

GLOBAL VACCINE ACTION PLAN

MONITORING, EVALUATION & ACCOUNTABILITY
SECRETARIAT ANNUAL REPORT 2020

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Note:

In line with the reporting in 2019, this year's annual GVAP secretariat report presents a collection of figures and graphs with the latest available data, for a selection of GVAP indicators, mainly covering disease elimination, coverage and equity and the surveillance dimensions. For some indicators, succinct notes complement the figures. For indicators which have not been updated this year, as well as for all background references and sources, please refer to the 2018 GVAP secretariat report.

For indicators related to supply and financing, a <u>Global vaccine market report</u> will be published in September 2020 on the WHO webpage (<u>www.who.int/immunization/MI4A</u>).

Vaccine coverage data displayed in this report are based on the July 2020 revised time series of the WHO-UNICEF estimates of national immunization coverage 2010–2019.

The majority of data provided in this report were updated through the end of December 2019. This means that there is no direct impact of the COVID-19 pandemic depicted in this report, which only started to impact countries in the first quarter of 2020. Nevertheless there is an indirect impact that is measurable: reporting of immunization figures was less exhaustive than in previous years due to the workload on COVID-19 response in 2020.



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ABBREVIATIONS

AEFI adverse events following immunization

cVDPV circulating vaccine-derived poliovirus cases

DTP diphtheria-tetanus-pertussis-containing vaccines

DTP1 diphtheria-tetanus-pertussis-containing vaccines, first dose

DTP3 diphtheria-tetanus-pertussis-containing vaccines, third dose

HepB BD Hepatitis B vaccine, birth dose

IB-VPD invasive bacterial vaccine-preventable diseases

IPV inactivated poliovirus vaccines

MCV measles-containing vaccines

MCV2 measles-containing vaccine, second dose

MDG Millennium Development Goal

MNT maternal and neonatal tetanus

PCV pneumococcal conjugate vaccine

PCV3 pneumococcal conjugate vaccine, third dose

RCV rubella-containing vaccines

RCV1 rubella-containing vaccines, first dose

UNICEF United Nations Children's Fund

WEUNIC WHO/UNICEF Estimates of National Immunization Coverage

WHO World Health Organization

WPV1 wild poliovirus serotype 1

Box 1: Progress towards meeting core GVAP indicators – 2020 report

Goal /Strategic objective	Indicators			
GOALS				
	G1.1 Interrupt wild poliovirus transmission globally			
Achieve a world free of poliomyelitis	G1.2 Certification of poliomyelitis eradication	Fig. 1, Fig. 2, Fig. 3		
Meet global and regional elimination	G2.1 Maternal and neonatal tetanus elimination	Fig. 4, Fig. 5		
	G2.2 Measles elimination	<u>Fig. 6, Table 1</u>		
targets	G2.3 Rubella/congenital rubella syndrome (CRS) elimination	Fig. 7, Table 2		
Meet vaccination coverage targets in every region, country and community	G3.1 By 2015, reach 90% national coverage and 80% in every district or equivalent administrative unit with three doses of diphtheria-tetanus-pertussis-containing vaccines	Fig. 8, Fig. 9, Fig. 10, Fig. 11, Fig. 12, Fig. 13, Fig. 14		
	G3.2 By 2020, reach 90% national coverage and 80% in every district or equivalent administrative unit for all vaccines in national programmes, unless otherwise recommended	Fig. 15, Fig. 16, Fig. 17		
Develop and introduce new and improved vaccines and technologies	G4.3 Number of low-income and middle-income countries that have introduced one or more new or under-utilized vaccines	Fig. 18		
Exceed the MDG Goal 4 target for reducing child mortality and Integration indicators	G5.1 Reduce under-five mortality rate	Fig. 19, Fig. 20		
STRATEGIC OBJECTIVES (
Ensuring country ownership of immunization	SO1.2 Presence of an independent technical advisory group that meets the defined criteria	Fig. 21, Fig. 22		
The benefits of immunization are equitably extended to all people	SO3.1 Percentage of districts with 80% or greater coverage with three doses of diphtheria-tetanus-pertussis-containing vaccine	Fig. 13		
	SO3.2 Reduction in coverage gaps between wealth quintiles and other appropriate equity indicator(s)	Fig. 14		
Strong immunization systems are an integral part of a well-functioning health system	SO4.1 Drop-out rates between first dose (DTP1) and third dose (DPT3) of diphtheria-tetanus-pertussis-containing vaccines	Fig. 9		
	SO4.2 Sustained coverage of diphtheria-tetanus-pertussis- containing vaccines 90% or greater for three or more years	Fig. 12		
	SO4.4 Number of countries meeting established surveillance standards with case-based surveillance for vaccine-preventable diseases and with viral and bacterial laboratory confirmation of suspect or probable cases	Fig. 23, Fig. 24, Table 3		
Vaccine safety		Fig. 25		



1. DISEASE ELIMINATION

A) POLIOMYELITIS ERADICATION

In 2019 and through 20 May 2020 two countries, Afghanistan and Pakistan, have accounted for all new wild poliovirus serotype 1 (WPVI) cases (Figs. 1 and 3).

In 2019 circulating vaccine-derived poliovirus cases (cVDPV) have been detected in 18 countries: Angola, Benin, Burkina Faso, Central African Republic, Chad, China, Democratic Republic of the Congo,

Ethiopia, Ghana, Malaysia, Myanmar, the Niger, Nigeria, Pakistan, the Philippines, Somalia, Togo and Zambia (Figs. 2 and 3).

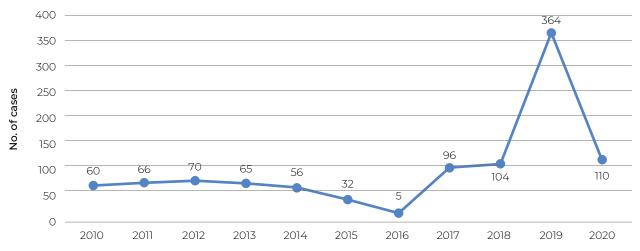
Of note, the independent Africa Regional Certification Commission (ARCC) for Polio Eradication officially declared on 25 August 2020 that the World Health Organization (WHO) African Region is free of wild poliovirus.

Fig. 1: Number of wild poliovirus cases globally, 2010–2020a



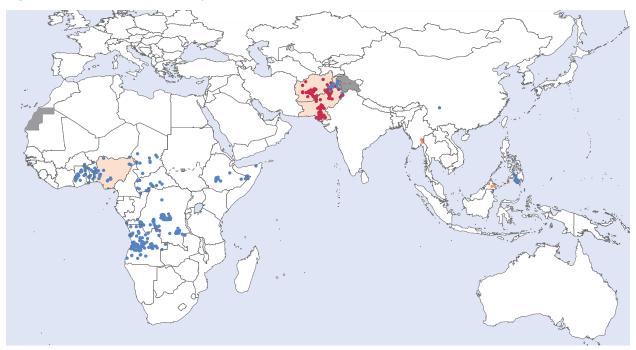
 $^{^{\}rm a}$ Data for 2020 as of 20 May.

Fig. 2: Number of circulating cVDPV globally, 2010–2020a



^a Data for 2020 as of 20 May.

Fig. 3: Global distribution of wild poliovirus and cVDPV in 2019^a



- Endemic country (WPV1)

 - cVDPV1 cases (Malaysia: 3; Myanmar: 6; Philippines: 2)
 - WPV1 (Afghanistan: 29; Pakistan: 147)
 cVDPV2 cases (Angola: 130; Benin: 8; Burkina Faso: 1;
 cVDPV1 cases (Malavsia: 3;
 Central African Republic: 21; Chad: 10; China: 1; Democratic Republic of the Congo: 88; Ethiopia: 13; Ghana: 18; Niger: 1; Nigeria: 18; Pakistan: 22; Philippines: 13; Somalia: 3; Togo: 8; Zambia: 2)

For further information see:

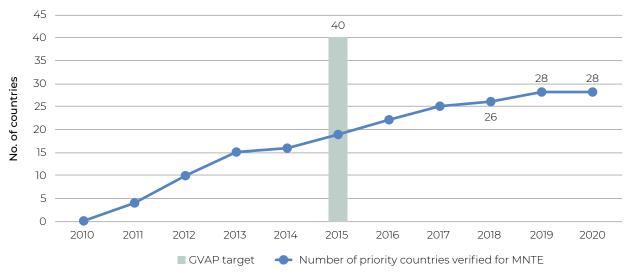
http://polioeradication.org/polio-today/polio-now/; https://extranet.who.int/polis/public/CaseCount.aspx .

^a Data for 2020 as of 28 May.

B) MATERNAL AND NEONATAL TETANUS ELIMINATION

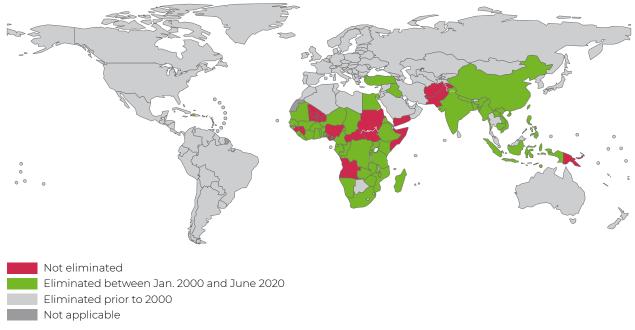
In 2019, Chad and the Democratic Republic of the Congo were validated as having eliminated maternal and neonatal tetanus (MNT). This leaves 12 countries yet to be validated as of 25 May 2020. This is in addition to other areas being validated as having eliminated MNT: the Punjab province of Pakistan (in 2016), the south-east zone of Nigeria (in 2017), six southern regions in Mali (in 2018) and the south-west zone in Nigeria (in 2019). Figs. 4 and 5 show the trends of MNT elimination over the past decade and globally.

Fig. 4: Number of countries with validated MNT elimination status by year^a



Note: In 2010, 40 countries still had not yet eliminated MNT.

Fig. 5: Countries with validated elimination of maternal and neonatal tetanus (as of June 2020)



Source: WHO-UNICEF database, June 2020. Geneva: World Health Organization/United Nations Children's Fund; 2020.

For further information see:

https://www.who.int/immunization/diseases/MNTE_initiative/en/index4.html; http://extranet.who.int/iris/restricted/bitstream/handle/10665/331939/WER9518-eng-fre.pdf

^a Data for 2020 as of 25 May.

C) MEASLES AND RUBELLA/CONGENITAL RUBELLA SYNDROME ELIMINATION

As of 31 December 2019, 83 countries were verified as having eliminated measles. Since 2018, when the Region of the Americas lost its elimination status, no World Health Organization (WHO) region has been verified as having eliminated measles, and only one region is verified as having eliminated rubella (Region of the Americas) (Figs. 6 and 7).

Table 1 shows a significant increase of measles cases globally, beginning in 2018 and continuing in 2019 with all regions experiencing outbreaks.

Fig. 6: Number of regions and countries achieving measles elimination

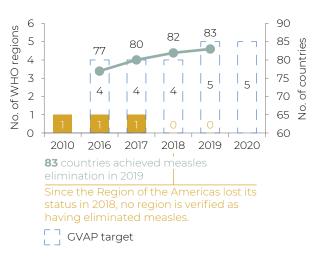
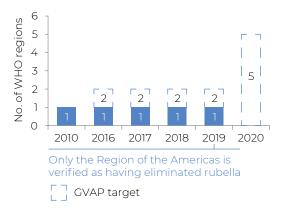


Fig. 7: Number of regions achieving rubella elimination



Coverage estimates for, and incidence of, measlescontaining vaccines (MCV) and rubella-containing vaccines (RCV) by WHO region are shown in Tables 1 and 2.

Table 1: MCV coverage (first and second dose) and measles incidence by WHO region, in 2010, 2018 and 2019

WHO region	WHO-UNICEF estimates for MCV1 national coverage (%)		WHO-UNICEF estimates for MCV2 national coverage (%)			Measles incidence per million population			Countries with measles incidence < 5 per million pop. (%)			
	2010	2018	2019	2010	2018	2019	2010	2018	2019	2010	2018	2019
African	73	69	69	4	25	33	232	118	587	30	47	35
Americas	93	91	88	67	84	75	0	17	28	100	91	91
Eastern Mediterranean	77	81	82	52	74	75	17	93	28	40	33	35
European	93	95	96	80	91	91	34	96	166	69	30	40
South-East Asia	83	93	94	15	81	83	30	18	15	36	36	12
Western Pacific	96	95	94	87	91	91	27	15	41	68	77	48
All	84	85	85	42	69	71	50	47	125	60	52	48

Table 2: Rubella incidence and RCV coverage by WHO region, in 2010, 2018 and 2019

WHO region	Ruk	pella incic pop	lence per oulation	r million	RCV1 coverage* (%)			
	2010	2018	2019	% change 2010–2019	2010	2018	2019	% change 2010–2019
African	4	11	6	63	0	32	33	
Americas	0	0	0	103	93	91	88	-5
Eastern Mediterranean	4	2	4	10	37	45	45	22
European	14	1	0	-97	93	95	96	3
South-East Asia	26	2	2	-91	3	85	93	3000
Western Pacific	27	4	18	-31	61	94	94	54
All	15	3	7	-51	35	69	71	103

For further information see:

http://www.who.int/immunization/monitoring_surveillance/burden/vpd/surveillance_type/active/measles_monthlydata/en/

2. IMMUNIZATION COVERAGE AND EQUITY

A) NATIONAL-LEVEL DTP3 COVERAGE

Global vaccination coverage – the proportion of the world's children who receive recommended vaccines – has remained stable over the past few years at around 85%.

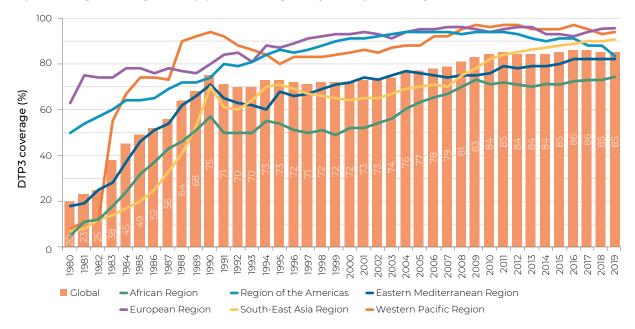
During 2019, approximately 85% of infants worldwide (116 million infants) received 3 doses of diphtheria-tetanus-pertussis-containing vaccines (DTP), protecting them against infectious diseases that can cause serious illness and disability or be fatal (Fig. 8). One hundred and twenty-five (64%) countries achieved a national DTP3 (third dose) coverage rate of 90% or above in 2019. District data were available and valid for 122 (63%) countries. Overall only 51 (26%) of the countries had national DTP3 coverage above ≥ 90% and valid district data above 80% in all districts.

Important increases in coverage (≥ 10%) between 2018 and 2019 were seen in Samoa, Senegal, Solomon Islands, Syrian Arab Republic, Ukraine, Viet Nam and Yemen.

In a five-year time frame, 10 countries improved coverage by 10% or more. Those include countries that are recovering from crises, such as Ukraine, Syrian Arab Republic and Iraq, as well as countries that have gradually improved their programmes.¹

Fourteen million infants did not receive an initial dose of DTP vaccine, pointing to a lack of access to immunization and other health services and an additional 5.7 million are only partially vaccinated.





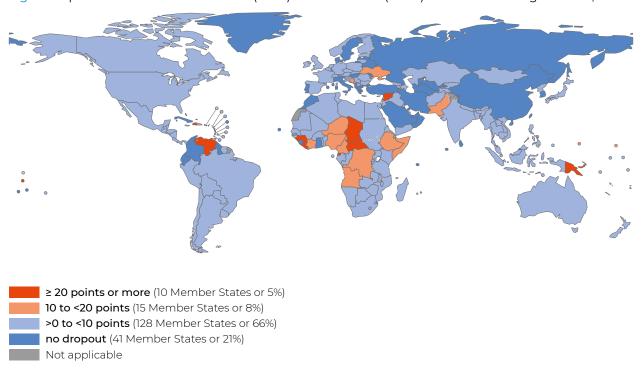
Progress and challenges with achieving universal immunization coverage. 2019 WHO/UNICEF Estimates of National Immunization Coverage. Geneva: World Health Organization/United Nations Children's Fund; 2020 (https://www.who.int/immunization/monitoring_surveillance/who-immuniz.pdf?ua=1, accessed 26 August 2020).

Regional coverage for the third dose of DTP in South Asia has increased by 12% over the past 10 years, notably across India, Nepal and Pakistan. However, that hard-won progress could be undone in 2020 by COVID-19-related disruptions. Countries that had recorded significant progress, such as Pakistan and Ethiopia, are now also at risk of backsliding if immunization services are not restored as soon as feasible. The situation is especially concerning for Latin America and the Caribbean, where historically high coverage has slipped over the past decade. In Brazil, the Plurinational State of Bolivia, Haiti and

the Bolivarian Republic of Venezuela, immunization coverage plummeted by at least 14% since 2010. In addition, these countries are now also confronting moderate to severe COVID-19-related disruptions.

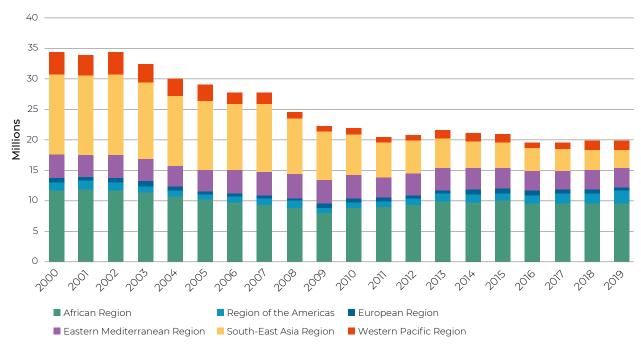
Drop-out rates between first and third dose of DTP have been analysed in all 64 countries where DTP3 coverage was below 90%. In 2019, 21 countries with DTP3 coverage between 50% and 89% experienced a drop-out rate of 10% or more. Among those, 7 countries had a drop-out rate of 20% or more. Fig. 9 shows drop-out rates globally in 2019.

Fig. 9: Drop-out rates between first dose (DTP1) and third dose (DTP3) of DTP-containing vaccines, 2019



The coverage trend has plateaued over the past decade, leaving almost 20 million children unprotected. Almost half of these children live in the African Region (Fig. 10).

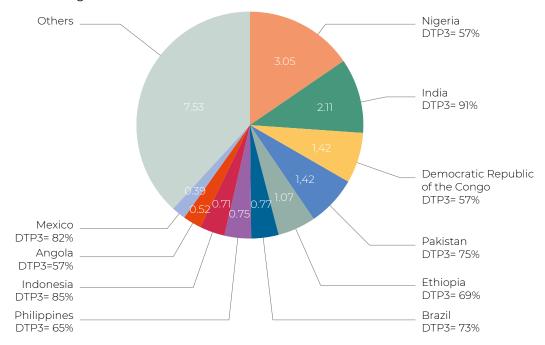
Fig. 10: Number of un- or under-vaccinated with DTP by year and WHO region, 2000–2019



Ten countries account for 12.2 of the 19.7 million unand under-vaccinated children in the world (62%). This list includes countries across five WHO regions, some with moderate coverage but very large birth cohorts, and others with substantially lower

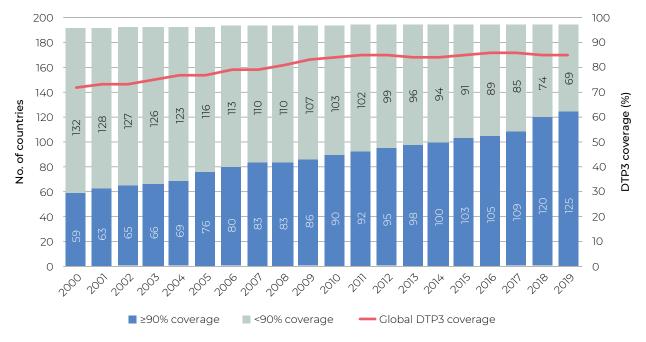
coverage: Angola, Brazil, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Mexico, Nigeria, Pakistan and the Philippines (Fig. 11). DTP3 coverage rates from 2000 to 2019 are shown in Fig. 12.

Fig. 11: Countries with the highest number of un- or under-vaccinated (in millions) with DTP, and their DTP3 coverage rate in 2019



Source: WHO-UNICEF Joint reporting form July 2020 [database]. Geneva: World Health Organization/United Nations Children's Fund; 2020 WUENIC July 2020 update [database]. Geneva: World Health Organization/United Nations Children's Fund; 2020 (https://www.who.int/immunization/monitoring_surveillance/data/en/, accessed 9 September 2020).

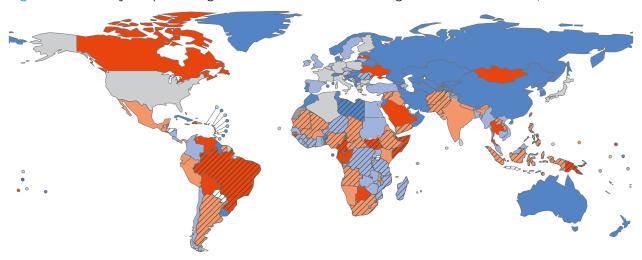
Fig. 12: Number of countries that reached and sustained \geq 90% coverage for DTP3 and global DTP3 coverage, 2000–2019

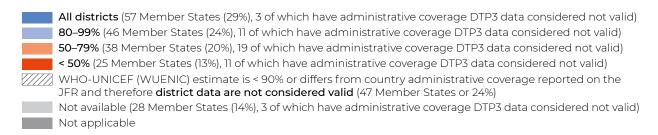


B) DISTRICT-LEVEL DTP3 COVERAGE

Only 57 countries declare having an 80% or more DTP3 coverage in all their districts. Fig. 13 shows district-level DTP3 coverage.

Fig. 13: Countries by the percentage of districts with DTP3 coverage ≥ 80% and valid data, 2019



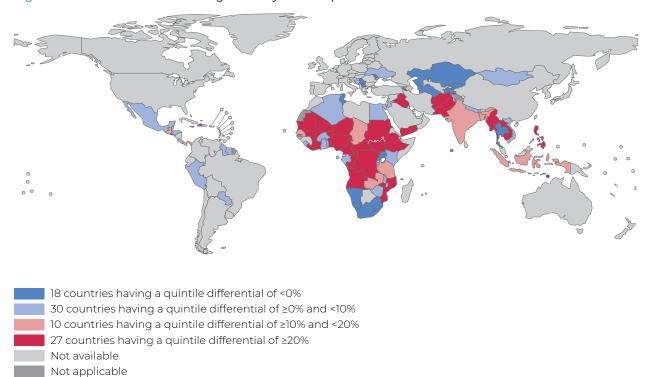


C) BENEFITS OF IMMUNIZATION ARE EQUITABLY EXTENDED TO ALL PEOPLE

Data from Demographic and Health Surveys (DHS) or Multiple Indicator Cluster Surveys (MICS) conducted between 2010 and 2018 on national diphtheria–tetanus–pertussis (DTP3) coverage rates by wealth quintiles were available for 85 of the 194 WHO Member States (44%). The latest survey data available for each country was considered for the purpose of this analysis. Coverage in 67 of these 85 Member States (79%) was generally higher in the wealthiest quintile than in the poorest quintile

(Fig. 14). Of the 85 countries with available data, 58 (68%) have met the target of < 20% difference in immunization coverage between the highest and lowest wealth quintiles; this includes 18 countries (21%) for which DTP3 national coverage for the richest is lower than for the poorest population. Twenty-seven countries (32%) had a quintile differential ≥ 20% and have thus failed to meet the target. This confirms trends described in previous reports.

Fig. 14: Countries with DTP coverage data by wealth quintiles available between 2010 and 2018



D) NATIONAL AND DISTRICT-LEVEL COVERAGE FOR ALL VACCINES IN THE NATIONAL PROGRAMME

In 2019,77 countries (40%) had achieved the national coverage of \geq 90% for all vaccines included in the national infant immunization schedule (Fig. 15), compared with 85 (43%) countries in 2010. However, between 2010 and 2019 most national schedules have expanded significantly the list of vaccines

included, which renders time series difficult to interpret.

Figs. 16 and 17 present the coverage rates for selected vaccines since 1980.

Fig. 15: Number of countries that have reached and sustained \geq 90% coverage for all vaccines included in the national infant schedule in 2019

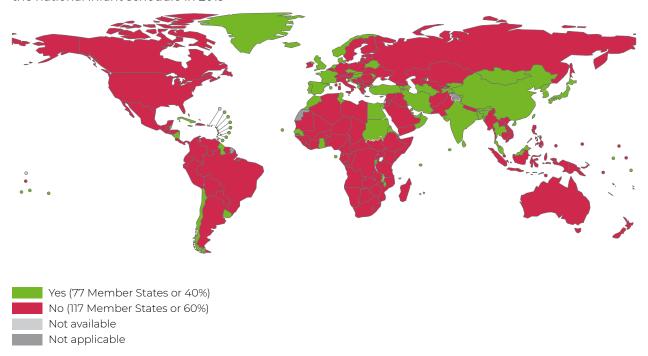
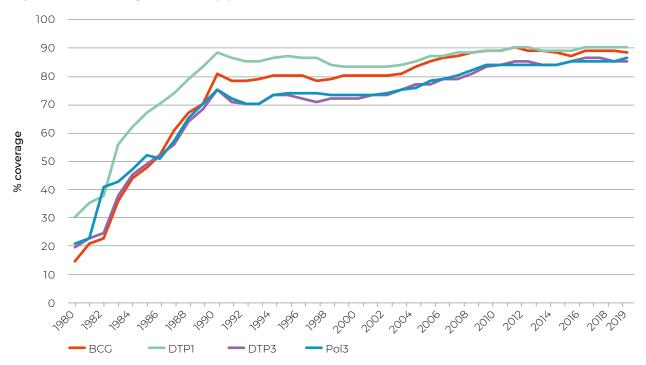
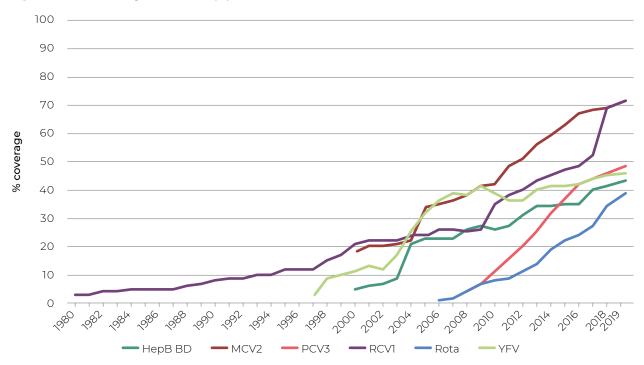


Fig. 16: Global coverage estimates (%) of four vaccines^a, 1980–2019



^a Bacille Calmette-Guérin (BCG) vaccine, DTP1, DTP3, Third dose of Polio vaccine (Pol3)

Fig. 17: Global coverage estimates (%) of six vaccines^a, 1980–2019



^a Hepatitis B vaccine birth dose (HepB BD), measles-containing vaccines second dose (MCV2), pneumococcus-containing vaccine third dose (PCV3), rubella-containing vaccine first dose (RCV1), rotavirus vaccine last dose (Rota) and yellow fever vaccine (YFV).

For further information see:

https://www.who.int/immunization/monitoring_surveillance/data/en/; http://www.who.int/entity/immunization/monitoring_surveillance/SlidesGlobalImmunization.pntv?ua=1:

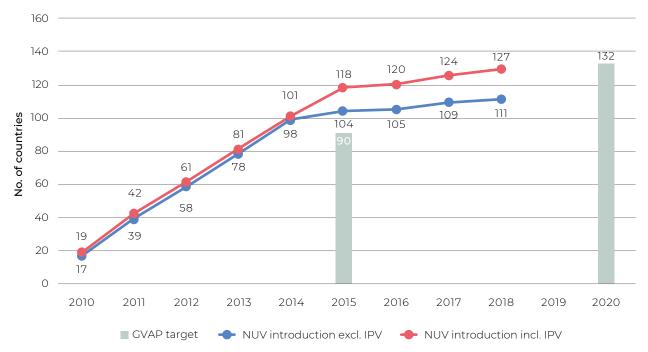
http://www.who.int/immunization/monitoring_surveillance/who-immuniz.pdf?ua=1

E) DEVELOP AND INTRODUCE NEW AND IMPROVED VACCINES AND TECHNOLOGIES

Fig. 18 shows the number of low- and middle-income countries that have introduced new or under-utilized vaccines, including inactivated poliovirus vaccines (IPV). According to the new World Bank Classification from June 2020², 132 countries are currently categorized as either low or middle income. There were 21 countries that did not introduce or did not sustain the introduction of

any new vaccine since 2010³, excluding IPV: Bosnia and Herzegovina, Chad, China, Comoros, Costa Rica, Cuba, Dominica, Grenada, Guinea, Marshall Islands, Mongolia, Montenegro, Republic of Moldova, Saint Lucia, Samoa, Syrian Arab Republic, The former Yugoslav Republic of Macedonia, Tonga, Turkey, Tuvalu and Ukraine.

Fig. 18: Number of low- and middle-income countries that have introduced one of more new or underutilized vaccines (NUV)^a between 2010 and 2018 (and have sustained it for at least one year)



^a Among the following: *Haemophilus influenzae* type b conjugate (Hib)-containing vaccine, pneumococcal conjugate vaccine (PCV), rotavirus vaccine, human papillomavirus vaccine, rubella and Japanese encephalitis vaccines. IPV is in addition to this list included in the red curve.

For further information see:

http://www.who.int/entity/immunization/monitoring_surveillance/VaccineIntroStatus.pptx

² http://databank.worldbank.org/data/download/site-content/CLASS.xls (as of 14 September 2020)

³ That is, one of the following: *Haemophilus influenzae* type b conjugate (Hib)-containing vaccine, pneumococcal conjugate vaccine (PCV), rotavirus vaccine, human papillomavirus vaccine, rubella and Japanese encephalitis vaccines.

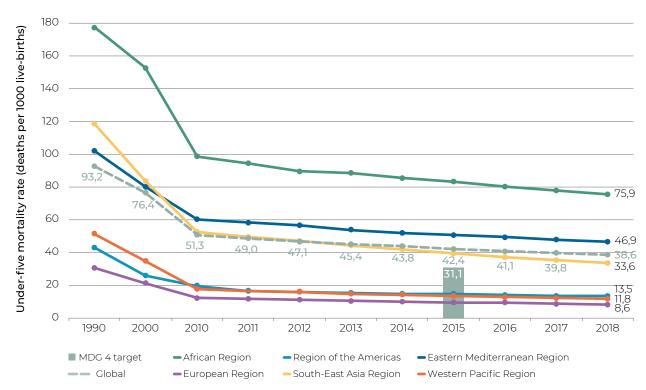


3. EXCEED THE MILLENNIUM DEVELOPMENT GOAL 4 TARGET FOR REDUCING CHILD MORTALITY AND INTEGRATION INDICATORS

The Millennium Development Goal (MDG) 4 target was attaining in 2015 a two thirds reduction in under five global mortality compared with the 1990 baseline, i.e. less than 31.1 deaths per 1000 live births. Global under-five mortality was 38.6 in 2018

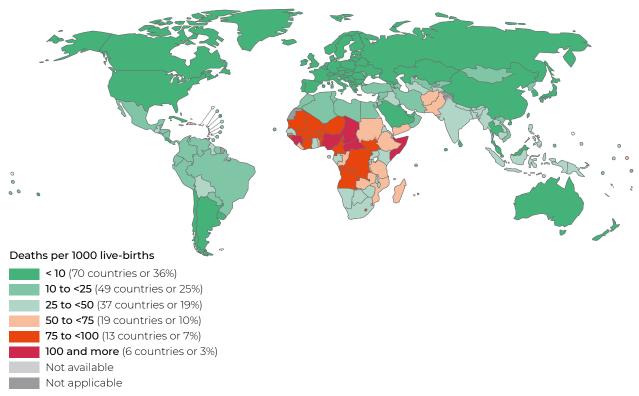
(Fig. 19). Each year since 2010 there has been an annual additional reduction of approximately 1.5 to 2 points (per 1000 live births) globally. Under-five mortality figures by country are shown in Fig. 20.

Fig. 19: Under-five mortality rate in 1990, 2000 and from 2010 to 2018, globally and by WHO region



Source: United Nations Inter-Agency Group for Child Mortality Estimates. Levels and trends in child mortality: Report 2018. New York (NY): United Nations; 2018.

Fig. 20: Under-five mortality rates globally in 2018



Source: United Nations Inter-Agency Group for Child Mortality Estimates. Levels and trends in child mortality: Report 2018. New York (NY): United Nations; 2018.

For further information see:

https://childmortality.org/ and http://apps.who.int/gho/data/node.gswcah?lang=en



4. ENSURING COUNTRY OWNERSHIP OF IMMUNIZATION

PRESENCE OF FUNCTIONAL NATIONAL IMMUNIZATION TECHNICAL ADVISORY GROUP

One hundred and fifty-eight countries reported the existence of a National Immunization Technical Advisory Group (NITAG) in 2019. The 120 NITAGS meeting the six process criteria in 2019 (5.3% increase over 2018), cover 87% of the world population, compared to 52% in 2010 (Figs. 21 and 22).

Fig. 21: Number of countries served by a NITAG, meeting all process criteria between 2010 and 2019

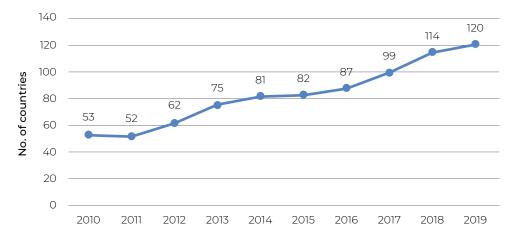
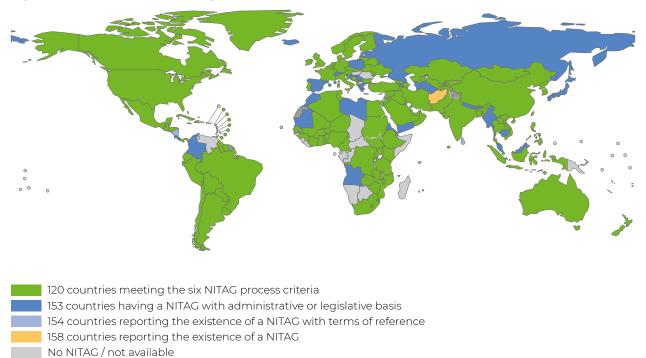


Fig. 22: Existence and functionality of NITAGs in 2019



Source: WHO IVB database as of 1 July 2020. Geneva: World Health Organization; 2020.

For further information see:

Not applicable

http://www.who.int/immunization/sage/national_advisory_committees/en/; http://www.nitag-resource.org/



5. STRONG IMMUNIZATION SYSTEMS ARE AN INTEGRAL PART OF A WELL-FUNCTIONING HEALTH SYSTEM

VACCINE-PREVENTABLE DISEASE SURVEILLANCE

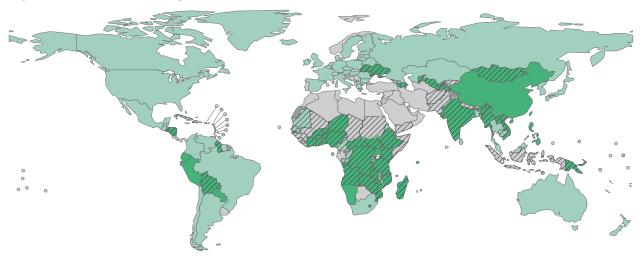
Globally, the number of countries that conduct surveillance for rotavirus or invasive bacterial vaccine-preventable disease (IB-VPD) remains high, although there is a continued trend of fewer countries reporting data to the WHO-coordinated surveillance networks (Table 3). Surveillance is

conducted in most of the populous countries with high burden of disease, including those that are Gavi-eligible in Africa and Asia, with current gaps in reported surveillance data in northern Africa and the Middle East (Figs. 23 and 24).

Table 3: Number of countries conducting surveillance for rotavirus and IB-VPD, 2017–2019

	20	17	20 [°]	18	2019		
	Rotavirus	IB-VPD	Rotavirus	IB-VPD	Rotavirus	IB-VPD	
Part of WHO-coordinated global surveillance network	61	54	54	50	47	46	
Conducts surveillance but not part of WHO-coordinated global surveillance network	72	100	78	101	80	103	
No reported surveillance	61	40	62	43	67	45	

Fig. 23: Countries conducting rotavirus surveillance, 2019^a



Countries conducting Rotavirus Surveillance but not reporting to GRSN (80 countries)

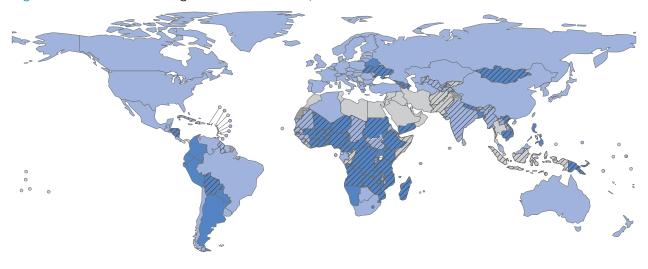
Countries in the WHO Global Rotavirus Surveillance Network (GRSN) (47 countries)

Gavi eligible countries

Not available

Not applicable

Fig. 24: Countries conducting IB-VPD surveillance, 2019^a



Countries conducting IB-VPD Surveillance but not reporting to GISN (103 countries)

Countries in the WHO Global IB-VPD Surveillance Network (GISN) (46 countries)

Gavi eligible countries

Not available

Not applicable

For further information see:

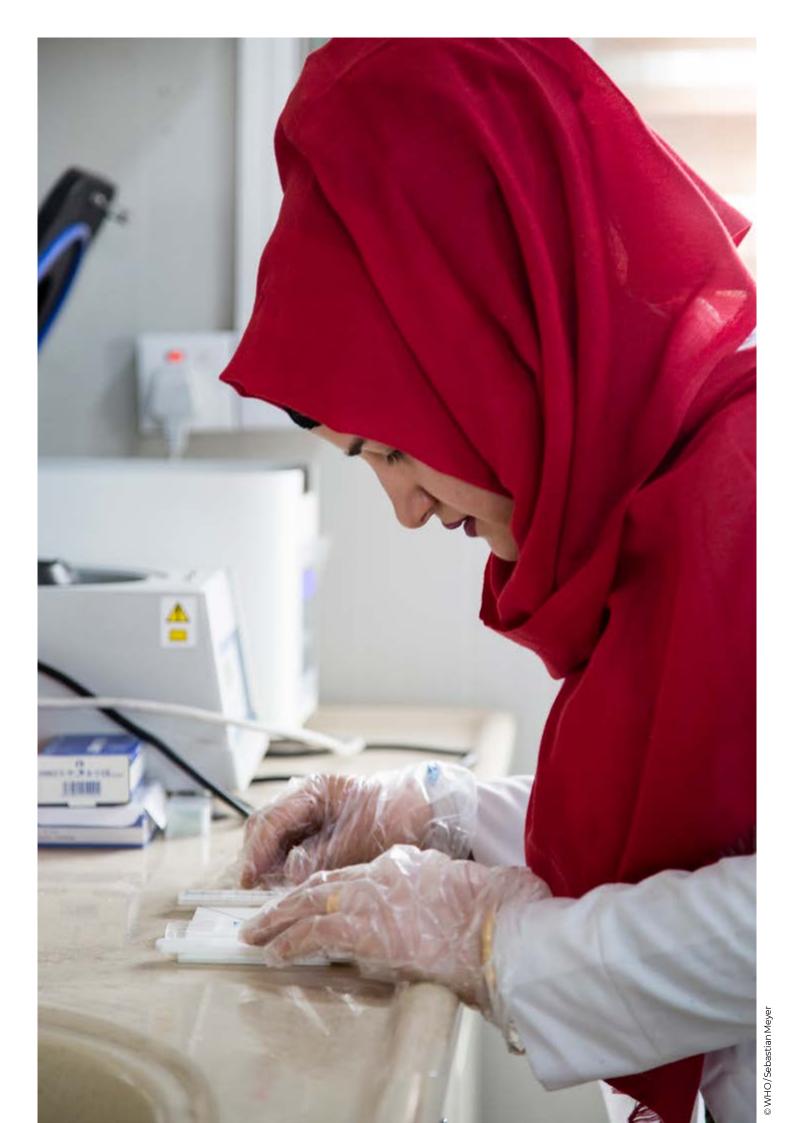
 $\frac{https://www.who.int/immunization/monitoring_surveillance/resources/NUVI/en/;}{https://www.who.int/immunization/monitoring_surveillance/burden/VPDs/en/;}$

WHO Global Invasive Bacterial Vaccine-Preventable Disease and Rotavirus and Pediatric Diarrhea; Surveillance Networks Bulletin February 2020:

https://mailchi.mp/d61958d8bbd1/who-ib-vpd-and-rotavirus-surveillance-bulletin-june-4779233

^a Most countries in the WHO African Region report diarrhoea with blood (dysentery) and diarrhoea with dehydration in children aged under 5 years as part of Integrated Disease Surveillance and Response (IDSR), which triggers investigation and laboratory confirmation of these syndromes.

^a Most countries in the WHO African Region report meningitis (bacterial) and severe pneumonia in children aged under 5 years as part of Integrated Disease Surveillance and Response (IDSR), which triggers investigation and laboratory confirmation of these syndromes.

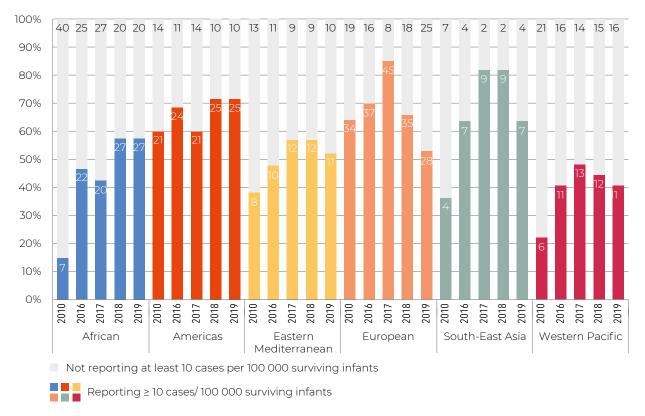


6. VACCINE SAFETY

Adverse events following immunization (AEFI) case reporting rates were stable or marginally decreased in most of the regions over the past year (Fig. 25). The only significant decline was observed in the European Region. Note that this

indicator does not allow for the differentiation between minor and serious AEFI, nor does it account for special immunization campaigns (e.g. supplementary immunization activities) that influence reporting rates.

Fig. 25: Percentage and number of countries reporting at least 10 per 100 000 AEFI cases by WHO region, in 2010, 2016–2019



For more information, see:

http://www.who.int/vaccine_safety/en/







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