

# For every child, vaccination

Immunization is one of humanity's most remarkable success stories. It has saved countless lives. Many more lives will be saved if the goals of the *Immunization Agenda 2030* are achieved. This global strategy aims for a world where "everyone, everywhere, at every age, fully benefits from vaccines for good health and well-being."

Immunization allows children everywhere to live lives free of many forms of disability and illness. It has led to the eradication of smallpox, a disfiguring and often fatal disease that in the twentieth century alone claimed an estimated 300 million lives. There has been remarkable progress, too, in eradicating polio. The power of immunization was demonstrated again in the COVID-19 pandemic. The disease claimed 14.9 million lives – directly and indirectly – in 2020 and 2021, according to the World Health Organization (WHO), and disrupted lives around the world, especially children's. While it has taken far too long to get COVID-19 vaccines to people living in the poorest countries, the global impact is still astounding: Already, at least two thirds of the world's population has been immunized against COVID-19. Those vaccines have prevented an estimated 20 million deaths globally. These examples demonstrate that public demand, scientific innovations and – perhaps above all – political will can drive rapid change.

# We *must* do more, and we must do better, now

Globally, an estimated 67 million children missed out entirely or partially on routine immunization from 2019 to 2021. In Latin America and the Caribbean, this figure is 6.8 million children. The region has historically maintained high levels of vaccination coverage but has experienced a considerable decrease over the last few years. The onset of the COVID-19 pandemic has exacerbated this trend, and more children have missed essential vaccines. As these children pass the age when vaccines are routinely given, it will require a dedicated effort to ensure that they catch up with their vaccinations.

Public health emergencies in the region, such as Zika and chikungunya, also created more challenges and potentially diverted political attention and investments from routine immunization. The backsliding in immunization highlighted that the story of zero-dose and under-vaccinated children is overwhelmingly a story of inequities. The children who are not vaccinated are also often the children of mothers who have not been able to go to school and who are given little say in family and spending decisions. Additionally, migrant populations and people living in hard-to-reach areas have considerably more difficulties in accessing health services.

The pandemic also exposed – and exacerbated – persistent weaknesses in health systems and primary health care. Key resources were diverted to respond to the pandemic, which, along with many other factors, contributed to the backsliding in routine immunization. But even before the pandemic, far too many primary health care systems suffered from a lack of skilled health workers, limited access to essential supplies and equipment, weak capacity for collecting and using data and conducting disease surveillance, shortages at the local level of key medicines and vaccines, and barriers to using available resources efficiently and effectively. The pandemic highlighted the difficulties facing women working in health care and immunization programmes. Although they form the bulk of the health workforce, women have long been under-represented in leadership roles and denied opportunities for professional advancement, and have faced the risk of gender-based violence in doing their jobs. If primary health care is to become more resilient, the needs and potential of health workers, especially women health workers, must be better recognized.

#### The consequences of failure

Unfortunately, the world continues to see far too many outbreaks of vaccine-preventable diseases. The consequences of failing to vaccinate children may become more severe in years to come. Climate change risks exposing new communities to infectious diseases, such as malaria, dengue and cholera and may alter seasonal disease patterns. Also of long-term concern is the rise of drug-resistant infections. Failure to immunize children sets back still further the prospects of attaining the Sustainable Development Goals (SDGs). Immunization is key to achieving SDG 3, which aims to "ensure healthy lives and promote well-being for all at all ages." But it is also linked to 13 of the other SDGs. In that sense, immunization is at the heart of our collective commitment to achieve a better and more sustainable future for us all.

#### A time for political will

Much will have to happen if we are to protect *every* child against vaccine-preventable diseases. The needs are complex, even daunting. But overriding them all is one single necessity: political will. Nothing will happen unless we garner the political will – globally, nationally and locally – to protect children against vaccine-preventable diseases.

That will should be grounded in optimism. The emergence of mass immunization in the 1980s and the development of COVID-19 vaccines show we can make progress, and we can make progress quickly. Encouragingly, and despite the setbacks it caused to childhood immunization, the pandemic may also have helped lay the groundwork in some countries for faster progress.

Political will should also be grounded in the realization that immunizing children makes economic sense. At an average cost of about US\$58 per child in low- and middle-income countries, the standard course of vaccines can contribute enormously to protecting against disease and lifelong disability. Despite shrinking national budgets in some countries, immunization must remain a priority because it is a proven strategy for reducing future health-care costs and supports economic growth. It generates strong returns on investment – as much as US\$26 for every US\$1 invested. Continued and sustainable investment in immunization as part of health budgets is essential. But governments and donors need to work together to improve the efficiency and effectiveness of planning, budgeting and service delivery.

Now is a time for determination.

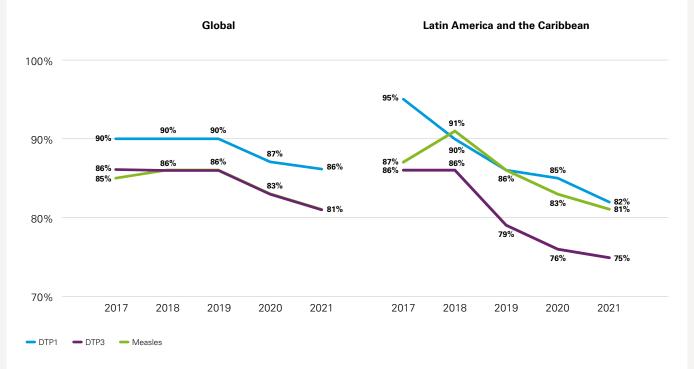
Now is a time for political will.

Now is the time to protect the health of every child.

# Immunization coverage in Latin America and the Caribbean

The Latin America and the Caribbean region has experienced a decrease in immunization coverage over the last five years. The COVID-19 pandemic brought even more setbacks, and children continue to miss critical vaccines. The coverage of diphtheria, tetanus and pertussis (DTP) and measles vaccines dropped significantly, leading to an increase in the prevalence of zerodose and under-vaccinated children in the region.

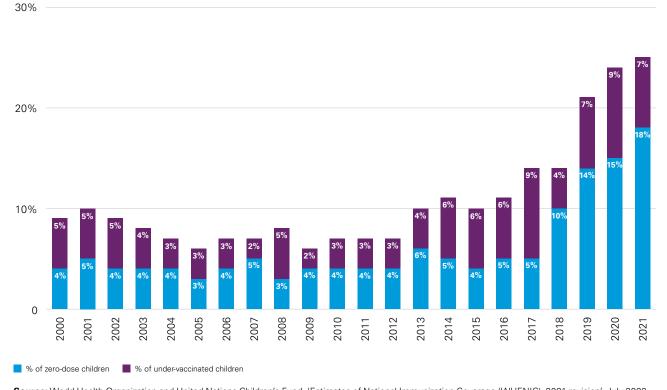
Figure 1. Prevalence of children in Latin America and the Caribbean who received DTP1, DTP3 and measles vaccines, 2017-2021



Source: World Health Organization and United Nations Children's Fund, 'Estimates of National Immunization Coverage (WUENIC), 2021 revision', July 2022.

Figure 2. Prevalence of zero-dose and under-vaccinated children in Latin America and the Caribbean

Over the past two decades, the number of children missing out on vaccination has increased. In the last five years, the percentage of zero-dose and under-vaccinated children in Latin America and the Caribbean has more than doubled, from 11 per cent in 2016 to 25 per cent in 2021.



Source: World Health Organization and United Nations Children's Fund, 'Estimates of National Immunization Coverage (WUENIC), 2021 revision', July 2022.



## Box 1 Understanding zero-dose

'Zero-dose' and 'undervaccinated' have become key concepts in explaining immunization coverage, in aligning global efforts to improve vaccine coverage, and for monitoring success. What do they mean?

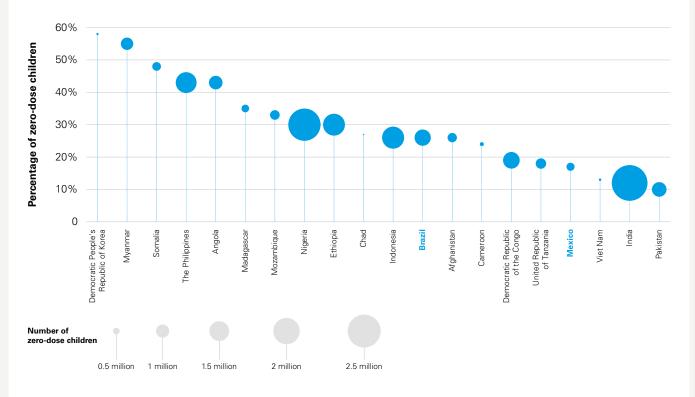
**Zero-dose** refers to children who have not received any vaccinations. Most live in communities that experience multiple deprivations.

**Under-vaccinated** refers to children who have received some, but not all, of their recommended schedule of vaccinations.

To calculate the numbers of zero-dose and undervaccinated children, a proxy measure is used. Children who have not received the first dose of diphtheria, tetanus and pertussis (DTP1) vaccine are described as zero-dose. Children who have received DTP1 but not the third dose (DTP3) are described as undervaccinated. Children typically receive these vaccines in the first year of life. In general terms, therefore, where data for zero-dose and undervaccinated children are presented in percentage terms, these numbers represent percentages of surviving infants (rather than the entire child population).

Figure 3. Countries with the largest number of zero-dose children in 2021

Two of the top 20 countries in the world with the largest number of zero-dose children are in Latin America and the Caribbean.



Source: World Health Organization and United Nations Children's Fund, 'Estimates of National Immunization Coverage (WUENIC), 2021 revision', July 2022.



Figure 4. Zero-dose and under-vaccinated children in Latin America and the Caribbean in 2021

Across countries, there was significant variation in the prevalence of zerodose and under-vaccinated children in 2021. However, the burden is still quite high in the region:

a total of 2.4 million zero-dose and under-vaccinated children.

Country*	Number of zero-dose children	Zero-dose percentage share of children under age 1	Number of under- vaccinated children**	Under- vaccinated percentage share of children under age 1		
Brazil	709,768	26	163,792	6		
Mexico	316,830	17	93,185	5		
Venezuela (Bolivarian Republic of)	120,306	27	75,748	17		
Argentina	112,376	18	37,459	6		
Colombia	72,323	10	28,929	4		
Ecuador	65,171	22	17,773	6		
Haiti	64,788	25	62,196	24		
Bolivia (Plurinational State of)	64,400	25	12,880	5		
Peru	58,837	10	47,069	8		
Guatemala	40,243	11	36,584	10		
Honduras	38,537	18	10,705	5		
Paraguay	28,660	21	12,283	9		
El Salvador	-	-	-	-		
Nicaragua	16,677	12	1,390	1		
Panama	5,324	7	14,450	19		
Jamaica	2,298	7	985	3		
Chile	2,282	1	9,128	4		
Suriname	2,087	19	988	9		
Dominican Republic	2,002	1	30,029	15		
Uruguay	1,787	5	2,145	6		
Belize	1,211	17	0	0		
Cuba	1,001	1	0	0		
Bahamas	971	21	185	4		
Trinidad and Tobago	879	5	176	1		
Costa Rica	608	1	0	0		
Barbados	513	17	30	1		
Grenada	413	21	138	7		
Guyana	321	2	1,123	7		
Saint Lucia	225	11	184	9		
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Country*	Number of zero-dose children	Zero-dose percentage share of children under age 1	Number of under- vaccinated children**	Under- vaccinated percentage share of children under age 1
Antigua and Barbuda	79	7	11	1
Dominica	38	4	38	4
Saint Kitts and Nevis	17	3	6	1
Saint Vincent and the Grenadines	13	1	27	2
Regional	1,759,115	18	652,603	7

**Source:** World Health Organization and United Nations Children's Fund, 'Estimates of National Immunization Coverage (WUENIC), 2021 revision', July 2022.

\* Countries are ranked by numbers of zero-dose children.

<sup>\*\*</sup> The number of under-vaccinated children excludes zero-dose children.



#### **ECUADOR**

### The power of community: Volunteers keep watch over children's immunization

After a morning of tending her dairy farm and delivering milk, Maria Ortencia Catucuago switches gears: She puts on a vest and backpack and begins her daily rounds to neighbourhood homes in her role as a community health volunteer.

"I feel passionate about helping others," Catucuago said. "For many years, I have been involved in community activities that promote the well-being and health of families."

Catacuago cares for the Turucucho community, which is nestled in the foothills of the north-eastern highlands of Ecuador. She is part of a corps of indigenous volunteers who keep watch over the health and well-being of children under age 5 and pregnant women.

On a recent morning, Catacuago started her rounds at the home of Fernanda Valdivieso and her 2-year-old daughter, Aysel Yanez. Aysel was born premature and struggled with chronic malnutrition. The little girl had recently missed a diphtheria, tetanus and pertussis (DTP) booster and a check-up on her weight and height.

"One of my responsibilities is reporting to the health centre's colleagues so they can quickly respond," Catacuago said. "I called the health

personnel, then they came and gave her the vaccine she lacked."

Catuguago's volunteer work is part of a community health monitoring strategy in 137 communities of indigenous peoples and nationalities in the provinces of Imbabura and Pichincha and in the Monte Sinai part of Guayaquil, Ecuador's largest city.

Part of the aim of the community health monitoring strategy is to tackle chronic malnutrition, which affects 4 out of 10 indigenous children under the age of 2. Essential to the effort to curb malnutrition are vaccines, including pneumococcal or rotavirus. However, in 2020 and 2021, a vaccine shortage and low attendance at health centres led to a drop in coverage. In 2021, the rate of complete rotavirus vaccination in Ecuador was 60.5 per cent, and 62.2 per cent for pneumococcus vaccination.

Volunteers such as Catucuago work with an average of 25 families in their communities. The corps of about 500 volunteers has reached about 8,200 children younger than 5 years since the programme began in 2020.

"I want all the children in my community to grow up healthy, happy and with the same opportunities," Catucuago said.



# Who is missing out on vaccines?

An analysis for *The State of the World's Children 2023* shows some of the socioeconomic determinants associated with immunization.<sup>1</sup> The numbers make the connection between children who miss out on vaccination and inequity. Wealth decile and location play a significant role in whether a child is immunized or not, as does a mother's level of education.

<sup>1</sup> This analysis includes surveys carried out from 2015 to 2020, covering 74 countries. The most recent Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) from that period were included for each country.

#### Figure 5. Prevalence of zero-dose children in Latin America and the Caribbean by wealthiest and poorest deciles, and urban and rural

Children in the **poorest households** are almost **three times as likely to be zero-dose** as children in the wealthiest households. However, there is no significant difference in zero-dose prevalence between children from rural and urban areas (*see Figure 7*).



**Source:** Victora, Cesar and Aluísio Barros, 'Within-country Inequalities in Zero-dose Prevalence: Background paper for The State of the World's Children 2023', International Center for Equity in Health at the Federal University of Pelotas, Brazil, December 2022.

Figure 6: Prevalence of zero-dose children in Latin America and the Caribbean by rural, urban, poorest decile and wealthiest decile (per cent), by country

Country*	Rural	Urban	Poorest decile	Wealthiest decile
Belize	8.7	4.7	12.2	13.1
Costa Rica	3.3	1.9	3.8	1
Cuba	2.5	2.6	1.6	0.5
Dominican Republic	9.8	7.5	13.1	8.2
Guyana	8.7	8.8	18.6	5
Haiti	19.1	11.5	28.9	3.2
Honduras	3.7	3.1	3.5	0
Mexico	5.5	8.6	11.1	3.3
Paraguay	6.5	4.4	8.8	3.4
Peru	8.5	6.9	11.4	6.9
Suriname	18.6	20.3	27.8	17
Regional	6.9	7.8	11.6	3.9

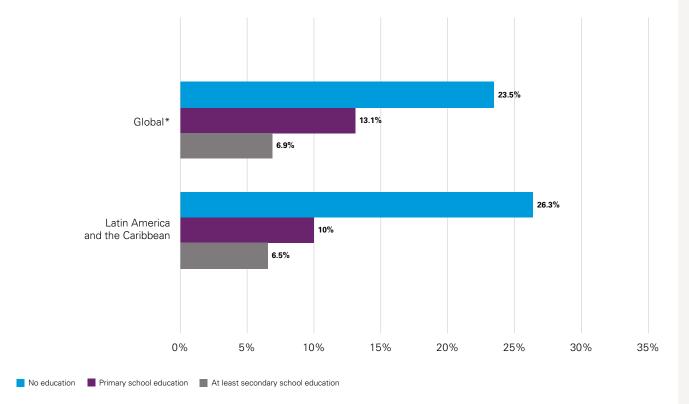
**Source:** Victora, Cesar and Aluísio Barros, 'Within-country Inequalities in Zero-dose Prevalence: Background paper for The State of the World's Children 2023', International Center for Equity in Health at the Federal University of Pelotas, Brazil, December 2022.

<sup>\*</sup> Global refers to the 74 countries in the world that were included in the study.

<sup>\*</sup> Only countries in the region with available data are listed in the table.

Figure 7. Mothers' education and prevalence of zero-dose children

The prevalence of zero-dose children declines as a mother's level of education increases.



**Source:** Victora, Cesar and Aluísio Barros, 'Within-country Inequalities in Zero-dose Prevalence: Background paper for The State of the World's Children 2023', International Center for Equity in Health at the Federal University of Pelotas, Brazil, December 2022.

\* Global refers to the 74 countries included in the study.



#### HAITI

### Solar solutions: Preserving vaccines, protecting children's health

Every time 6-month-old Jamesly needs a vaccine, his mother Rosemirlande makes a 6-kilometre journey from her village to the Sacré Coeur Health Centre.

On one visit, the 27-year-old shopkeeper patiently took a seat in the waiting room, joined by about 20 mothers and caregivers who also held children on their laps. All were eagerly waiting for essential vaccines that will protect their children from diphtheria, diarrhoea, tuberculosis and pneumonia.

For Rosemirlande, it was worth the effort and the wait.

"If a mother loves her child, she must vaccinate him," she said.

Rosemirlande can put her love into action thanks, in part, to the installation of solar power that has allowed the Sacré Coeur Health Centre in the Sud department to overcome persistent electricity shortages.

Over recent years, UNICEF and the Ministry of Public Health and Population have invested in solar energy for health centres. In the tropical country, refrigeration is essential for maintaining perishable health supplies, especially vaccines.

"In the past, we used propane gas canisters, but there were always shortages putting the cold chain and quality of vaccines at risk," said Mona Yvrose Jean Claude, who has worked as a nurse at Sacré Coeur Health Centre for more than 10 years. "Now . . . there are fewer cases of measles, polio, flu or diarrhoea."

"Solar energy is a blessing," she added.

Throughout Haiti, 96 per cent of health-care facilities rely on solar power. The country has over 960 solar refrigerators and 2 cold rooms – a large warehouse for vaccines. Sud department has more than 150 solar refrigerators. Despite experiencing a backsliding in immunization coverage because of COVID-19, Sud department managed a coverage of 88 per cent for children protected with the Pentavalent 3 vaccine.

"The electricity problem is solved with solar panels for refrigerators," said Pierre Jean Gardy, cold chain technician at the Sud Department Input Supply Centre. "Now, health institutions are continuously well equipped to receive vaccines for children."

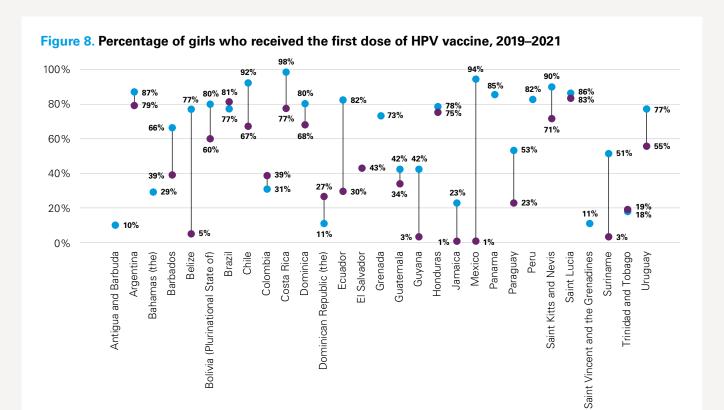


# Adolescent girls' health: Focus on HPV

According to the World Health Organization, more than 95 per cent of cervical cancer is caused by sexually transmitted human papillomavirus (HPV). The HPV vaccine helps protect against a number of cancers, notably cervical cancer, which is estimated to be the **fourth largest cause of cancer deaths** among women worldwide.

In Latin America and the Caribbean, the Pan American Health Organization (PAHO) estimates that every year **more than 56,000 women are diagnosed** with cervical cancer, and more than 28,000 die from it.

Although the majority of countries in Latin America and the Caribbean have introduced the HPV vaccine, overall the region has experienced a considerable **drop in HPV vaccine coverage** rates.



Source: World Health Organization estimates of human papillomavirus (HPV) immunization coverage, 2010–2021, 15 July 2022.

20192021



#### **NICARAGUA**

#### Community Health Network: Reaching indigenous children at home

On an October morning, three community nurses dressed in white uniforms walked among the traditional tambo wood homes in the indigenous Miskito community of Sisin, a tiny town about 50 kilometres from the coast of Nicaragua.

One carried a high-tech thermos for vaccines, another a scale, and a third a bag of vitamins and medicine.

As they climbed the staircase to Florencia Mena's home, the nurses greeted Mena and her 3-year-old daughter, Rihana, in the Miskito language. Since before her daughter was born, these nurses from Nicaragua's Ministry of Health have been regular visitors.

"The doctor and the nurses have seen me every month to keep close control of my daughter's development," Mena said.

In a remote and poor community in the North Caribbean Coast Autonomous Region, where houses built on pillars protect people from an often punishing climate, the visiting nurses are a vital link between an indigenous community and immunization.

"Children are given routine vaccines according to their schedule, their height and weight," said Reynilda Cramer, one of the regular visitors to Mena and Rihana. "Heights are taken, and deworming and vitamins are administered if appropriate. If anyone else in the family has health problems, we also take care of that other person."

Cramer and her colleagues are part of the Community Health Network, a nationwide programme supported by UNICEF in collaboration with the Nicaragua Ministry of Health. The nurses are volunteers elected at community-wide meetings and are a critical link between national primary health care services and populations that traditionally have been hard to reach.

Success of the Community Health Network can be measured in vaccination rates in the North Caribbean Coast Autonomous Region, which includes Sisin, which stayed at 98 per cent in 2020 despite the COVID-19 pandemic and two disastrous hurricanes: Eta and lota.

The success was also helped when the Community Health Network incorporated the Intercultural Health Care Model, a programme for indigenous communities that involves faith leaders in primary health-care efforts.

"This closeness of the health system to the community is one of the reasons for Nicaragua's outstanding vaccination rates," said Dr. Jazmina Umaña, the Ministry of Health's national coordinator of the Expanded Programme on Immunization.



# A framework for action

Despite undeniable progress over many decades, we continue to face critical challenges in immunization. Immunization coverage has fallen back, or stagnated, in too many places. We are persistently missing children with life-saving vaccines, especially the socially marginalized and poorest children, and the situation has only deteriorated during the pandemic. The failure of health systems to reach every child with vaccines reflects domestic underinvestment in primary health care, inadequate human resources for health, and leadership gaps across different government levels and areas.

The decline in immunization throughout the pandemic should sound an alarm bell: Routine immunization must be a priority in the coming years. We must take concerted action to catch up on children who missed out on being vaccinated during the pandemic, rebuild systems and tackle major gaps in health systems. Failure to act will devastate the lives of today's children and adolescents and tomorrow's adults, and will set back still further progress towards reaching the SDGs.

Building on the global strategies outlined in the *Immunization Agenda 2030* and the Gavi 5.0 Strategy to promote equity and sustainably scale up immunization coverage, presented here is a set of concrete and actionable recommendations to reach every child with vaccines and to ensure that immunization and primary health care systems are ready to meet future challenges.

Enacting this agenda will require strong political will from governments and other major stakeholders in the immunization landscape. The COVID-19 pandemic has shown the centrality of collective and concerted action to ensure that vaccines reach everyone. We are constantly reminded that "vaccines don't save lives; vaccination saves lives." For vaccination to happen, political will must be a number one priority across countries.

#### 1. Vaccinate every child, everywhere

Vaccination is an equity agenda. This means reaching: children who missed out on vaccination during the pandemic; children in remote locations, informal urban settlements and conflict areas; and zero-dose children.

- Catch up on the vaccination of children missed during the pandemic: The COVID-19 pandemic response generated enormous momentum for immunization, which can now be used to focus on the needs of children who were not vaccinated over the last three years. Tailored responses are needed in the countries most affected, backed by financial and other support from key donors and international partners.
- ✓ Identify zero-dose and under-vaccinated children and address key inequities: Use high-quality and fit-for-purpose data to identify zero-dose and under-vaccinated children and to inform and guide action, and invest in new technologies and approaches to make data timelier and more granular. Develop an individual child-health record system to monitor outcomes, including a community's vaccine status, and monitor progress and needs with publicly accessible dashboards. Design immunization services to be responsive to addressing key socioeconomic inequities and barriers to accessing immunization.

- Identify children in urban areas, and access children in rural areas:
  In urban areas, strengthen community engagement to encourage people to engage with health services; improve security for parents and health workers; and offer flexibly timed vaccine services. In rural areas, focus on motivating and retaining health workers with salary top-ups and other incentives; consider using private operators to lower the high marginal cost of delivering vaccine services; and better integrate health services across sectors.
- ✓ Meet the challenges in emergency and fragile settings: Invest in preparedness to ensure countries are equipped to respond, including through the creation of contingency stocks, resilience-building and civil society engagement. Support children and families on the move, ensuring vaccines and health services are available and accessible. Prioritize and invest in innovative solutions, such as using mobile money and digital systems to pay health workers and developing vaccines with longer shelf-lives.

# 2. Strengthen demand for – and confidence in – vaccination

Understanding factors that influence vaccine readiness with effective social listening is critical to identify and develop tailored interventions and strategies that can help promote vaccine demand.

- ▼ Talk to communities: Strengthen engagement with communities to better understand: their attitudes towards the safety of vaccines and the value of vaccination; their experiences both good and bad with health systems and government officials; and the support they need if they are to take the time to vaccinate their children.
- Tackle gender barriers: Use innovative approaches to inform and educate caregivers, especially mothers; involve and engage fathers and men; and tailor services to meet the needs of time-pressed caregivers.
- Equip health workers to address concerns: Health workers enjoy high levels of trust. They should be supported to be powerful allies to persuade parents to vaccinate children, counter misinformation in the community and inform the design of responses that meet families' needs.
- Rethink accountability in health systems to boost trust: Governments should consider setting up well-designed governance bodies, such as healthcare facility committees, to give community leaders a formal mechanism for voicing concerns and tackling issues related to immunization and primary health-care services in their area.

# 3. Spend more and spend better on immunization and health

Despite significant global investment in immunization and health systemsstrengthening, health systems in many countries remain fragile.

- Invest in primary health care at the national level: Governments should prioritize funding for primary health care to ensure it does more to meet the needs of its users and ensures equitable access, especially to underserved communities.
- ✓ Better align donor support: Donors should work to integrate their support into national priorities and national systems, shifting from disease-specific initiatives to systems-strengthening. Better harmonization of support can help to reduce fragmentation and eliminate wasteful overlaps, including the duplication of, among others, infrastructure, service delivery and information platforms.
- ✓ Strengthen leadership capacity and promote accountability: Improve mechanisms for social accountability to ensure transparency, adequate budget allocations, quality of service and community engagement. Such approaches should be part of an overall push to maximize returns on current investment by improving planning and budgeting, identifying budget challenges, improving public financing management systems, and strengthening coordination between national-level ministries and between national and subnational levels of government.
- ✓ Explore innovative financing: Stakeholders at all levels need to build on recent successes and explore how innovative financing mechanisms can maximize returns on current investment and tap into new sources of funding. Such approaches need to be informed by a clear understanding of the potential risks involved, as well as the need for governance and oversight.

# 4. Build resilient systems and shockproof them for the future

Resilient systems can respond to outbreaks, epidemics or pandemics, while continuing to provide essential services.

- ✓ Focus on health workers, especially women: Improve pay and working conditions to motivate and retain health workers, especially the many women working in health systems. They need to be better represented in leadership; offered access to training and professional advancement; protected from discrimination and gender-based violence in the workplace; and provided with flexible working arrangements to help them better manage their family and professional commitments.
- ✓ Improve data collection and disease surveillance: Within broader information systems for primary health care, it is essential to improve data collection on immunization and ensure it is actionable. Countries also need to build and strengthen comprehensive surveillance systems for vaccine-preventable diseases as part of a national system for public health surveillance, all supported by strong and reliable laboratory networks.
- ✓ Secure vaccine and other supplies: Ensure a secure supply of high-quality vaccines and related commodities. Making better use of pooled procurement processes and strategies can ensure affordable prices and support strategic stockpiles. The potential of expanded regional manufacturing to speed up and diversify vaccine supplies also needs to be fully explored and supported.
- Develop and promote worthwhile innovations: Invest in novel delivery technologies, such as solar-powered cold chains, heat-resistant vaccines and micro-array patches, to ensure access to vaccines for communities in the most challenging settings.



This regional brief was produced by UNICEF Innocenti – Global Office of Research and Foresight
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Cover photo: In Peru, 12-year-old Jeyson Mori Diaz holds his arm after receiving a vaccination.
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