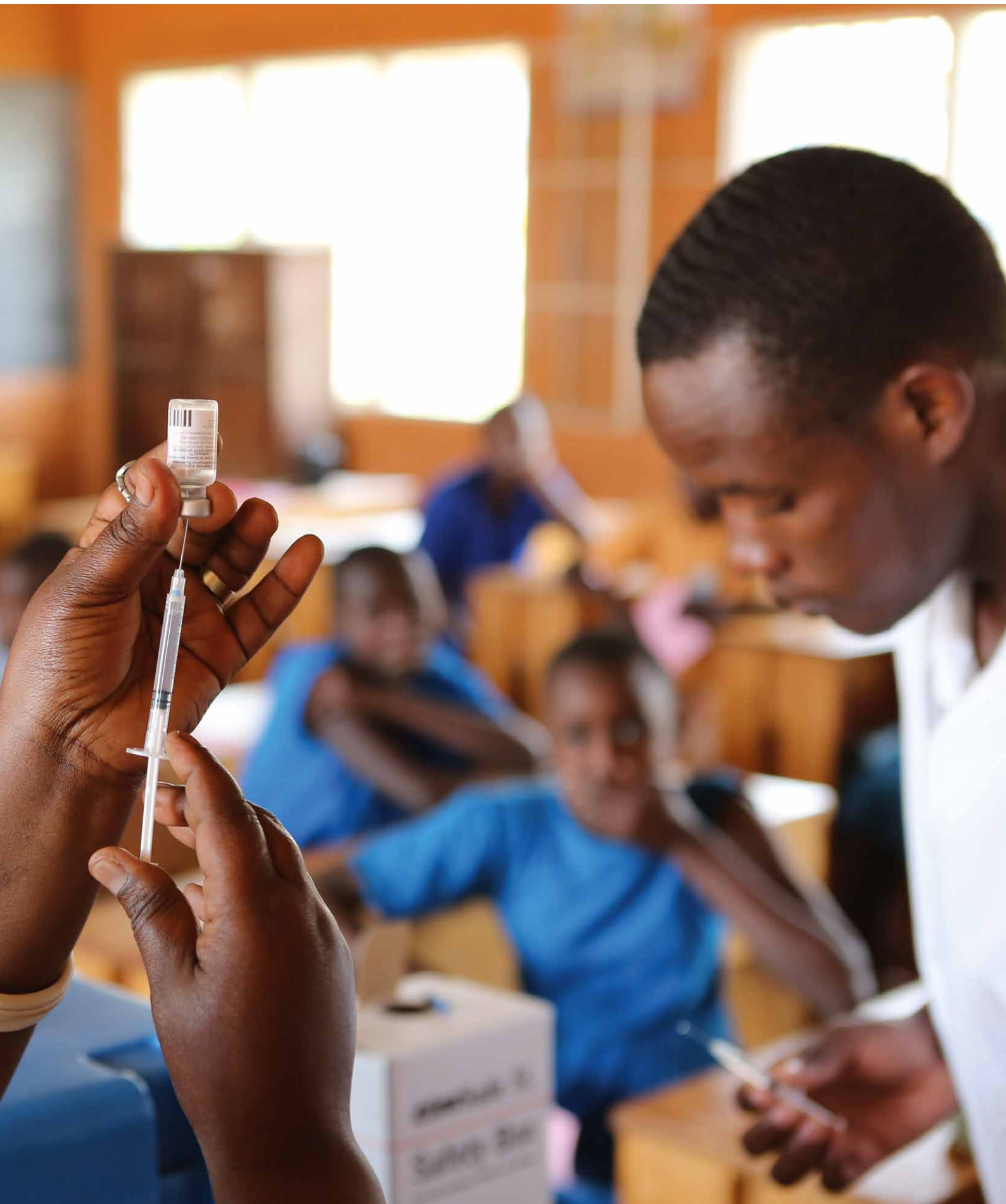
Political and economic volatility.

Support for immunization is vulnerable to changing economic and socio-political climates at national and global levels.

Rapid spread of anti-vaccination messaging

New tools such as social media enable misleading vaccination information to be disseminated rapidly and widely, affecting confidence in vaccination.





III. REFLECTIONS AND LESSONS LEARNED

Collectively, much can be learned from GVAP indicator data, feedback from immunization stakeholders, and the collective insights of GVAP working group members, staff from WHO regional office and representatives of partner organizations.

Although many GVAP targets were not met, much progress was made during the Decade of Vaccines

A focus solely on the achievement of targets could give the impression that GVAP had limited impact. However, this overlooks the important progress that has been made. More children are being vaccinated each year than ever before, regions such as South-East Asia and many low- and middle-income countries have taken huge strides in increasing immunization coverage and most low- and middle-income countries have introduced at least one new vaccine. Vaccine-preventable infectious disease deaths have declined markedly, particularly among infants. These are achievements to be celebrated.

GVAP targets were bold and aspirational, designed to catalyse action. However, for some regions and in some areas, the timelines for their achievement may have been unrealistic. Furthermore, many of the 'failures' to achieve targets reflect highly challenging circumstances – particularly the impact of conflict and political instability. A true picture of progress therefore requires a more nuanced reading than that provided by a binary distinction between success and failure in achieving GVAP targets.

Incomplete implementation: GVAP provided a comprehensive strategy that described in broad terms what needed to be done to achieve its goals. It was designed to be implemented mainly through updating of national immunization plans. This happened to only a limited extent, and depended on the priorities of countries, partners and existing disease control initiatives. Partners, in light of their own strategic priorities, drove progress in some areas without prioritizing others.

Implementation was given impetus by the development of Regional Vaccine Action Plans, which were more responsive to country situation and calibrated to regional capacities and issues. In some cases, they set more pragmatic targets and added new, regionally relevant goals. However, most of the regional plans were endorsed midway through the decade, contributing to a lag in GVAP implementation, and had less input from global and local partners.

Learning through the decade: Importantly, much has been learned over the past decade – in terms of the nature of the key challenges facing immunization, how they can best be addressed, and how a global immunization strategy could more effectively drive forward change.

“A true picture of progress therefore requires a more nuanced reading than that provided by a binary distinction between success and failure in achieving GVAP targets”

GVAP did not take sufficient consideration of differences in individual countries' circumstances

The development of GVAP involved extensive consultation with a huge range of stakeholder organizations, with particular efforts made to integrate the country perspective. It was therefore one of the most collaboratively focused global health initiatives ever undertaken.

However, being focused on the achievement of global goals and targets, GVAP is widely perceived to be a **top-down strategy** (even though the goals were endorsed by member states). Furthermore, as GVAP adhered to the principle of equity, it aspired to achieve similar goals for all countries, irrespective of their current status. This led to targets and timelines that were unrealistic for some countries, limiting their buy in.

Despite a sophisticated monitoring and evaluation framework, these factors contributed to **weak accountability** for achieving GVAP targets, particularly at national and sub-national levels.

Middle-income countries ineligible for Gavi funding were assumed to be able to self-support their immunization programmes and had little access to financial or technical support, contributing to the slower introduction of new vaccines in such countries.

Nevertheless, many countries with limited resources have achieved high coverage or significantly improved coverage levels. Although external financial resourcing clearly is important, it is not the only factor affecting national immunization programme performance. In many countries, stronger political commitment and additional technical assistance have had major impacts.

“Despite a sophisticated monitoring and evaluation framework, these factors contributed to weak accountability for achieving GVAP targets, particularly at national and sub-national levels”

Unique challenges: In each region, a small number of ‘outlier’ countries with low coverage rates have typically lowered regional and global averages, partially obscuring global progress. Many of these countries are affected by conflict and political volatility, sometimes exacerbated by extreme poverty, and large communities of vulnerable populations. It has become clear that each faces its own unique set of challenges, and solutions will need to be similarly tailored to national context.

From global to country (and beyond): To a degree, and after a delay, the development of Regional Vaccine Action Plans mitigated the top-down nature of GVAP, leading to the development of more tailored support for countries based on assessments of national immunization programme capacities. In addition, later in the decade, more attention was paid to **sub-national political structures** – key contributors to immunization programmes in many large countries.





NITAGs: A success story

The decade saw spectacular progress in the number of NITAGs globally, with 85% of the world's population now living in a country with a NITAG meeting GVAP process criteria. Furthermore, the role of NITAGs has expanded from advising on new vaccine introductions to more general support for national evidence-based policymaking. Good evidence has emerged of how NITAGs can influence national decision-making and improve immunization programme function. NITAGs are integral to country ownership of immunization programmes, and have a key role to play as the number and diversity of vaccine products increase, more evidence-based strategies to improve uptake are required, and decision-making becomes more complex.

Notably, NITAGs and their regional equivalents, RITAGs, have evolved context-specific roles. In some regions, NITAGs have become an integral part of the immunization landscape, developing a national immunization programme monitoring function and contributing to accountability, coordinated through regional structures.

However, NITAGs are not yet perceived as essential components of immunization systems in all countries. The technical and financial sustainability and capacity of NITAGs remain issues in many countries. Smaller countries may lack the breadth of expertise to establish fully functioning NITAGs, which is being addressed through sub-regional collaborations.

If these challenges are addressed, there is significant potential to build upon the NITAG and RITAG infrastructure, and its links to global decision-making processes, building on the dynamic changes seen over the past decade.

“NITAGs are integral to country ownership of immunization programmes, and have a key role to play as the number and diversity of vaccine products increase”

Local innovation

The evolution of NITAGs and RITAGs to serve national and regional functions is an illustration of tailored innovation to solve local challenges. Throughout the decade, imaginative and innovative solutions have been developed at country and regional levels, with regions often playing important facilitating or coordinating roles. Examples include the electronic immunization registry developed in the Region of the Americas, as well as resources on building community support and countering anti-vaccination messaging developed by the European Region.

However, stakeholders may not be aware of relevant resources, or may find them hard to locate. A major challenge for the future is to ensure that potential users of these tools and resources are made aware of their existence and that they are more easily accessible for others to adapt and use.

Local research

For the first time, GVAP included a focus on R&D, including vaccine technologies and new vaccine development – where significant progress has been made. Although local research capacity and vaccine production capabilities in some middle-income countries have significantly increased, there is still much progress to be made to encourage local involvement in vaccine R&D and production, especially in low-income countries of disease-endemic regions.

Although part of GVAP, less attention has been given to the use of implementation science (including continuous quality improvement), operational research, and behavioural and social research to improve the performance of immunization programmes and to scale up innovations that fit local contexts.

Looking forward, many new vaccines licensed in the next decade will have complex immunization schedules or target people who are not routinely vaccinated today. Implementation research will therefore play an increasing role in generating the evidence to inform policy decisions and guide the most effective and efficient use of vaccines.

“Less attention has been given to the use of implementation science, operational research, and behavioural and social research to improve the performance of immunization programmes”

GVAP goals remain relevant – but the remaining challenges are tough

Immunization coverage has increased substantially since the 1990s. Millions of lives have been saved as a result. Now, however, progress is inevitably slower – those most easily reached are generally well served but reaching less-accessible populations continues to pose significant challenges.

Achieving immunization goals requires constant commitment and vigilance. As recent measles, diphtheria and other outbreaks have illustrated, there is a significant risk of backsliding. Measles outbreaks are an important early warning sign of gaps in coverage and shortcomings in immunization programme performance.

Achieving immunization and disease control targets will therefore be challenging. Success will require an **unwavering commitment to the ‘basics’** – ensuring that national immunization programmes are effective, efficient and sustainable, well-resourced and well-led, year after year. There are no magic bullets that will transform programmes overnight.

Extending coverage to currently under-served populations will undoubtedly be challenging. So too will be understanding and addressing the reasons behind people’s reluctance to take up immunization services when they are available.

GVAP’s goals and strategic objectives, endorsed in 2012, are equally relevant today and should form the core of a future immunization strategy, updated to take account of the lessons learned from the past decade and ways in which the world has changed. The aim should be both to secure the gains made to date and to extend the benefits of immunization to all those who are currently missing out.

“Achieving immunization goals requires constant commitment and vigilance. As recent measles, diphtheria and other outbreaks have illustrated, there is a significant risk of backsliding”

Integrating disease-specific activities and national immunization programmes

Disease-specific activities focus attention and action on concrete disease-control goals, such as elimination. Such high-profile goals have been strong motivators of action at national, regional and global levels. Often, they have also built capacity that has benefited other programmes. However, disease-specific activities can also draw attention and resources away from other infectious disease priorities, and in some cases, especially with polio eradication, have led to the development of parallel structures and lack of coordination within countries.

Exciting new tools to improve coverage and disease surveillance – such as GIS-based population mapping and community-based surveillance – have been developed within disease-specific initiatives. Sometimes these tools have been assimilated into national immunization programmes, but not always (in part because they can be costly and require significant technical expertise). In addition, without integration, some important functions are at risk of being lost during funding transitions.

Given their interdependency, strong national immunization programmes provide a more solid foundation for disease-control initiatives, making it more likely that global eradication and elimination targets will be met. At the same time, disease-control efforts should be seen as opportunities to enhance national immunization programmes.

“Given their interdependency, strong national immunization programmes provide a more solid foundation for disease-control initiatives, making it more likely that global eradication and elimination targets will be met”



Partnerships and integration – the expanding scope of immunization

The past decade has seen a growing awareness that immunization has relevance far beyond its traditional core role – protecting infants against infectious disease. The expanding scope of immunization has critical implications for the immunization community's relationship with groups both within and beyond health.

Notably, the importance of **primary health care** has been reinforced during the decade. Delivery of integrated services within primary health care was an important theme of GVAP, yet only limited progress has been achieved.

Immunization is increasingly seen as fundamental to health and wellbeing at all ages. Again, the **life-course perspective** was incorporated into GVAP, but in reality immunization of infants has remained its key focus. The need to expand immunization at older ages will require more concerted efforts to forge links with other sectors inside and outside the health system.

Integration of services and other key functions such as surveillance can be organizationally challenging; however, coordinated development and deployment of services and disease **surveillance** offers the prospect of greater efficiency and more sustainable impact.

Civil society organizations (CSOs) were identified as a key constituency in GVAP. Their main involvement has been in community mobilization and service delivery, but CSOs are a highly diverse group, and have the potential to play a much wider range of roles. Professional societies, academia and other groups could be more engaged in national immunization activities, and community-focused organizations could be more actively involved in planning, monitoring and long-term community engagement.

GVAP did not say enough about **private sector providers** (for-profit and non-profit), which play important roles in extending access to vaccines in many countries. The role of private sector service delivery is highly context-specific, and likely to evolve as countries progress economically.

In addition, opportunities to establish closer ties with communities involved in emerging global health priorities such as **global health security** and **antimicrobial resistance** were not fully grasped, despite common interests in areas such as infectious disease surveillance as well as vaccine development.

Finally, another important lesson has been the importance of fostering dialogue and collaboration across the **full spectrum of R&D** from basic research through to implementation and deployment. To accelerate development of vaccines that are appropriate for field use, it is important for researchers to understand potential use scenarios and constraints; similarly, in order to plan for timely clinical and field evaluation of promising candidates and their eventual uptake, downstream developers, public health officials, communities, and potentially other stakeholders need to be informed early of the progress of potential candidates.

“The expanding scope of immunization has critical implications for the immunization community's relationship with groups both within and beyond health”

Humanitarian emergencies and chronic fragility

The past decade has been characterized by extensive political upheaval, civil conflict and natural disasters. In many settings, these have severely disrupted health infrastructure and services, led to mass displacement of people, and undermined efforts to deliver immunization and other health services to vulnerable populations.

Although GVAP did not specifically focus on humanitarian emergencies, some important mechanisms have been developed to improve access to immunization in such situations. Given the number of humanitarian emergencies each year, and persistent conflict and fragility in several countries, a dedicated strategy is required to secure the availability and distribution of essential vaccines, recognizing that each emergency setting is likely to have its own unique set of challenges. Experience over the past decade has highlighted the critical need to engage communities in emergency responses, and to improve both preparedness and coordination of responses to ensure access to immunization and other services in emergencies.

Accelerating urbanization and migration have also raised humanitarian immunization issues. In some instances, immunization programmes have been sufficiently flexible to ensure that urban migrants and migrants transiting through a country are immunized but in others this has been problematic. Strategies for transient populations are needed, with clear definitions of roles and responsibilities among countries, partners and CSOs so no groups fall through the immunization net.

Monitoring of national immunization and other indicators could also provide early warning signs of backsliding and more general fragility, triggering actions to prevent major disruption to services.

“Strategies for transient populations are needed, with clear definitions of roles and responsibilities among countries, partners and CSOs”

GVAP created a global framework for immunization, but was unable to drive sufficient change to achieve its goals

GVAP created a comprehensive global framework for addressing key issues in immunization. It established a common vision and a forum in which immunization stakeholders could collectively discuss matters of concern across the full spectrum of activities relevant to immunization. As a global strategy and advocacy tool, GVAP helped to maintain immunization's visibility globally.

Through its consultation process, GVAP aligned stakeholders around the need to improve immunization coverage and equity. Its endorsement by all member states reinforced access to immunization as a global priority, building political will and helping to make the case for vaccination among political and business decision-makers.

Implementation of GVAP, and achieving GVAP targets, was the responsibility of countries and a diversity of partners and programmes – whose commitment to GVAP was mixed. Rather than fully embracing all its goals and targets, many stakeholders adopted GVAP priorities selectively, according to their institutional priorities.

Alignment was not optimal at either a global strategic level or, often, within countries, as partners too often undertook activities without full coordination with other stakeholders.

Driving action: With no formal organizational infrastructure, GVAP had limited ‘levers’ to accelerate progress towards its goals. In particular, contrary to many initial expectations, GVAP did not have its own additional dedicated resourcing (except for monitoring and evaluation at the global and regional levels), which may have deterred country buy in. This misperception may also have diverted attention away from maximizing domestic resourcing and making the best possible use of existing resources. These factors may have limited GVAP's capacity to effect change and to catalyse action to achieve targets – and GVAP may therefore have overestimated what was achievable.

Without a formal organizational infrastructure to represent immunization, integration and relationship building with sectors outside health have also lagged.

“With no formal organizational infrastructure, GVAP had limited ‘levers’ to accelerate progress towards its goals”

Responding to emerging challenges

Emerging infectious diseases, measles resurgence, accelerating urbanization, migration and displacement, conflict and political instability all presented major challenges. High-profile anti-vaccination campaigns, ambivalence about the value of vaccines, and the politicization of vaccination – all powered by the rise of social media – have become significant concerns. The rise of antimicrobial resistance has heightened interest in expanding the use of vaccines.

Such threats and opportunities were recognized in annual progress reports. However, there was no mechanism to update GVAP. In addition, as with initial implementation, GVAP had limited scope to influence national, regional or global priorities to address emerging challenges.

Spreading the word

Extensive GVAP-related **communications and advocacy** activities were undertaken around its launch. However, less activity was undertaken later during the decade. In addition, global GVAP partners made a strategic decision to focus on promotion of immunization more generally rather than GVAP specifically, through initiatives such as the successful World Immunization Week.

Awareness of GVAP among country stakeholders was often low, particularly among those who became involved with immunization later in the decade. This low visibility may have lessened its impact, and limited GVAP's ability to secure alignment around goals, targets and principles.

Important regional communications and advocacy activities have been undertaken, particularly the development of the Addis Declaration on Immunization in the African Region. A potentially important mechanism for securing political commitment, the Addis Declaration was signed by heads of states only in 2017, further evidence of the time it can take to convert a global strategy into regional actions.

“Low visibility may have lessened its (GVAP) impact”

Inclusion of R&D in GVAP was a major advance

GVAP was the first global immunization strategy to include R&D – widely seen as a highly positive innovation. Inclusion of R&D focused attention on the emerging pipeline of new vaccine products and vaccine technologies, and the need to consider potential bottlenecks across the entire translational pathway, including licensing and post-licensing implementation stages.

Although global investment in vaccine development is still sub-optimal, particularly for infectious diseases primarily affecting low- and middle-income countries, product pipelines are better stocked now than a decade ago. Regulatory, implementation and production-capacity issues have emerged as significant challenges to providing populations with timely access to vaccines.

Progress in the R&D field has been highly promising. Despite major technical challenges, encouraging progress has been made in the development of vaccines against the main diseases highlighted by GVAP, malaria, TB, HIV and influenza. Typhoid and Ebola vaccines are beginning to be used in the field, and vaccines are in the pipeline for major killers such as respiratory syncytial virus, which causes an estimated 3 million hospitalizations and 60,000 deaths of children under five every year.

Furthermore, a range of exciting new developments could have significant impact over the next decade. These include innovative vaccine platforms to enable rapid development of new and strain-specific vaccines, novel preventive interventions such as broadly neutralizing antibodies, more vaccines to protect against non-communicable diseases, therapeutic vaccines, and vaccines against sexually transmitted infections. The implications of these advances for regulatory systems, implementation and public acceptance need to be carefully thought through to minimize any delays in their uptake to protect people's health.

“Despite major technical challenges, encouraging progress has been made in the development of vaccines against the main diseases highlighted by GVAP, malaria, TB, HIV and influenza”

GVAP highlighted the critical role of data and stimulated important initiatives to improve data quality and use for action

Data serve multiple purposes, informing programmatic decision-making, national, regional and global policy-making, and supporting advocacy. A wide range of information beyond coverage data, including infectious disease surveillance data, and both country-generated and external data, is needed to meet these different purposes. Depending on their roles, different users will have very different data needs.

GVAP's focus on data raised awareness of inequities in coverage within countries and drew attention to the need for quality data. This led to important initiatives to improve the value of data to users, and encouraged greater reflection on the key attributes of 'data quality' (particularly that it be fit for purpose). The quality of national and sub-national administrative data remains a concern in some countries, with the risk of decision-making being based on an inaccurate picture of coverage. Lack of up-to-date data on local population sizes remains a key factor contributing to uncertainties in coverage estimates. Data on migrating populations have largely been missing.

Despite this strong focus on data, data collection for GVAP reporting was not sufficiently tied to action, particularly at national levels. Data collection can be time-consuming for frontline staff, who may see no benefits from their data-collecting activities. Without a strong linkage to action at all levels, there is a growing risk that data reporting becomes an end in itself.

“GVAP's focus on data raised awareness of inequities in coverage within countries and drew attention to the need for quality data”

GVAP's monitoring and evaluation framework delivered many benefits, but did not achieve full accountability

GVAP's monitoring and evaluation framework established a common set of metrics to assess progress, identify bottlenecks, and to enable countries to benchmark their achievements.

The annual reporting process provided regular updates on progress and highlighted emerging issues of concern. Annual reporting, to the World Health Assembly and often also WHO Regional Committees, reinforced the political will demonstrated by World Health Assembly endorsement, ensuring that ministers of health were aware of global progress in immunization and how their countries compared to their peers. Countries used these discussions to raise issues such as affordability of new vaccines for middle-income countries.

At the global level, the recommendations in annual assessment reports were generally perceived as useful, highlighting specific issues of concern. At the regional and country levels, many – including some key stakeholders within national immunization programmes – were unaware of the specific recommendations or saw them as vague or impractical.

Poor data quality hampered the monitoring of several indicators. In some cases, as for vaccine hesitancy and demand, the measures used did not adequately capture the complexity of issues. Some GVAP indicators were cumbersome to monitor. Some of the more detailed indicators were omitted from annual assessment reports meant for wide audiences, and it is unclear how effective the detailed targets were in driving progress.

Importantly, headlines that sounded the alarm on 'off track' results often masked important underlying progress. In addition, global averages and country-level data generally provided little clue to the causes of under-achievement, again limiting the scope for corrective action.

GVAP's monitoring and evaluation framework therefore generated a rich data stream but had limited impact in driving achievement of GVAP targets. Ultimately, monitoring and evaluation failed to ensure accountability among stakeholders, including global partners. While country results were evaluated progressively at country, regional and global levels, global accountability processes did not effectively cascade to the country level and had little impact on the activities of partners. As a result, evaluations of progress did not necessarily catalyse the actions needed to achieve GVAP targets.

“GVAP's monitoring and evaluation framework therefore generated a rich data stream but had limited impact in driving achievement of GVAP targets”

IV. CONCLUSIONS

The past two decades have seen tremendous advances in immunization coverage, particularly in low- and middle-income countries. Between 2000 and 2018, an estimated 35 million deaths have been averted through use of vaccines in such countries – 96% of them of infants. These efforts have almost halved the number of deaths from vaccine-preventable disease.

Looking forward, at least 122 million deaths are likely to be averted by immunization over the lifetime of people born between 2000 and 2030.

These statistics speak to the extraordinary impact of vaccines. They are almost uniquely successful interventions – highly effective, extremely safe, mostly affordable and not vulnerable to the development of resistance, as occurs with antimicrobials.

Indeed, vaccines are so successful that it is easy to take them for granted. Recent outbreaks should be warning signs against complacency. In addition, it is still the case that not everyone is benefiting from these proven interventions.

GVAP created a united global coalition to extend the benefits of immunization. The challenge for the next ten years is to maintain the momentum it created, to absorb important learnings, and to shape a new strategy to drive forward even greater achievements.



V. TECHNICAL RECOMMENDATIONS

A post-2020 global immunization strategy should:

1. Build on GVAP's lessons learned, ensuring more timely and comprehensive implementation at global, regional and national levels

- Take forward the foundation established by GVAP, maintaining its positive elements and updating and adapting as necessary in light of the valuable experience gained over the past decade.
- Ensure development and implementation of National and Regional Vaccination Action Plans begins as rapidly as possible, to maintain momentum and ensure rapid operationalization.
- Develop Regional Vaccination Action Plans within the framework of existing regional planning/approval cycles.
- Ensure National Vaccination Action Plans are used to update national immunization plans and are integrated into wider health service plans.

2. Have a key focus on countries:

2a. Place countries at the centre of strategy development and implementation to ensure context specificity and relevance

- Incorporate flexibility to accommodate the needs of all types of country, allowing each country to tailor its national plan within the global framework, taking account of its development requirements, the vaccination needs of its population, available resources, competing priorities and other contextually important factors.
- Enable countries to set ambitious but realistic national targets for key indicators with accompanying milestones, with the long-term aim of achieving agreed global goals; all countries should recognize the need for ambition and urgency in target setting.
- Enable countries to develop, in collaboration with external and internal partners, country-led strategies to achieve targets with specific roles and responsibilities and clearly defined financial resourcing and technical assistance requirements.

- Encourage regions and partners to provide tailored and coordinated technical support according to countries' specific needs, to build sustainable national immunization programme capacity.
- Ensure that, in countries with devolved political/health systems, similar planning processes are undertaken with sub-national authorities.

2b. Strengthen country-led evidence-based decision-making

- Promote strong national commitment to National Immunization Technical Advisory Groups (NITAGs).
- Enhance and extend the technical capacity and capabilities of NITAGs.
- Encourage countries to draw on other sources of in-country expertise, including national public health institutes and higher education institutions, directly or through NITAGs.
- Ensure that NITAG functions and impact are regularly assessed.
- Develop innovative solutions such as sub-regional NITAGs for countries with small populations or limited technical expertise.
- Encourage sub-regional, regional and global networking of NITAGs, including enhanced sharing of experience through the Global NITAG Network.
- Explore the potential for greater NITAG involvement in monitoring and advising on national programmes and serving as an independent voice for immunization.

2c. Encourage the sourcing and sharing of innovations to improve programme performance

- Encourage greater peer-to-peer exchange of expertise, lessons learned, tools and resources at regional, country and sub-national levels, with tools, technical resources and expertise made more visible and easier to access and adopt or adapt.
- Promote wider uptake of innovative tools developed by elimination/eradication programmes.
- Encourage countries, regions and partners to look to other fields, inside and outside health, for potentially adoptable innovations.

2d. Promote use of research by countries to accelerate uptake of vaccines and vaccine technologies and to improve programme performance

- Encourage countries to develop national immunization research agendas identifying key local knowledge gaps.
- Encourage countries to draw on both global and local data to answer key research questions and support evidence-based decision-making.
- Promote the use of implementation science, operational research, delivery science, behavioural and social research, and data science to develop, pilot and evaluate improvements to national programmes.
- Prioritize development of national capacity in these areas of research.
- Emphasize collaborative development and evaluation of needs-driven and potentially scalable innovations.

3. Maintain the momentum towards GVAP's goals:

3a. Incorporate key elements of GVAP, recognizing its comprehensiveness and the need to sustain immunization's successes each and every year

- Maintain the drive towards previously agreed global and regional elimination and eradication goals.
- Retain the focus on GVAP's other goals and objectives:
 - Strengthening of all aspects of national immunization programme function, with a systems perspective and a focus on leadership, human capacity building and people-centred service delivery.
 - Promoting integration of immunization with other primary health care services.
 - Generating active public support for immunization.
 - Ensuring timely and reliable access to affordable vaccines.
 - Promoting national financial self-sustainability.
- Retain research and development (R&D) as a core feature of a new strategy.

3b. Add a specific focus on humanitarian emergencies, displacement and migration, and chronic fragility

- Encourage greater collaboration between immunization and health emergency programmes globally and regionally.
- Promote greater attention to preparedness, including surveillance to provide early warnings and risk assessments.
- Encourage greater collaboration among partners (including communities) in emergency responses, with greater clarity on roles and responsibilities.
- Explore innovative approaches for capturing the size and improving tracking of displaced and migrating groups.
- Promote research and evidence generation in emergency situations.
- Develop regional mechanisms to detect and respond to incipient national fragility.

3c. Encourage stronger integration between disease-elimination initiatives and national immunization programmes

- Stress the importance of building stronger national immunization programmes as the foundation for disease-specific initiatives.
- Ensure disease-specific initiatives contribute to capacity building of national immunization programmes.
- Strengthen coordination across different disease-specific initiatives.
- Promote development of integrated infectious disease surveillance, within the wider context of International Health Regulations (IHR) monitoring.

3d. Encourage greater collaboration and integration within and beyond the health sector

- Promote a wide-ranging view of collaboration and integration, at all levels (globally, regionally, nationally and sub-nationally) and across all functions.
- Ensure that coordination of immunization and other services within the health sector contributes to the development of integrated primary health care systems.
- Strengthen links beyond health to build platforms for immunization across the life course.

- Encourage active participation in integrated disease control partnerships in which immunization is just one element of coordinated strategies (e.g. malaria, cholera).
- Explore opportunities for mutually beneficial collaborations in areas such as primary health care, global health security, antimicrobial resistance, climate change, food security and the Sustainable Development Goals.
- Explore the potential for additional partners within and beyond health (e.g. the full spectrum of CSOs, including professional societies, academic institutions and local NGOs, as well as the non-profit and for-profit private sector).

4. Establish a governance model better able to turn strategy into action:

4a. Create a robust and flexible governance structure and operational model based on closer collaboration between partners at all levels

- Incorporate a stronger emphasis on roles, responsibilities, contributions and accountability for achieving global and national goals.
- Encourage global partners to establish closer collaborations, ensuring greater coordination of partner activities.
- Develop a governance model that promotes the above and incorporates greater global partner accountability.
- Encourage collaboration with a wider range of partners, allowing for more flexible partnership models.
- Include primary responsibility for establishing global monitoring and evaluation and communications and advocacy strategies within the governance mechanism.

4b. Incorporate the flexibility to detect and respond to emerging issues

- Include the flexibility to respond to new challenges with a potentially major impact on immunization and emerging opportunities over the next decade.

4c. Develop and maintain a strong communications and advocacy strategy

- Develop a coordinated communications and advocacy (C&A) strategy, establishing goals, key messages and target audiences.

- Ensure that the C&A strategy clearly focuses on 'corporate communications', complementing communication for other purposes (e.g. to generate support immunization more generally).
- Focus C&A activities on building awareness, encouraging buy in and alignment of activities, maintaining momentum for implementation, and mobilizing resources for capacity building (financial contributions and in-kind support).
- Encourage C&A activities at global, regional and national level to mobilize support and resources, and to strengthen and establish partnerships.
- Ensure that the C&A strategy is mindful of health system context and the perspectives of other actors in the health sector
- Sustain C&A activities over the decade, monitoring and adapting as required.

5. Promote long-term planning for the development and implementation of novel vaccine and other preventive innovations, to ensure populations benefit as rapidly as possible

- Maintain the momentum behind new product/technology development.
- Promote dialogue between countries, partners and developers through needs assessments, evaluation, piloting and scale up, to ensure rapid access to safe and effective products that meet national needs.
- Identify key bottlenecks in new product approval and implementation, and develop new strategies to overcome them.
- Continue to prioritize capacity building and coordination of national regulatory authorities, including regulatory harmonization to expedite introduction of WHO pre-qualified vaccines.
- Promote early consideration of the broad implications of novel interventions nearing practical application, to identify possible implementation enablers/barriers and potential acceptability issues.
- Ensure that the lessons learned from both successful and problematic vaccine introductions are documented and shared to inform future implementation planning.
- Promote the development of regional and national research capacity to support more locally relevant evidence generation.

6. Promote use of data to stimulate and guide action and to inform decision-making

- Prioritize collection of data specifically required to monitor and improve national programme performance.
- Encourage closer linkage between data collection and action, to drive forward continuous quality improvements.
- Enhance national programme capacity for data collection and use.
- Encourage greater data transparency and sharing of data, in the right format, for the right people to use at the right time.
- Ensure programmes have the flexibility to halt collection of data of limited value and to add useful new data sources.
- Encourage collection of qualitative data, to aid understanding of underlying causes.
- Ensure that national immunization programmes are able to draw upon and contribute to integrated infectious disease surveillance data systems.
- Encourage national immunization programmes to prepare for the likely widespread and potentially transformative frontline implementation of new data technologies in the next decade.
- Promote collaborations with data scientists and informatics experts in other fields to ensure effective use of data.
- Ensure lessons are learned from SDG and UHC/PHC information management strategies and plans and data collection experience.

7. Strengthen monitoring and evaluation at the national and sub-national level to promote greater accountability

- Ensure that implementation and monitoring and evaluation (M&E) are fully integrated to ensure that the latter is better able to promote accountability.
- Ensure that targets and milestones are set at the country level, informed by agreed global targets.
- Use evidence-based processes to establish global and national targets and milestones.
- Ensure that progress towards milestones and targets is reviewed at least annually, to underpin corrective action, with more in-depth programme reviews conducted periodically (e.g. five-yearly).
- Build capacity for M&E at national and sub-national levels.
- Explore the potential for NITAGs to play a larger role in M&E and programme oversight.
- Recognize the risks of overloading frontline/programme staff; an M&E framework should be lean and fit for purpose, with all national data collection having a clear purpose.
- Ensure that regional- and global-level data requests are only for clearly defined purposes; wherever possible, global data analysis should be based on data routinely collected to inform national activities.
- Ensure that, wherever possible, data collection serves multiple purposes (e.g. SDG as well as M&E reporting).
- Build some flexibility to adapt goals, targets and indicators (e.g. regionally, over time) into the M&E framework.
- Recognize that some important data generation will occur outside the M&E framework (e.g. qualitative research, root cause analysis in countries).
- Encourage countries and regions to identify specific subsets of country data required for advocacy/political reporting.
- Ensure that the monitoring and evaluation reporting schedule for research reflects the different pace of research, and provides separate reporting opportunities for new product development and for implementation/operational research.

ANNEX 1

SAGE DECADE OF VACCINES

WORKING GROUP MEMBERSHIP AND CONTRIBUTORS

SAGE Members

- Noni MacDonald (Chair of the Working Group), Professor of Paediatrics, Dalhousie University, IWK Health Centre, Canada
- Ezzeddine Mohsni, Senior Technical Adviser in Global Health Development / Eastern Mediterranean Public Health Network

Experts

- Yagob Al-Mazrou, Secretary General - Health Services Council of the Kingdom of Saudi Arabia, Saudi Arabia
- Jon Kim Andrus, Adjunct Professor and Director, Division of Vaccines and Immunization, Center for Global Health, University of Colorado, USA
- Narendra Arora, Executive director, International Clinical Epidemiology Network, India
- Susan Elden, Health Adviser, Department for International Development, London, UK
- Marie-Yvette Madrid, Independent Consultant, Geneva, Switzerland
- Rebecca Martin, Director of the Center for Global Health, US CDC, USA
- Amani Mahmoud Mustafa, Project Manager, Sudan Public Health Training Initiative, Carter Center, Sudan


- Helen Rees, Executive Director, Wits Reproductive Health and HIV Institute, Personal Professor, Ob/Gyn Codirector, African Leadership in Vaccinology Excellence, University of Witwatersrand, South Africa
- David Salisbury, Associate Fellow, Centre on Global Health Security, Chatham House, London, UK
- Qinjian Zhao, Associate Dean, School of Public Health, Xiamen University, Xiamen, Fujian, China

Working Group Secretariat

- DoV Secretariat Coordinator: WHO
- Bill & Melinda Gates Foundation
- Gavi, the Vaccine Alliance
- United Nations Children's Fund
- National Institute of Allergy and Infectious Diseases, part of the US National Institutes of Health
- World Health Organization

Consultants

- MMGH Consulting; Zurich, Switzerland
- Task Force for Global Health, Atlanta, USA



ANNEX 2

SAGE

MEMBERSHIP

- Alejandro Cravioto (Chair of SAGE), affiliated with the Faculty of Medicine of the Universidad Nacional Autónoma de México (UNAM), Mexico
- Rakesh Aggarwal, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry, India
- Ilesh Jani, Director General, Instituto Nacional de Saúde (National Institute for Health), Mozambique
- Jaleela Jawad, Head of Expanded Programme on Immunization, Public Health Directorate, Ministry of Health, Bahrain
- Youngmee Jee, Director General, Centre for Infectious Disease Research, National Institute of Health, Korean Centre for Disease Control and Prevention, Republic of Korea
- Kari Johansen, Expert Vaccine Preventable Diseases, European Centre for Disease Prevention and Control (ECDC), Sweden
- Noni MacDonald, Professor of Paediatrics, Division of Infectious Diseases, Department of Pediatrics, Dalhousie University, Canada
- Peter McIntyre, Professor in the Discipline of Child and Adolescent Health and the School of Public Health, University of Sydney, Australia
- Shabir Madhi, Professor of Vaccinology at the University of the Witwatersrand, Johannesburg, South Africa
- Ezzeddine Mohsni, Senior Technical Adviser in GHD/EMPHNET (Global Health Development / Eastern Mediterranean Public Health Network), Jordan
- Kathleen Neuzil, Director, Center for Vaccine Development and Global Health (CVD), University of Maryland School of Medicine, United States of America
- Andrew J. Pollard, Professor of Paediatrics, Department of Paediatrics, University of Oxford, United Kingdom
- Firdausi Qadri, Director, Infectious Diseases Division, Head and Senior Scientist, Mucosal Immunology and Vaccinology Laboratory, icddr,b, Dhaka, Bangladesh
- Nicola Turner, Director Immunisation Advisory Centre, University of Auckland, New Zealand
- Frederick Were, Executive Director - Professor, Department of Paediatrics and Child Health, University of Nairobi, Kenya

ANNEX 3

SUPPLEMENTAL INFORMATION

SOURCES

This summary draws on the following source documentation available at: www.who.int/entity/immunization/global_vaccine_action_plan/GVAP_review_lessons_learned/en/

- Report on GVAP review and lessons learned: Methodology, analysis and results of stakeholder consultations
- The GVAP Monitoring, Evaluation and Accountability (M&E/A) Framework: Review and lessons learned
- Global Vaccine Action Plan - Monitoring, evaluation & accountability - 2019 report
- Global Vaccine Action Plan - Progress towards GVAP-RVAP goals – 2019 regional reports
- National Immunization Coverage Scorecards 1999-2018



Photos credits:

• Cover - Gavi / Saiful Huq Omi • Page iv - PATH /Gabe Bienczycki • Pages vi and viii - UN Foundation / Stuart Ramson • Page x - WHO PAHO • Page 4 - WHO / Christine McNab • Page 6 - WHO WPRO / Shimizu • Page 8 - WHO / Christine McNab • Page 10 - BMGF / Frédéric Courbet • Page 13 - WHO / S.Volkov • Page 14 - WHO / Christine McNab • Page 16 - WHO PAHO • Page 23 - WHO / PAHO



For more information, contact:

World Health Organization

Department of Immunization, Vaccines and Biologicals

1211 Geneva 27

Switzerland

E-mail: vaccines@who.int

Web: www.who.int/immunization/en/