



PNEUMONIA & DIARRHEA PROGRESS REPORT 2024



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BLOOMBERG SCHOOL
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IVAC

International Vaccine
Access Center

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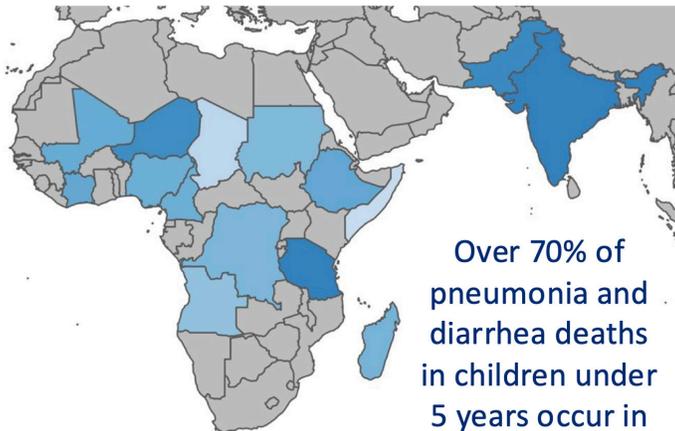
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EXECUTIVE SUMMARY

Each year, IVAC’s Pneumonia and Diarrhea Progress Report tracks 10 key indicators in the 15 countries with the highest mortality burden of pneumonia and diarrhea in children under 5 years. These 10 indicators are evaluated and summarized into an overall score based on the Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea (GAPPD). Overall scores improved by two or more percentage points in 7 focus countries since the 2023 report. Deaths are based on the most recent estimates available from the WHO Maternal and Child Epidemiology Estimation (MCEE) Group.

15 HIGH-BURDEN FOCUS COUNTRIES



Over 70% of pneumonia and diarrhea deaths in children under 5 years occur in only 15 focus countries

PNEUMONIA AND DIARRHEA ARE RESPONSIBLE FOR 1 IN 4 DEATHS OF CHILDREN UNDER 5 YEARS

1.17 MILLION children under 5 years die of pneumonia and diarrhea per year

A CHILD UNDER 5 YEARS DIES OF PNEUMONIA EVERY 43 SECONDS

 **726,000** children under 5 years die of **pneumonia** per year

 **444,000** children under 5 years die of **diarrhea** per year

Rank	Country	Under-5 Pneumonia & Diarrhea Deaths	Deaths per 1,000 live births	GAPPD Score 2024	GAPPD Score Change Since 2023
1	Nigeria	305,006	39	49	4
2	India	119,012	5	68	1
3	Democratic Republic of the Congo	72,872	18	46	-3
4	Pakistan	67,226	11	65	1
5	Ethiopia	45,253	12	52	4
6	Niger	35,661	31	63	8
7	Somalia	32,317	43	23	0
8	Angola	27,959	21	40	4
9	Chad	27,591	37	28	2
10	Mali	27,342	30	50	-1
11	United Republic of Tanzania	26,924	12	68	1
12	Sudan	19,654	13	44	-9
13	Cameroon	18,115	19	49	0
14	Ivory Coast	17,022	18	52	4
15	Madagascar	16,786	19	47	5



INTRODUCTION

Despite significant progress, childhood pneumonia and diarrhea continue to claim the lives of more children under five years than any other infectious diseases.

While global health systems have shown promising impact, progress remains uneven, with millions of children left without access to basic services. Pneumonia and diarrhea remain leading killers of young children worldwide, responsible for 1.17 million under-five deaths annually. These two infectious diseases account for approximately 23% of global under-five mortality.

Routine immunization is a cornerstone of primary health care and is essential to reducing the burden of vaccine-preventable pneumonia and diarrhea. Data on global immunization coverage showed signs of recovery from COVID-19, with an estimated 4 million more children receiving life-saving vaccination in 2022 compared to 2021.¹ However, much ongoing immunization work remains to be done as global immunization coverage has not yet returned to pre-pandemic 2019 levels.²

Although great progress continues to be made, the burden of pneumonia and diarrhea is still deeply inequitable, with over 70% of under-five mortality concentrated in just 15 countries. If we are to leave no child behind, regardless of where they are born, we must call for consistent, focused

prioritization of children living in settings where conflict and poverty threaten already fragile health systems. Restoring and strengthening routine immunization systems is critical to get back on track toward achieving the Sustainable Development Goal targets for ending preventable newborn and child deaths.

Rank	Country	Under-5 Pneumonia & Diarrhea Deaths	Deaths per 1,000 Live Births
1	Nigeria	305,006	39
2	India	119,012	5
3	Democratic Republic of the Congo	72,872	18
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11	United Republic of Tanzania	26,924	12
12	Sudan	19,654	13
13	Cameroon	18,115	19
14	Ivory Coast	17,022	18
15	Madagascar	16,786	19



With a child under five years dying of pneumonia every 43 seconds, we continue to fall short of global targets.

“We have seen incredible progress against preventable childhood deaths over the past decades, but disruptions to health systems and stagnated immunization coverage rates continue to threaten the health and safety of the most vulnerable children,” says IVAC Executive Director Dr. William Moss. “We cannot allow persistent gaps in basic child health services to continue – the global health community must mobilize to prevent the resurgence of preventable diseases like pneumonia, diarrhea, and measles.”

In 2013, the Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea (GAPPD)³ identified an integrated framework of key interventions proven to effectively protect, prevent, and treat childhood pneumonia and diarrhea. In the 11 years since, under-five pneumonia and diarrhea deaths have fallen by 60% from 2.89 million deaths in 2000,⁴ but this progress still falls short of the GAPPD goal of less than three childhood pneumonia deaths and fewer than two diarrhea deaths for every 1,000 births in all countries by 2025.

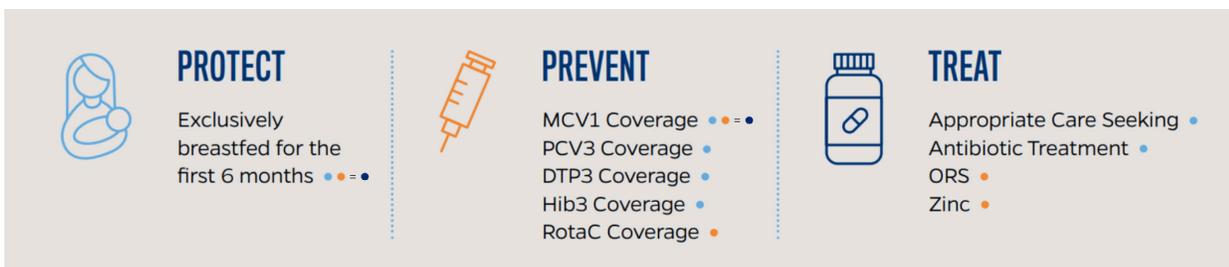
Since 2011, the International Vaccine Access Center at the Johns Hopkins Bloomberg School of Public Health has analyzed annual progress for 10 key GAPPD interventions in the 15 countries with the highest burden of under-five deaths from pneumonia and diarrhea.

GAPPD INDICATORS

In 2009 and 2013, the WHO and UNICEF published GAPPD, a bold call to action with the goal of achieving a global 75% reduction in incidence of severe pneumonia and diarrhea in children under 5 years by 2025.⁵ GAPPD outlines a set of core interventions to successfully prevent, protect, and treat children who are at risk of serious illness or death due to these two diseases.

A country’s Overall GAPPD score reflects the average of all 10 indicators.

- The Pneumonia Score reflects the mean of **7 pneumonia-specific indicators**
- The Diarrhea Score reflects the mean of **5 diarrhea-specific indicators**
- Of the 10 indicators, **2 are effective against both diarrhea and pneumonia**

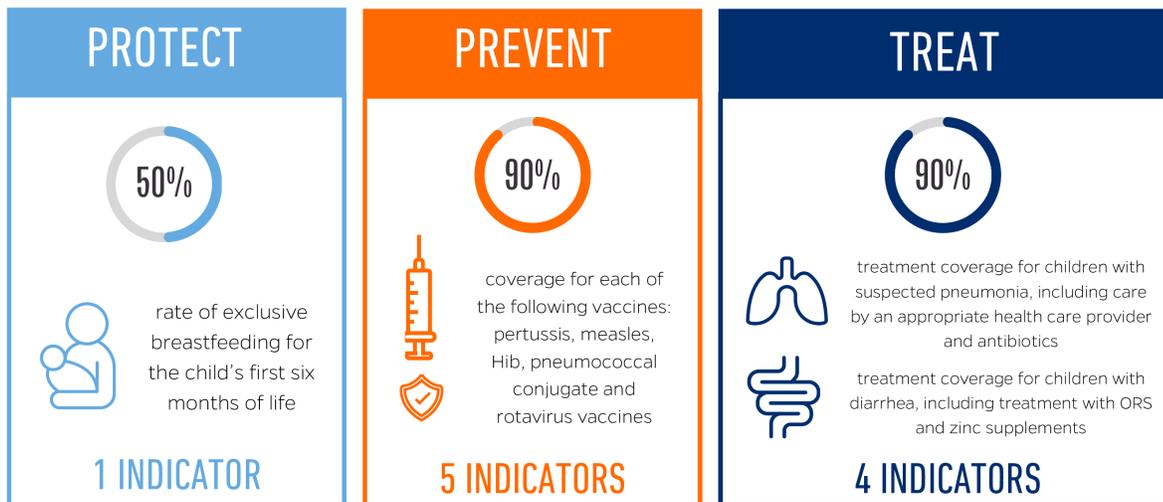


KEY RESULTS & FINDINGS

HOW THE SCORES ARE CALCULATED

Each year we calculate and compare GAPPD scores based upon 10 key indicators to track global progress toward GAPPD targets. Exclusive breastfeeding **PROTECTS** children by making them healthier and less vulnerable to pneumonia and diarrhea. Vaccination against pertussis, measles, Hib, pneumococcus, and rotavirus **PREVENTS** illness and death due to these pathogens that cause pneumonia and/or diarrhea, while access to appropriate health care providers, antibiotics, ORS, and zinc are key interventions to **TREAT** pneumonia and diarrhea.

GAPPD COVERAGE TARGETS



$$\left[\begin{array}{c} \text{PROTECT} \\ 50\% * 1 \\ \text{breastfeeding coverage target} \end{array} \right] + \left[\begin{array}{c} \text{PREVENT} \\ 90\% * 5 \\ \text{vaccine coverage target} \end{array} \right] + \left[\begin{array}{c} \text{TREAT} \\ 90\% * 4 \\ \text{treatment coverage target} \end{array} \right] = 86\% \text{ Overall GAPPD target score}$$



GAPPD scores for the 15 countries with the highest number of under-5 pneumonia and diarrhea deaths

Countries with most under-5 pneumonia & diarrhea deaths		Under-5 pneumonia & diarrhea burden		Protect (Target = 50%)	Prevent (Target = 90%)					Treat (Target = 90%)				2024 Scores		
					% exclusive BF* in first 6 months	Vaccine coverage (%)					% of children under 5 with suspected pneumonia		% of children under 5 with diarrhea receiving		Overall	Pneumonia
Rank	Country	Number of deaths	Number of deaths per 1,000 live births	DTP3		MCV1	Hib3	PCV3	Rotac	Taken to an appropriate health care provider	Receiving antibiotics	ORS	Zinc			
1	Nigeria	305,006	39	34	62	60	62	60	49	40	50	40	31	49	53	43
2	India	119,012	5	64	91	93	91	83	90	56	25	61	31	69	72	68
3	Democratic Republic of the Congo	72,872	18	54	60	52	60	59	52	34	39	24	22	46	51	41
4	Pakistan	67,226	11	48	86	84	86	86	90	71	46	37	13	65	72	54
5	Ethiopia	45,253	12	59	72	61	72	69	70	30	27	30	33	52	56	51
6	Niger	35,661	31	25	85	80	85	85	88	59	N/A	41	20	63	70	51
7	Somalia	32,317	43	34	42	46	42	0	0	23	N/A	N/A	0	23	31	20
8	Angola	27,959	21	37	54	50	54	49	43	49	25	43	0	40	45	35
9	Chad	27,591	37	7	67	63	67	0	0	18	18	17	21	28	34	22
10	Mali	27,342	30	50	77	73	77	77	63	35	17	21	15	51	58	44
11	United Republic of Tanzania	26,924	12	64	93	91	93	92	84	55	49	45	18	68	77	60
12	Sudan	19,654	13	55	51	51	51	52	39	48	59	20	15	44	52	36
13	Cameroon	18,115	19	39	75	71	75	75	72	30	12	18	21	49	54	44
14	Ivory Coast	17,022	18	34	79	70	79	79	77	44	21	17	18	52	58	43
15	Madagascar	16,786	19	54	65	51	65	73	62	40	29	19	11	47	54	39
MEDIAN				48	72	63	72	73	63	40	27	27	18	49	54	43

*BF = Breastfeeding

Equal or above target score

N/A = Data is unavailable or not reported



PROGRESS SUMMARY

OVERALL GAPPD SCORES

In 2024, all 15 countries failed to reach the Overall GAPPD score target of 86%. The mean Overall GAPPD score across all 15 countries was 50%, **2% more than last year**. 2024 Overall GAPPD scores ranged from 23% (**Somalia**) to 69% (**India**). From 2023 to 2024, 2 countries experienced a decline, while 7 countries experienced an improvement of greater than 1% in Overall GAPPD score.

Countries listed in the table below experienced greater than 1 percentage point change in Overall GAPPD score between 2023 and 2024.

Country	2023	2024	Difference
Niger	56	63	+7
Madagascar	42	47	+5
Nigeria	45	49	+4
Ivory Coast	48	52	+4
Ethiopia	49	52	+3
Angola	37	40	+3
Chad	26	28	+2
Democratic Republic of the Congo	48	46	-2
Sudan	53	44	-9



PNEUMONIA GAPPD SCORES

In 2024, all 15 countries failed to meet the Pneumonia GAPPD score target of 84%. The mean Pneumonia GAPPD score across all 15 countries was 56%, **2% more than last year**. 2024 Pneumonia GAPPD scores ranged from 31% (**Somalia**) to 77% (**United Republic of Tanzania**). From 2023 to 2024, 2 countries experienced a decline, while 7 countries experienced an improvement of greater than 1% in Pneumonia GAPPD score.

Countries listed in the table below experienced greater than 1 percentage point change in Pneumonia GAPPD score between 2023 and 2024.

Country	2023	2024	Difference
Niger	58	70	+12
Madagascar	48	54	+6
Ethiopia	51	56	+5
Ivory Coast	53	58	+5
Angola	41	45	+4
Chad	31	34	+3
India	70	72	+2
Democratic Republic of the Congo	54	51	-3
Sudan	62	52	-10



DIARRHEA GAPPD SCORES

In 2024, all 15 countries failed to meet the Diarrhea GAPPD score target of 82%. The mean Diarrhea GAPPD score across all 15 countries was 43%, **1% more than last year**. 2024 Diarrhea GAPPD scores ranged from 20% (**Somalia**) to 68% (**India**). From 2023 to 2024, 3 countries experienced a decline, while 9 countries experienced an improvement of greater than 1% in Diarrhea GAPPD score.

Countries listed in the table below experienced greater than 1 percentage point change in Diarrhea GAPPD score between 2023 and 2024.

Country	2023	2024	Difference
Nigeria	35	43	+8
Niger	47	51	+4
Angola	31	35	+4
Ethiopia	48	51	+3
Ivory Coast	40	43	+3
Madagascar	36	39	+3
Chad	20	22	+2
United Republic of Tanzania	58	60	+2
Cameroon	42	44	+2
Democratic Republic of the Congo	43	41	-2
Mali	46	44	-2
Sudan	44	36	-8



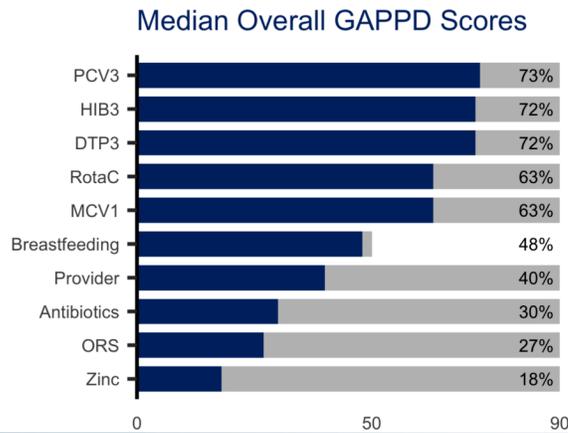
GAPPD PROGRESS SUMMARY

2024 GAPPD OVERALL SCORES

7 COUNTRIES met the **50% target** for exclusive breastfeeding: India, DRC, Ethiopia, Mali, Tanzania, Sudan, Madagascar.

0 COUNTRIES met the **90% target** for all 5 vaccines. India and Tanzania met targets for 4 vaccines, and Pakistan met 1 vaccine target. No other vaccine targets were met.

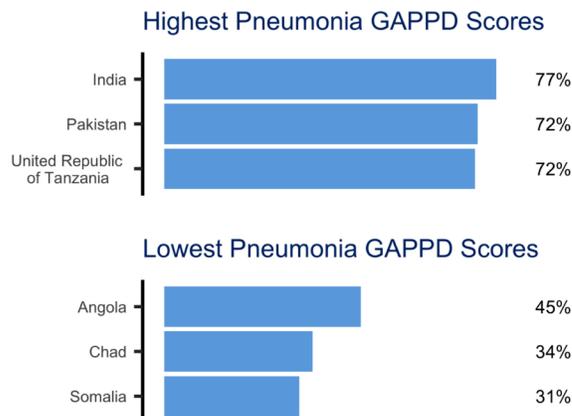
0 COUNTRIES met the **90% target** for any of the four treatment indicators.



2024 GAPPD PNEUMONIA SCORES

Although no country met the GAPPD Pneumonia score target of 84%, several countries are very close to reaching this target.

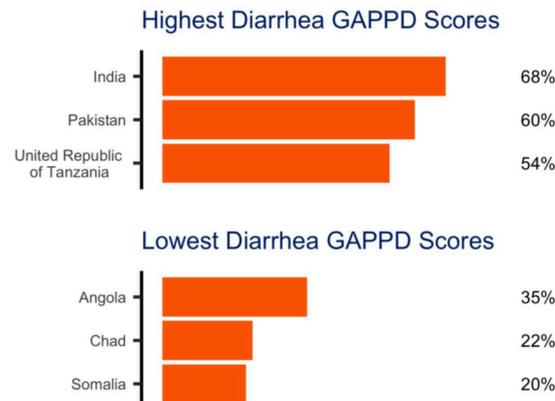
THE MEDIAN PNEUMONIA GAPPD SCORE FOR ALL 15 COUNTRIES WAS 54%



2024 GAPPD DIARRHEA SCORES

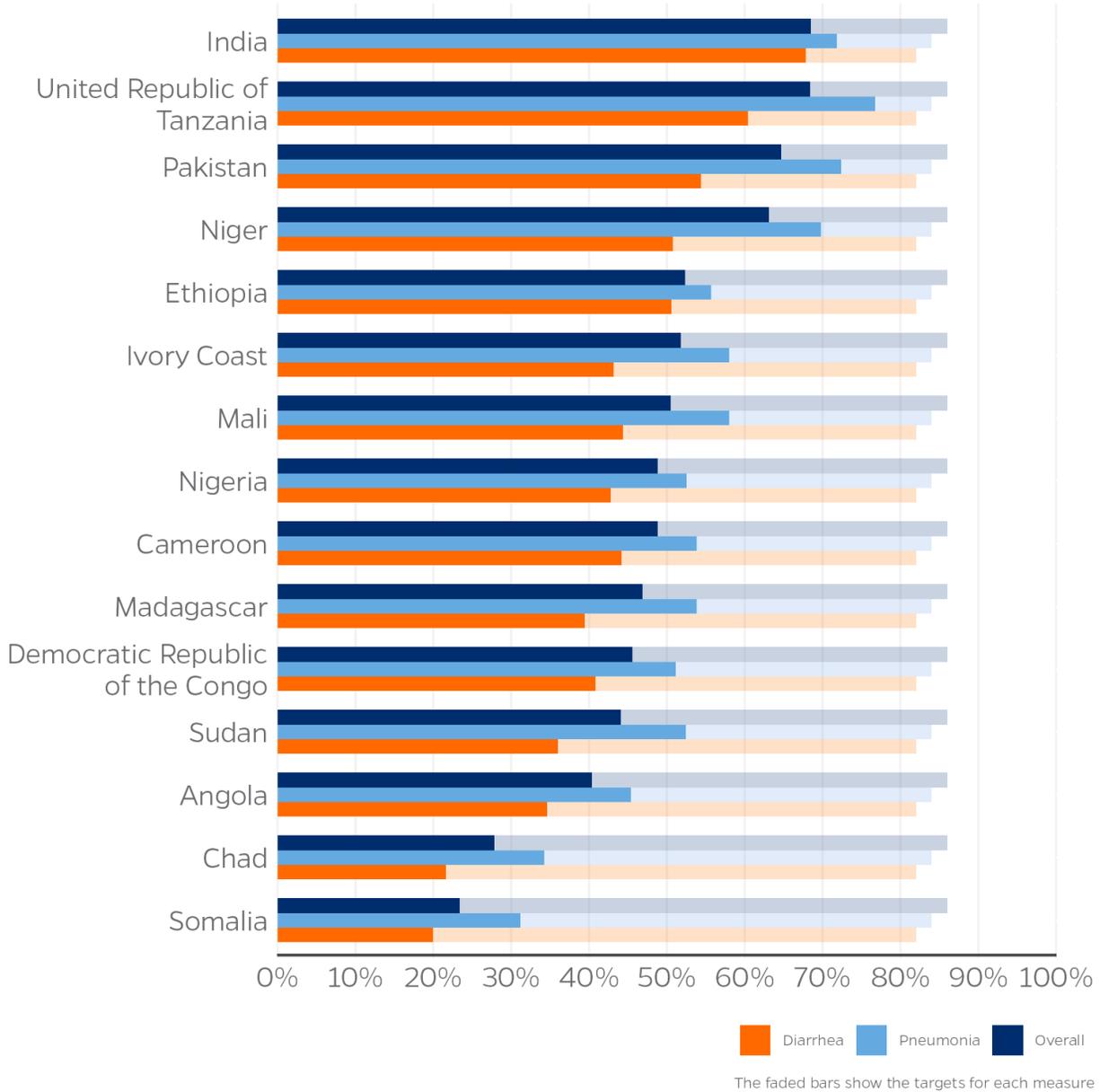
GAPPD Diarrhea scores continue to be below the 82% target in all countries, with coverage of ORS and zinc remaining particularly low, as in past years.

THE MEDIAN DIARRHEA GAPPD SCORE FOR ALL 15 COUNTRIES WAS 43%



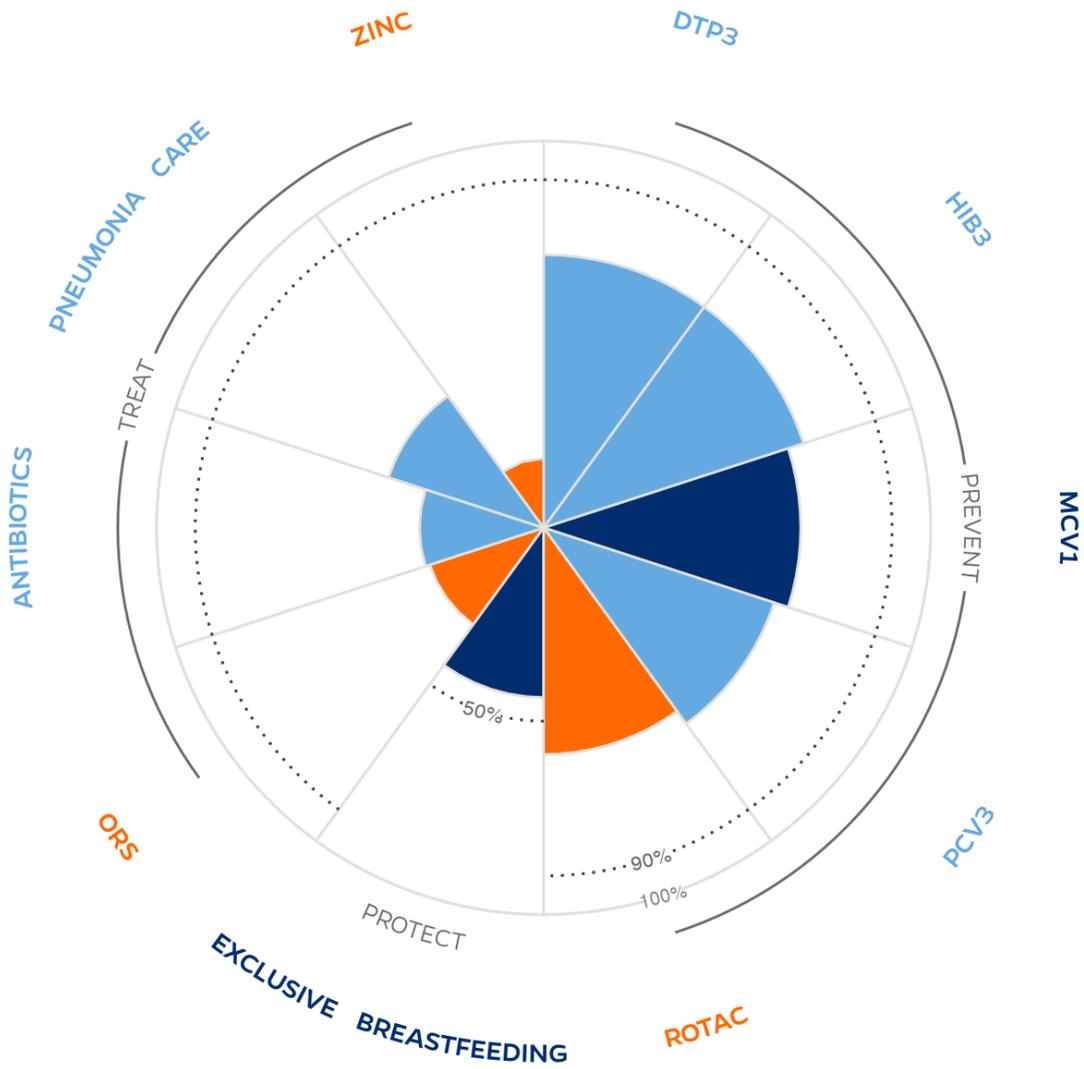
TOTAL GAPPD TARGET SCORES

None of the 15 countries met GAPPD targets in 2024.



Mean coverage by indicator

Zinc continues to lag far behind other GAPPD indicators.



The dotted lines show the targets for each measure

COUNTRY PROGRESS SUMMARY

From 2023 to 2024, 9 countries saw Overall GAPPD score changes of at least two percentage points.

Niger		MCV1 coverage in Niger jumped 15 percentage points. There were small gains of 1 to 2 percentage points in each of the other GAPPD vaccine indicators.
Madagascar		Coverage increased across all GAPPD immunization interventions in Madagascar, ranging from 6 percentage points for MCV1 to 16 percentage points for PCV3.
Nigeria		Nigeria's GAPPD gains were due entirely to the rotavirus vaccine. Since its introduction in June 2022, coverage has risen to 49%. Rotavirus coverage increased 37 percentage points in the past year.
Ivory Coast		Ivory Coast saw increases of 6 to 11 percentage points across all GAPPD immunization estimates.
Ethiopia		Coverage of each GAPPD vaccine intervention increased by 5 to 7 percentage points in Ethiopia over the past year.
Angola		Angola saw major gains in all GAPPD vaccine coverage, particularly PCV3 coverage which jumped from 24% last year to 49% this year.
Chad		A gain of 7 percentage points was seen in DTP3 and Hib3 coverage, while a gain of 9 percentage points was seen in MCV1 coverage. Chad has yet to introduce PCV3 and RotaC.
Democratic Republic of the Congo		DRC experienced decreases in coverage for all GAPPD immunization estimates. These drops ranged from 4 to 7 percentage points.
Sudan		Sudan saw a significant decrease of 23 percentage points in RotaC coverage, and 15 to 17 percentage points across all other immunization estimates.



DATA & METHODOLOGY

IDENTIFYING THE HIGHEST BURDEN COUNTRIES

For this report, we analyzed the progress of 10 GAPPD indicators in the 15 countries with the highest total number of pneumonia and diarrhea deaths among children under 5 years.

These 15 high-burden countries were identified based on the latest data on pneumonia and diarrhea deaths, sourced from the WHO Maternal and Child Epidemiology Estimation (MCEE) group estimates.⁶ The most recent publicly available estimates were published in 2024 and include data through 2021. The list of the 15 high-burden countries can shift from year to year as new data is made available. Therefore, countries included in our list of high burden countries may change either due to country progress that results in fewer under-5 pneumonia and diarrhea deaths or adjustments to the methodology used to estimate mortality.

A dataset of the 10 GAPPD indicators used in this report is now available for 194 countries and is accessible on the [VIEW-hub](#) data visualization platform.

GAPPD INDICATORS

The main data sources for data for this report come from WHO and UNICEF data repositories on global child health.^{5,7-9} The most recently available data were used to compile the national coverage estimates for each of the 10 GAPPD indicators tracked in the report. We used data collected within the last 10 years to compile national coverage estimates for each of the 10 indicators. Three key target scores are calculated by averaging the GAPPD coverage target scores for these 10 indicators: a GAPPD Pneumonia score, GAPPD Diarrhea score, and an Overall GAPPD score that includes both pneumonia and diarrhea indicators. These scores can be used to track country progress towards achieving GAPPD coverage targets based upon this selection of proven pneumonia and diarrhea interventions.



Data sources for 10 GAPPD indicators

Indicator	Definition	Source
PROTECT		
Exclusive breastfeeding	Percentage of infants 0-5 months of age who are fed exclusively with breast milk	UNICEF's global database, Infant and Young Child Feeding: Exclusive Breastfeeding (<6 months) .
PREVENT		
DTP3	3rd dose of diphtheria-tetanus-pertussis (DTP) vaccine	WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) .
MCV1	1st dose of measles-containing vaccine	
Hib3	3rd dose of Haemophilus influenzae type b (Hib) vaccine	
PCV3	3rd dose of pneumococcal conjugate vaccine (PCV)	
RotaC	Final dose of rotavirus vaccine (complete course)	
TREAT		
Pneumonia care-seeking	Percentage of children born in the five years preceding the survey with acute respiratory infection (ARI) taken to a health facility	UNICEF's global database, Child health coverage: Pneumonia data
Antibiotics	Percentage of children under the age of 5 years with symptoms of ARI who received antibiotics	USAID Demographic and Health Survey (DHS) .
		UNICEF Multiple Indicator Cluster Surveys (MICS) .
		or equivalent
ORS	Percentage of children under 5 years with diarrhea receiving oral rehydration salts (ORS packets or pre-packaged ORS fluids)	UNICEF's global database, Child health coverage: Diarrhoeal disease
Zinc	Percentage of children born in the five years preceding the survey with diarrhea in the two weeks preceding the survey who received zinc supplements	



LIMITATIONS

Data availability

Not all indicators are available for each country for each year. While the data for some indicators are updated annually, as with the WUENIC immunization coverage, other data sources may only be updated once every few years when new national surveys are published. In cases where a country has no available data for a particular indicator, that indicator is recorded as either “missing” or, in the case of countries which have not yet introduced a vaccine, “0% coverage.”

While actual changes in the availability and provision of these key interventions may have occurred in a given year, estimates reflecting these changes may not yet be recorded or available. In the event that new data are not collected, the last reported data point within the last 10 years is used for calculations. Thus, GAPPD scores for countries where more data are available may better reflect trends toward GAPPD targets. This limitation underscores the importance of regularly collected, high-quality data that enables accurate monitoring of key GAPPD interventions.

Antibiotics

Concerns have been raised about the validity of antibiotics for suspected pneumonia as an indicator and recommend excluding this indicator in analyses of pneumonia treatment coverage.

Learn more: [A prospective validation study in South-West Nigeria on caregiver report of childhood pneumonia and antibiotic treatment using Demographic and Health Survey \(DHS\) and Multiple Indicator Cluster Survey \(MICS\) questions.](#)

Oxygen

The availability of oxygen is not currently a standard health system indicator, despite oxygen’s classification as an essential medicine by the WHO. Indicators for tracking country-level progress for oxygen coverage have not been included this year but may be incorporated in the future.

Read more here: [Good data is critical to equitably improve oxygen access](#)



ADDITIONAL RESOURCES

[**VIEW-hub**](#)

VIEW-hub is an open-access data visualization tool from IVAC that provides updated data on global vaccine introduction, use, coverage, access, impact, and disease burden for eight vaccines: the [pneumococcal conjugate vaccine](#), the [rotavirus vaccine](#), the [Haemophilus influenzae type b vaccine](#), the [inactivated polio vaccine](#), the [human papillomavirus vaccine](#), the [typhoid vaccine](#), the [measles-containing vaccine \(second-dose\)](#), and the [measles-rubella vaccine](#).

[**Immunization Agenda 2030 Scorecard**](#)

The Immunization Agenda 2030 (IA2030) scorecard is a publicly available interactive tool displaying data that enables stakeholders at all levels—global, regional and country—to monitor the status of each indicator in the IA2030 Framework for Action. The scorecard supports coordinated operational planning, ownership and accountability, and communication and advocacy.

[**Second Global Forum on Childhood Pneumonia**](#)

The 2nd Global Forum on Childhood Pneumonia built on the momentum for action generated by the first Global Forum, and the political attention COVID-19 has focused on respiratory health, to accelerate the specific government actions needed to reduce child pneumonia deaths. These include full coverage of the pneumonia-fighting vaccines (e.g., PCV, pertussis, Hib, and measles), reductions in wasting, improvements in air quality, as well as rapid access to diagnosis and treatment with antibiotics and oxygen, especially as part of strong primary health care.

[**Estimating the impact of new vaccine introduction in Chad, Guinea, Somalia, and South Sudan**](#)

This analysis emphasizes the life-saving benefits of including PCV and rotavirus vaccines in the immunization schedules of four key countries. By implementing this strategy in Chad, Guinea, Somalia, and South Sudan, an estimated 67,500 lives could be saved, and around 2.6 million cases of pneumococcal pneumonia, meningitis, and rotavirus-related diarrhea in children under five years could be prevented from 2024 to 2030.



The Big Catch-Up: An Essential Immunization Recovery Plan for 2023 and Beyond

The backsliding of immunization coverage during the COVID-19 pandemic, combined with delayed catch-up efforts has resulted in a large and growing immunity gap for millions of children. The Essential Immunization Recovery Plan sets out a path to getting immunization back on track, framed by three key approaches – Catch-Up, Restore and Strengthen. This document serves as the joint strategic description of this coordinated effort by WHO, UNICEF, and Gavi, the Vaccine Alliance, along with the Immunization Agenda 2030 (IA2030) Partnership, to support countries to plan and implement intensified efforts, to bolster immunization programmes in 2023 and beyond.

The State of the World’s Children 2023 Report

The world is facing a red alert for children’s health: Routine vaccination coverage dropped sharply during the COVID-19 pandemic. UNICEF’s report, The State of the World’s Children 2023: For every child, vaccination, explores the reasons behind this red alert and the steps we as a global community must take to make sure that no child is left behind.



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For inquiries on the content or use of this report, please contact Emily Wilson at ewilso28@jhu.edu.

Report and web appendices can be found at jhspH.edu/ivac/resources/pdpr



ACRONYMS

DHS - Demographic & Health Survey

DRC - Democratic Republic of the Congo

DTP - Diphtheria-tetanus-pertussis vaccine

DTP3 - Third dose of diphtheria-tetanus-pertussis (DTP) vaccine

GAPPD - The Integrated Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea

Hib - *Haemophilus influenzae* type b

Hib3 - Third dose of *Haemophilus influenzae* type b (Hib) vaccine

IVAC - International Vaccine Access Center

MCEE - WHO Maternal and Child Epidemiology Estimation Group

MCV - Measles-containing vaccine

MICS - Multiple Indicator Cluster Survey

NFHS - National Family Health Survey

ORS - Oral rehydration salts

PCV - Pneumococcal conjugate vaccine

PCV3 - Third dose of pneumococcal conjugate vaccine (PCV)

RotaC - Rotavirus vaccine final dose

SDG - Sustainable Development Goals

WHO - World Health Organization

WUENIC - WHO/UNICEF Estimates of National Immunization Coverage

