

Introducing the Pneumococcal Conjugate Vaccine (PCV) in Somalia, Guinea, South Sudan, and Chad



EVERY
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This report was released on 4 February 2022 by the Every Breath Counts Coalition, a public-private partnership including United Nations and multilateral health and development agencies, companies, foundations, NGOs, and academic institutions united in their efforts to support low- and middle-income countries to reduce deaths from pneumonia. Learn more at <https://stoppneumonia.org>. Photo credit: Save the Children

On 2 December 2021, the **Every Breath Counts Coalition** hosted a dialogue on the introduction of the pneumococcal conjugate vaccine (PCV) in Somalia, Guinea, South Sudan, and Chad on behalf of the Steering Committee of the **Global Forum on Childhood Pneumonia** (see Box I).

That historic forum took place in Barcelona at the end of January 2020 just as the pandemic was emerging. It brought together countries losing large numbers of children to pneumonia and **renewed their commitment** to reducing these deaths, including by increasing coverage of the PCV.

But two years later, there are still countries that have yet to introduce the PCV. Among them are Somalia, Guinea, South Sudan, and Chad where more than 40,000 children died from pneumonia, and an additional 10,000 from meningitis and sepsis, in 2019 according to the **Global Burden of Disease (GBD)**.

Studies in other African countries show that cases, hospitalizations, and deaths from all of these conditions fall significantly following PCV introduction - including in **Rwanda (1), South Africa (2), Kenya (3,4), Cameroon (5), Burkina Faso (6), and Zambia (7)**. Adult populations are also protected when children get the PCV.

I. Overview

Since **Gavi, the Vaccine Alliance** (Gavi) offered support for eligible countries to introduce the PCV in 2009, most African nations have done so.(8) By 2021 there were only nine that had not, including Somalia, Guinea, South Sudan, and Chad (all Gavi-eligible) and Cabo Verde, Comoros, Equatorial Guinea, Gabon, and Egypt.

The high prices of the PCV products available in the market have been a major barrier to introduction in these countries. But in 2020 a third, 30% more affordable, PCV product became available - **PNEUMOSIL**® from the Serum Institute of India (SII). In 2021 the Government of India announced national PCV introduction with the new SII vaccine and Indonesia, Tajikistan, Timor-Leste, and Ukraine have all made progress on PCV introduction during the pandemic (see Box II).

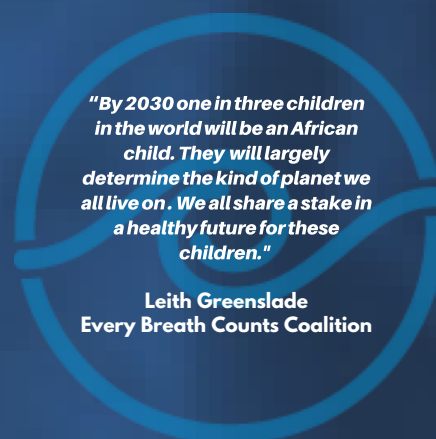
It is critical that the remaining African countries can both introduce the PCV by 2025 and sustain the high rates of coverage needed to deliver health benefits for children and adults. A recent study found that one-third of the African countries that introduced the PCV have struggled to achieve 80% coverage two years later.

The reasons include lack of adequate preparation prior to introduction, insufficient supply chain capacity and management, poor communication between organizations and with the public, and data collection systems that are insufficient to meet information needs.(9)

The wide adoption of the PCV, and other vaccines that prevent pneumonia, is especially important in Africa where care seeking rates for children with pneumonia symptoms are low (46%). Rates are even lower in Somalia and Chad, where only 23% and 26% of children with pneumonia symptoms are taken for care respectively.(10) In this context it is even more critical to prevent infection with vaccination.

Studies also show that widespread use of the PCV could reduce antimicrobial resistance by lowering the number of days children with pneumonia receive antibiotics each year by half. (11)

Further, the need to protect children - indeed all populations - from respiratory infections is only going to become more important in an era of global respiratory infection pandemics.



COVID-19 is the first, but most likely not the only or the worst, global respiratory pandemic that will be experienced this century.(12)

At the same time, climate change is increasing the major risk factors for childhood pneumonia - air pollution and poor diet - and rapid urbanization is increasing population density and the risk of more rapid transmission of respiratory infections.

In the face of all of these rising threats, we need to fully activate every vaccine that we have to protect children from pneumonia, and develop new ones to target vaccine-preventable pathogens.

This report offers ten specific actions to accelerate introduction of the PCV in Somalia, Guinea, South Sudan, and Chad and achieve 90% coverage by 2025, as required by the **Global Action Plan for Pneumonia and Diarrhea (GAPPD)** and **Immunisation Agenda 2030**.

In the spirit of the **Global Declaration** that was signed at the Global Pneumonia Forum, we call on all stakeholders to join forces to implement these ten actions. Our ultimate goal is the achievement of Sustainable Development Goal (SDG 3.2) by 2030.

In the nine years remaining we need to work more effectively with the countries that need the most support to reduce child deaths to less than 25 per 1,000 births.

This is how we keep our precious promise to the world's children - a fifth birthday for all.

II. Ten Actions

The introduction and sustained high coverage of the PCV will help Somalia, Guinea, South Sudan, and Chad make rapid progress on two critical health goals: (1) reducing child pneumonia deaths to less than 3 per 1,000 live births by 2025 (the GAPPD target), and (2) reducing all-cause child deaths to less than 25 per 1,000 births by 2030 (the SDG 3.2 target).

Following discussions with Ministry of Health officials from each country and new vaccine introduction experts from WHO, UNICEF, Gavi, and PATH, ten actions emerged as essential to enabling each country to apply to Gavi for PCV introduction in 2022 and to achieve high rates of coverage by 2025. These ten actions have the power to accelerate the achievement of child health goals in each country.

In partnership with the governments of Somalia, Guinea, South Sudan, and Chad, child health stakeholders commit to work together to achieve PCV introduction and sustained high coverage in each country by:

- Estimating the number of child deaths prevented from PCV introduction (0-1 year olds) and catch-up campaigns (1-5 year olds) between 2023 and 2032, and the impact on GAPPD achievement
- Estimating the cost of routine PCV introduction (0-1 year olds) between 2023 and 2032 and of an optional one-off catch-up campaign (1-5 year olds) at launch, by vaccine product and by funding source (e.g., country and Gavi)
- Identifying other benefits of PCV introduction, including reductions in government hospital costs, out-of-pocket costs for families, and anti-microbial resistance; increased protection of elderly populations through herd immunity, etc.
- Providing Ministries of Health with data, information, and evidence on the effectiveness, safety, and affordability of all PCV products to facilitate their decision making and budget allocation, and assistance to support the Gavi application process (e.g., data gathering, editorial support, clarifications, etc.)
- Exploring Gavi waivers (or other financial relief) to co-financing and assisting Ministries of Health to engage both public and private sector donors, including multilateral development banks, to assist with co-financing

"It is more than ten years since Gavi began supporting eligible countries to introduce the PCV and as time passes, the inequities in the pneumonia disease burden between the countries with and without this vaccine grow even bigger."

Dr Oya Zeren Afşar
UNICEF

- Facilitating dialogue between Ministries of Health, global health agencies, and all PCV manufacturers to ensure access to timely, comparable data on all available PCV vaccine products
- Briefing national NGOs and other civil society organizations on the case for PCV and engaging families to strengthen national advocacy efforts
- Expanding use of the Humanitarian Mechanism (see Box III) to vaccinate populations of child refugees, internally displaced children, and other vulnerable child populations
- Providing high-profile opportunities for governments to launch the PCV
- Tracking and publishing national progress to full coverage of the PCV and supporting post-introduction research and evaluation

African countries without PCV (white)



WHO/UNICEF, 2021

SOMALIA

Child Pneumonia Burden

- 14,200 deaths (0-5 years)
- 11% reduction since 2010
- Leading risk factors wasting, household air pollution, no hand washing, underweight, stunting

Source: **Global Burden of Disease 2019**

PCV Impact

- ~32,600 child deaths prevented with routine vaccination (0-1 year) by 2030. *PCV catch-up campaigns will save even more lives (e.g., Kenya catch-up campaigns reduced the incidence of child pneumonia by an additional 40%). (13)
- ~40% of GAPPD target closed in 2030

Source: **Vaccine Impact Modeling Consortium (VIMC)**.

PCV Cost

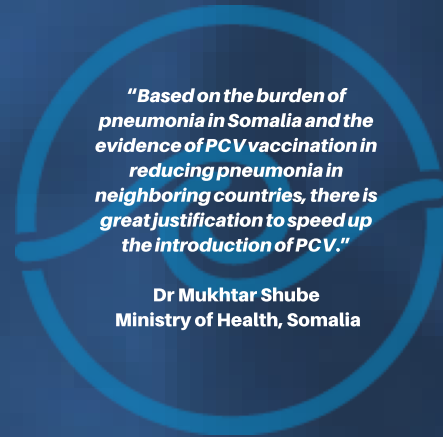
(a) Somalia Government

- ~\$US287,936 PCV procurement (2023)
- ~\$US3,285,698 PCV procurement (2023-32)
- Partial contribution to implementation costs

(b) Gavi

- ~\$US24,701,549 (2023-32)
- ~\$US560,480 one-off Vaccine Introduction Grant
- Additional one-off costs for catch-up vaccination of children 1 -5 years

Source: **PCV Cost Calculator (PATH)**. See the Appendix for more details on different PCV options and costing methodology.



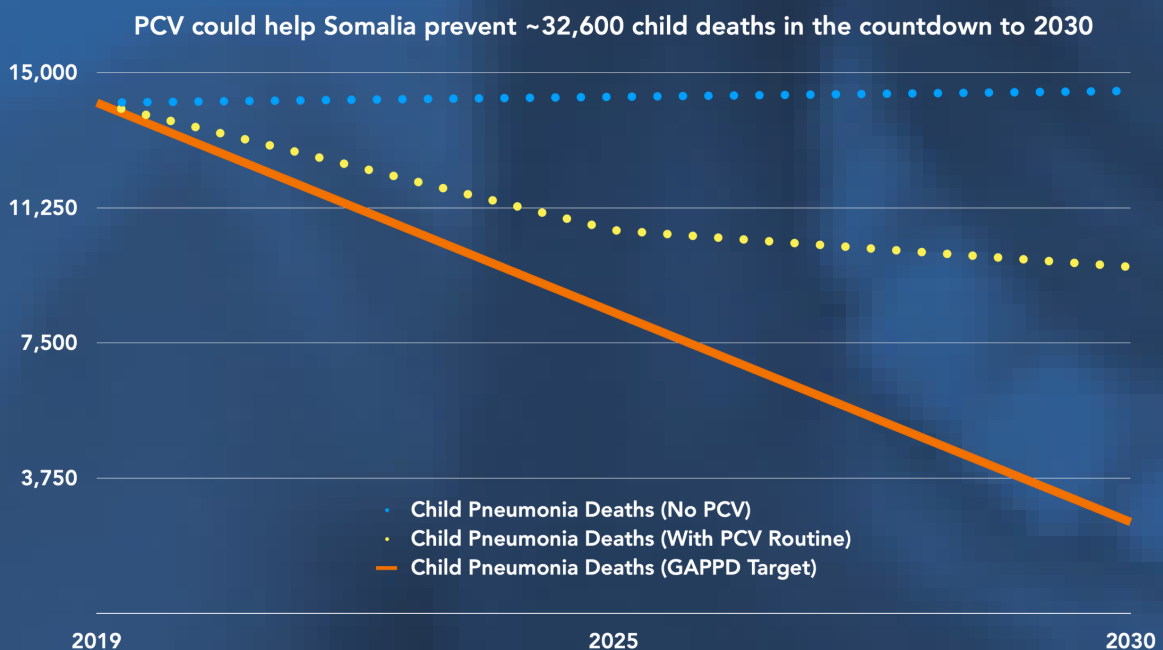
What the Ministry of Health says:

A top priority

Childhood pneumonia is a major public health concern in Somalia and one of the leading causes of mortality in children.

An effective vaccine

PCV is highly effective and protects against severe forms of pneumococcal disease, such as meningitis and pneumonia. The introduction of PCV (10 valent) in **Kenya** in 2011 and PCV (13 valent) in **Burkina Faso** in 2013 reduced the incidence of pneumonia-related hospitalizations among children.



Sources: UN World Population Prospects 2019, Global Burden of Disease 2019, Vaccine Impact Modeling Consortium (VIMC) 2021

III. Countries...Somalia continued

High-level advocacy

Somalia is continuing to advocate for PCV introduction following the Federal Minister of Health's comments at the Global Forum on Childhood Pneumonia in Barcelona in 2020, the Pneumonia Workshop in Nairobi in 2021, and ongoing in-country discussions.

Policy adoption

PCV vaccine is already included in all strategic health policy and planning documents, including the Comprehensive Multi-Year Plan 2021-2025 and EPI Policy, and in the revised Health Management Information System (HMIS) tools, and District Health Information Software 2 (DHIS2).

Increasing preparedness

Somalia is establishing a New Vaccine Introduction Taskforce to accelerate PCV introduction and to collect and analyze surveillance data to better understand the burden of pneumonia. The task force will assess cold chain functionality and storage capacity across all regions to prepare space to store PCV. The Adverse Event Following Immunization (AEFI) committee will also be strengthened.

New opportunities

Leveraging COVID-19 investments including the **Cold Chain Equipment Optimisation Platform (CCEOP)** by working with the Global Fund, the World Bank, and other multilateral development banks, engaging existing and new donors (e.g., USAID, Japan, World Bank, etc.) to co-finance the immunization program, and expanding partnerships (e.g., Save the Children) to support PCV introduction.

Key challenges

Underreporting of the pneumonia burden due to inadequate pneumonia surveillance systems, meeting Gavi co-financing obligations, competing health and vaccine priorities including COVID-19 vaccine introduction and the need to increase coverage of the measles (MCV2) and polio (IPV2) vaccines.



Honorable Dr Fawziya Abikar
Minister for Health, Somalia
Global Forum on Childhood Pneumonia, 2020

Next steps:

In 2022, the Somalia Ministry of Health will:

- Establish a New Vaccine Introduction Taskforce
- Assess the availability of data and functionality of the Adverse Event Following Immunization (AEFI) committee
- Agree on approach of introduction (e.g., a phased approach to routine introduction and a catch-up campaign for children 1-5 years)
- Advocate for a Gavi waiver of co-financing obligation
- Include PCV in routine vaccine forecasting
- Develop a costed proposal to introduce the PCV
- Mobilize resources to co-finance PCV introduction
- Submit PCV application to Gavi (**note deadlines**)

GUINEA

Child Pneumonia Burden

- 7,300 deaths (0-5 years)
- 15% reduction since 2010
- Leading risk factors wasting, household air pollution, no hand washing, stunting, low birth weight

Source: [Global Burden of Disease 2019](#)

PCV Impact

- ~11,300* child deaths prevented with routine vaccination (0-1 year) by 2030.*PCV catch-up campaigns will save even more lives (e.g., Kenya catch-up campaigns reduced the incidence of child pneumonia by an additional 40%). (13)
- 40% of GAPPD target closed in 2030

Source: [Vaccine Impact Modeling Consortium \(VIMC\)](#)

PCV Cost

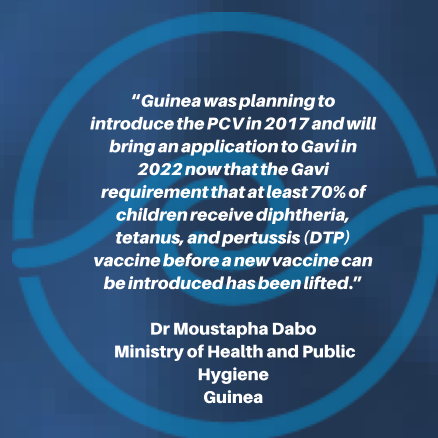
(a) Guinea Government

- ~\$US231,993 PCV procurement (2023)
- ~\$US2,611,062 PCV procurement (2023-32)
- Partial contribution to implementation costs

(b) Gavi

- ~\$US19,629,705 (2023-32)
- ~\$US389,440 one-off Vaccine Introduction Grant
- Additional one-off costs for catch-up vaccination of children 1-5 years

Source: [PCV Cost Calculator \(PATH\)](#). See the Appendix for more details on different PCV options and costing methodology.



Dr Moustapha Dabo
Ministry of Health and Public Hygiene
Guinea

What the Ministry of Health says:

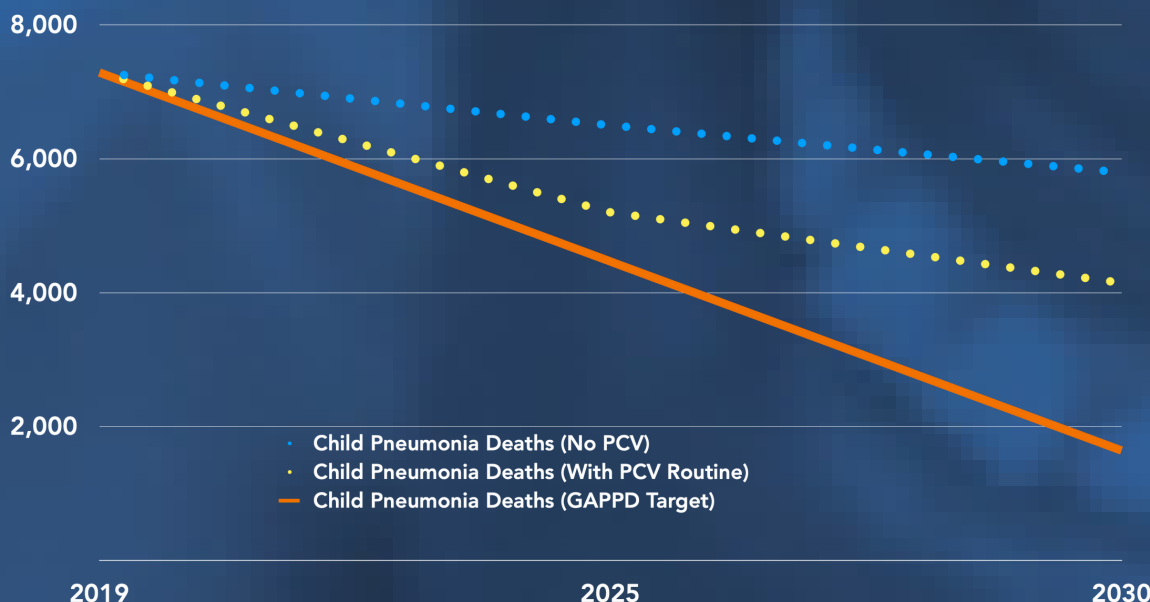
A top priority

Pneumonia is the second major cause of sickness and death among children in Guinea after malaria, and the current low coverage (47%) of routine vaccines that prevent pneumonia (e.g., pertussis, Hib, and measles) means we need to strengthen pneumonia vaccination across the board.

An effective vaccine

Guinea has determined that PCV is an effective vaccine from the data collected following introduction in several other African countries since 2009.

PCV could help Guinea prevent ~11,300 child deaths in the countdown to 2030



Sources: UN World Population Prospects 2019, Global Burden of Disease 2019, Vaccine Impact Modeling Consortium (VIMC) 2021

III. Countries...Guinea continued

High-level advocacy

The Guinea Ministry of Health and Public Hygiene is committed to introducing the PCV as soon as possible now that the 70% DTP threshold* has been lifted following the 2020 **Gavi Board** decision.

Policy adoption

Introduction of the PCV was planned for 2017 for all children 0-11 months old with 95% coverage by 2020 forecast. The National Immunisation Technical Advisory Group (NITAG), the Committee for Interagency Coordination for Vaccination, the MAPI Experts Committee, and the Polio Experts Committee all support the introduction of PCV.

Increasing preparedness

The government is ready to introduce the PCV following increased spending on the vaccine program, the installation of solar refrigerators in 423 health centers, 882 health posts, 31 private hospitals, and six army health services, and improved surveillance of vaccine-preventable diseases to provide vital information to understand disease burden and epidemiology and inform vaccine policy and strategy.

New opportunities

Guinea's 2022 health system strengthening application to Gavi will take into account the introduction of PCV and the second phase of the **Cold Chain Equipment Optimisation Platform** and COVAX support will further strengthen the cold chain for vaccine storage in health centers, posts, and other facilities. The development of the new Comprehensive Multi-Year Plan 2021-2025 will include the introduction and scale-up of PCV.

Key challenges

Low and declining coverage of routine vaccines due to weak immunization infrastructure, competing disease priorities (e.g., Ebola, COVID-19), limited national and sub-national data on pneumonia incidence and deaths, challenges with government co-financing for vaccines, and competing new vaccine priorities (e.g., the world's first malaria vaccine for children which is now recommended by **WHO**). Note Guinea lost an estimated 8,000 children under five to malaria in 2019 according to the GBD.

"WHO recommends the PCV for all countries and especially those with high child mortality rates above 50 child deaths for every 1,000 born, including South Sudan (96), Guinea (99), Chad (114), and Somalia (117)."

Dr Jenny Walldorf
World Health Organization

Next steps

In 2022, the Guinea Ministry of Health and Public Hygiene will:

- Prepare the Gavi application for PCV introduction
- Agree on approach of introduction (e.g., a phased approach to routine introduction and a catch-up campaign for children 1-5 years)
- Submit the Gavi application to the NITAG and CCIA for validation
- Deploy national and international technical assistance for the development of the application
- Mobilize resources to co-finance PCV introduction
- Submit PCV application to Gavi (**note deadlines**)

BOX I: Introducing PCV: a Critical Child Survival Vaccine

On 2 December 2021, officials from the Expanded Program on Immunization (EPI) at the Ministries of Health in Somalia, Guinea, and South Sudan came together with new vaccine introduction experts from WHO, UNICEF, Gavi, and PATH to discuss barriers and opportunities to the introduction of one of the most powerful pneumonia-fighting vaccines for children - the pneumococcal conjugate vaccine (PCV). Listen to a recording of the webinar [here](#) with Dr Mukhtar Shube (Somalia), Dr Moustapha Dabo (Guinea), George Legge (South Sudan), Dr Jenny Walldorf (WHO), Dr Oya Zeren Afşar (UNICEF), Veronica Denti (Gavi), and Farzana Muhib (PATH).

SOUTH SUDAN

Child Pneumonia Burden

- 5,400 deaths (0-5 years)
- 34% reduction since 2010
- Leading risk factors wasting, household air pollution, no hand washing, low birth weight, stunting

Source: [Global Burden of Disease 2019](#)

PCV Impact

- ~11,900* child deaths prevented with routine vaccination (0-1 year) to 2030. *PCV catch-up campaigns will save even more lives (e.g., Kenya catch-up campaigns reduced the incidence of child pneumonia by an additional 40%). (13)
- 64% of GAPPD target closed in 2030

Source: [Vaccine Impact Modeling Consortium \(VIMC\)](#)

PCV Cost

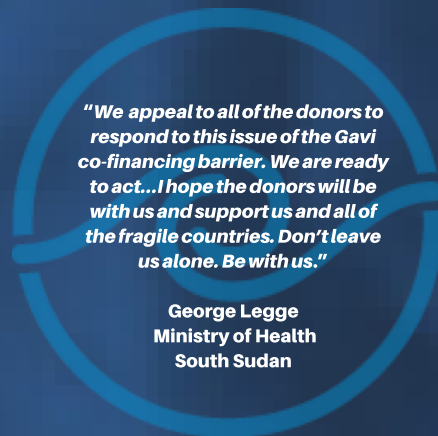
(a) South Sudan Government

- ~\$US172,701 PCV procurement (2023)
- ~\$US1,899,695 PCV procurement (2023-32)
- Partial contribution to implementation costs

(b) Gavi

- ~\$US14,281,715 (2023-32)
- ~\$US316,000 one-off Vaccine Introduction Grant
- Additional one-off costs for catch-up vaccination of children 1 -5 years

Source: [PCV Cost Calculator \(PATH\)](#). See the Appendix for more details on different PCV options and costing methodology



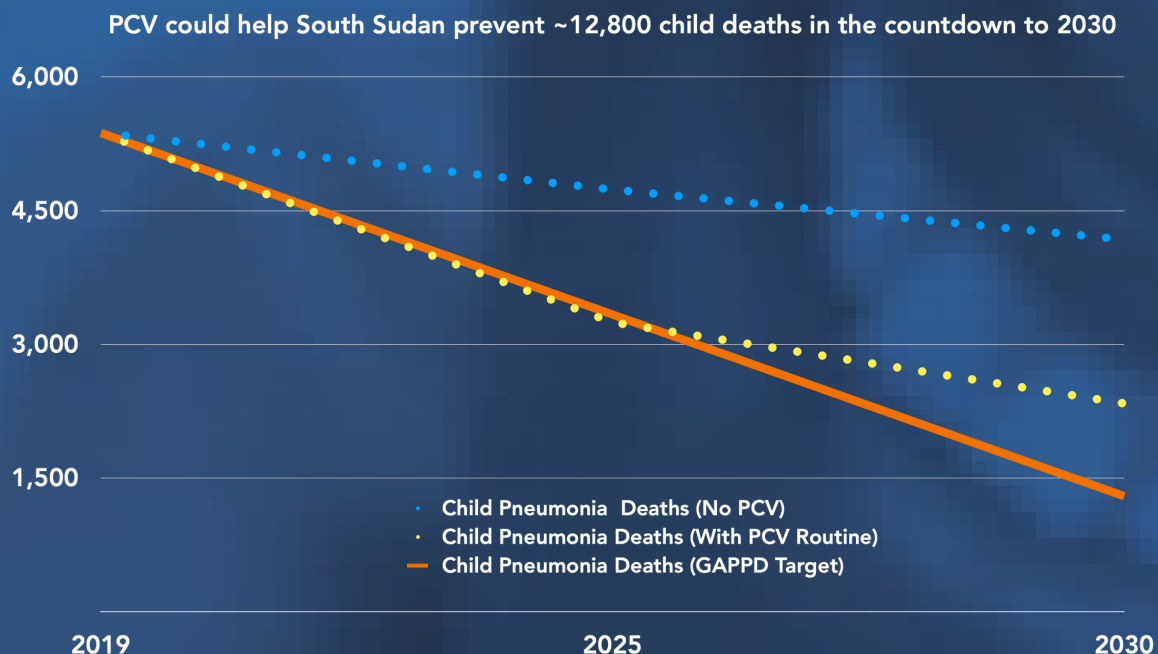
What the Ministry of Health says:

A top priority

The PCV vaccine is an important vaccine for the children of South Sudan because of the high number of pneumonia cases and deaths affecting children. Pneumonia is the leading cause of death among children in South Sudan and the current low coverage (50%) of routine vaccines that prevent pneumonia (e.g., pertussis, Hib, and measles) is contributing to the high burden.

An effective vaccine

The Ministry of Health views the PCV as a highly effective vaccine, especially in the context of South Sudan's heavy burden of childhood pneumonia, which is responsible for 16% of all child deaths.



Sources: UN World Population Prospects 2019, Global Burden of Disease 2019, Vaccine Impact Modeling Consortium (VIMC) 2021

III. Countries...South Sudan continued

High-level advocacy

The former Minister for Health in South Sudan, the Honorable Luka Monoja, advocated strongly for PCV introduction at the Global Forum on Childhood Pneumonia in 2020 and called for more support from international partners to help the government introduce the vaccine. The Ministry of Health continues to argue that the children of South Sudan are not benefiting from PCV because donors are putting conditions on introduction but are not helping countries meet the conditions.

Policy adoption

PCV introduction will be part of South Sudan's next Comprehensive Multi-year Plan for 2022-2026.

Increasing preparedness

South Sudan has been able to leverage COVID-19 vaccine support to prepare for new vaccine introductions for children including by strengthening cold chain, training staff, and strengthening communications materials. The introduction of the PCV in South Sudan's Yida refugee camp via the Humanitarian Mechanism activated by the NGO **Médecins Sans Frontières** (MSF) shows it is possible to successfully vaccinate even the most vulnerable populations with PCV. (14)

New opportunities

A stronger vaccination system from COVID-19 investments and the increased focus on PCV introduction in South Sudan's next Comprehensive Multi-year Plan for 2022-2026, will create a window of opportunity to submit an application to Gavi and introduce the vaccine by the end of 2023.

Key challenges

The major challenge with PCV introduction in South Sudan is the lack of financing to meet the requirements of Gavi. South Sudan is ready to introduce the PCV but has not even able to cover the costs of existing vaccines including pentavalent (DTP, Hepatitis B, and Hib) and polio (IPV) for the past three years. New co-financing solutions for very low-income, fragile, and conflict countries are urgently needed.



Honorable Luka Monoja
Former Health Minister, South Sudan
Global Forum on Childhood Pneumonia, 2020

Next steps

In 2022, the South Sudan Ministry of Health and Public Hygiene will:

- Prepare the Gavi application for PCV introduction
- Agree on approach for introduction (e.g., a phased approach to routine introduction and a catch-up campaign for children 1-5 years)
- Seek more support from Gavi and partners to solve the co-financing challenge
- Mobilize resources to co-finance PCV introduction
- Submit PCV application to Gavi (**note deadlines**)

BOX II: PCV progress during the pandemic

Several countries with high burdens of child pneumonia have made significant progress on PCV introduction and coverage during the pandemic, including India, Indonesia, Tajikistan, Timor-Leste, and the Ukraine. In November 2021, the Government of India announced national introduction of the PCV using the new, more affordable Serum Institute of India **PNEUMOSIL**® vaccine. The Indonesian government also began national PCV introduction and Tajikistan, Timor-Leste, and the Ukraine all applied to Gavi to introduce the PCV in 2022. Several partners applauded these major milestones including Gavi, JSI, and PATH.

CHAD

Child Pneumonia Burden

- 13,800 deaths (0-5 years)
- 1% reduction since 2010
- Leading risk factors wasting, household air pollution, no hand washing, stunting, low birth weight

Source: **Global Burden of Disease 2019**

PCV Impact

- ~35,000* child deaths prevented with routine vaccination (0-1 year) to 2030. *PCV catch-up campaigns will save even more lives (e.g., Kenya catch-up campaigns reduced the incidence of child pneumonia by an additional 40%). (13)
- 44% of GAPPD target closed in 2030

Source: **Vaccine Impact Modeling Consortium (VIMC)**

PCV Cost

(a) Chad Government

- ~\$US374,632 PCV procurement (2023)
- ~\$US4,255,392 PCV procurement (2023-32)
- Partial contribution to implementation costs

(b) Gavi

- ~\$US31,991,611 (2023-32)
- ~\$US564,960 one-off Vaccine Introduction Grant
- Additional one-off costs for catch-up vaccination of children 1 -5 years

Source: **PCV Cost Calculator (PATH)**. See the Appendix for more details on different PCV options and costing methodology



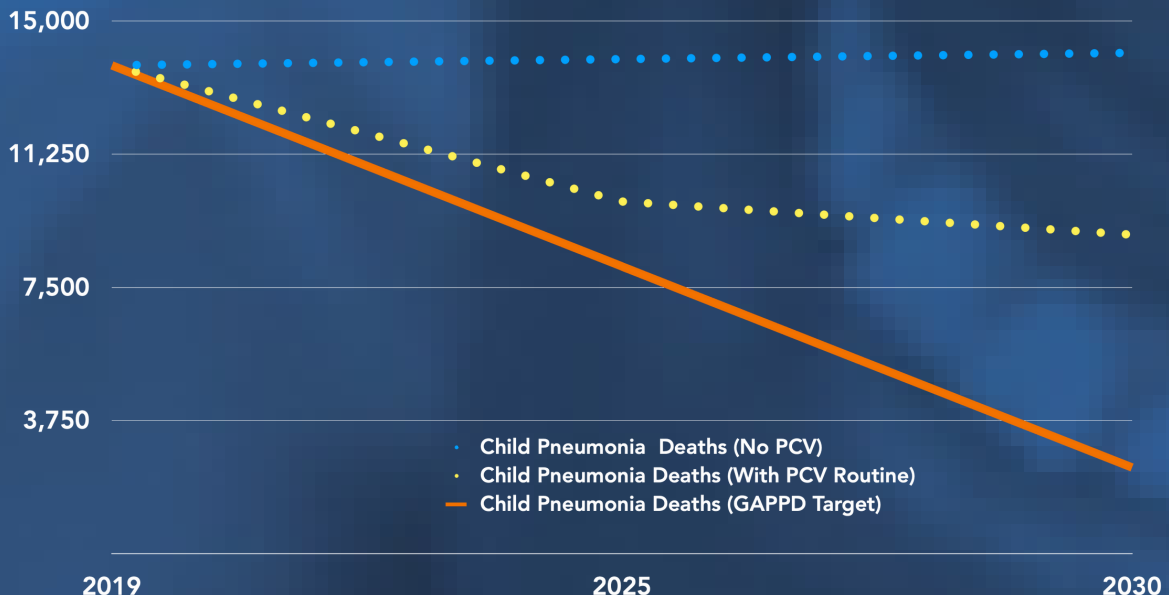
Honorable Dr Mahamat Hamid Ahmat
Ministry of Public Health, Chad

Global Forum on Childhood Pneumonia, 2020

"Gavi has restructured to provide more support to countries that are fragile and in conflict, which includes Somalia, South Sudan, and Chad and starting in 2022 there will be a new, simplified Gavi application form to reduce the administrative burden on Ministries of Health."

Veronica Denti
 Gavi

PCV could help Chad prevent ~35,000 child deaths in the countdown to 2030



Sources: UN World Population Prospects 2019, Global Burden of Disease 2019, Vaccine Impact Modeling Consortium (VIMC) 2021

IV. PCV Resources

For governments considering PCV introduction, the following resources are available to help answer critical questions:

Which new vaccine should a country prioritize?

WHO, **Country-led Assessment for Prioritisation on Immunisation (CAPACITI)** - tool to evaluate immunisation options according to priorities and programme context for national decisions and to inform vaccine supply, research, and development. See also WHO's guidance on planning for **New Vaccine Introduction and Catch-Up Vaccination**.

What is the PCV?

WHO, **Position Paper on Pneumococcal conjugate vaccines in infants and children under 5 years of age (2019)** - guidance to Member States on the use of PCV in large-scale vaccination programmes summarizing essential background information and concluding with the current WHO position on the use of PCV in children under five years of age.

What PCV vaccine should our country choose?

WHO, **Considerations for PCV Product Choice (2021)** - document summarizing technical and programmatic information on WHO prequalified PCV products to facilitate informed country choices for PCV introduction or product switch. Three PCV products are prequalified by WHO - a 13-valent PCV manufactured by Pfizer (PCV-13, Prevnar®), a 10-valent PCV manufactured by GlaxoSmithKline (PCV-10 GSK, Synflorix®), and a 10-valent PCV manufactured by Serum Institute of India (PCV-10 SII, PNEUMOSIL®). See also **Gavi-supported PCV Profiles (2020)**.

What are the latest prices of PCV?

UNICEF, **PCV Pricing Table (2021)** - table that shows the price per dose (\$US) per PCV product per supplier per calendar year, based on a UNICEF multi-year long-term supply agreement with each manufacturer. Prices are based on a 10-year supply commitment and a volume guarantee as defined in the **Advanced Market Commitment (AMC)** legal framework.

"UNICEF is the supplier of the PCV vaccine on behalf of Gavi and recently issued a new PCV tender to secure additional doses for the countries planning to introduce the vaccine from 2022 with the same prices. Therefore countries will not face any supply shortages in the coming years."

Dr Oya Zeren Afşar
UNICEF

BOX III: PCV and the "Humanitarian Mechanism"

In 2017, the **Humanitarian Mechanism** was launched by WHO, UNICEF, Save the Children, and MSF to facilitate rapid access to the lowest priced PCV for children in emergencies. To date, 760,000 PCV doses have been provided, including 470,000 for 19 MSF campaigns in the Central African Republic, Niger, Nigeria, South Sudan, Syria, and Greece, with the remaining doses used by UNICEF, the UN Relief and Works Agency, the International Organization for Migration (IOM), and the Red Crescent. A **recent review (14)** recommended much wider use of the mechanism by global health actors and governments, especially middle-income countries.



Global Forum on Childhood Pneumonia, Barcelona, 2020

IV. PCV Resources...continued

How much of the PCV cost will Gavi cover?

PATH, **PCV Cost Calculator** (2021) - Excel-based tool for assessing and comparing the annual costs of PCV to help country policymakers compare products and estimate vaccination program costs for different PCVs. Estimates of vaccine cost (i.e., vaccine and supplies procurement and international shipping) and vaccination program costs (i.e., vaccine cost and cost of delivery) are provided separately for countries and for Gavi.

Where is the latest coverage data for PCV (and other vaccines)?

WHO/UNICEF **Estimates of National Immunization Coverage** (WUENIC) - tables of vaccine coverage estimates that WHO and UNICEF jointly publish based on reports submitted by Member States, other surveys, and data from published and grey literature and UNICEF. See also **Visualization of Immunization Coverage** - an interactive visualization of WUENIC data.

Will there be enough PCV to meet demand?

UNICEF, **PCV Supply and Demand Update** (2020) - documents PCV demand availability and access to supply through UNICEF; updated periodically.

How do countries apply to Gavi for PCV introduction?

Gavi, **Process and Programme Funding Guidelines** (2021) - document outlining what countries need to do to apply to Gavi for PCV introduction. Additional information available at **Campaign Plan of Action** for countries including a catch-up PCV campaign.

How to communicate the importance of PCV?

UNICEF/Yale Institute for Global Health, **Vaccine Messaging Guide** and **Training Package on Interpersonal Communication for Immunization** (2020) - guides to creating pro-vaccine content to motivate people to get vaccinated. Every recommendation is based on current evidence, but the authors encourage users to test all content for behavior-related outcomes.

"International partners need to work more closely with Ministries of Health to help make the case for PCV introduction to Ministries of Finance, by showing the health and economic costs of childhood pneumonia with and without the PCV."

Veronica Denti
Gavi

How do we reduce vaccine misinformation?

UNICEF/First Draft/Yale Institute for Global Health/The Public Good Projects, **Vaccine Misinformation Management Guide** (2020) - guide to help organizations address the global infodemic through the development of strategic and well-coordinated national action plans to rapidly counter vaccine misinformation and build demand for vaccination that are informed by social listening.

Table 1: PCV Products and Prices (\$US)	PNEUMOSIL (10 valent)	Synflorix (10 valent)	Prevenar (13 valent)
Manufacturer	Serum Institute of India	GSK	Pfizer
Presentation	5 dose vial	4 dose vial	4 dose vial
Cold chain volume per fully immunized child (cm ³)	11	8	11.7
Gavi/UNICEF price per dose	\$US2.00	\$US3.05	\$US2.90
Gavi/UNICEF price per fully immunized child	\$US6.00	\$US9.15	\$US8.70
Gavi/UNICEF waste-adjusted price	\$US6.52	\$US9.95	\$US9.62
Middle-income price per dose	\$US2.90-\$US4.00	\$US10.90	NA

IV. PCV Resources...continued

Is there a one-stop-shop for PCV information?

IVAC, **VIEW-hub** (2021) - easy-to-use online repository for the most relevant and recent PCV data, covering topics such as vaccine introduction and use, immunization equity, vaccine-preventable disease burden, and immunization system strength. It includes country level summary data on the latest academic studies on vaccine impact, and the economic burden of disease.

Which organizations have specific expertise supporting PCV introduction?

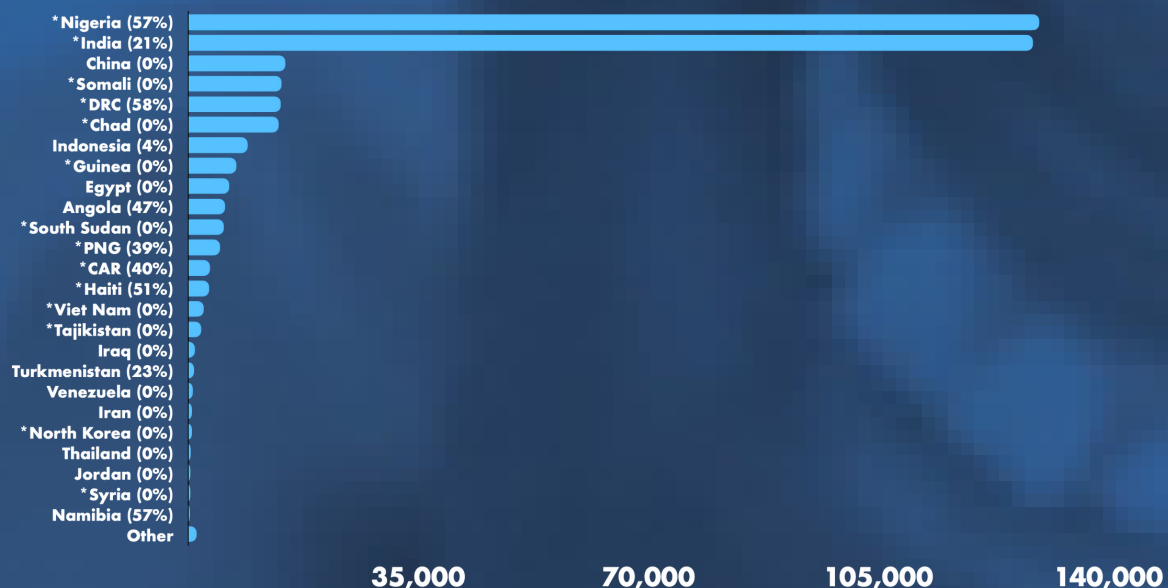
PATH, JSI, USAID, CHAI, IVAC. See JSI's Choice Optimization in Immunization: **Country Exercises for Sustainability (CHOICES)** project which helps countries introduce and sustain high coverage of pneumococcal, rotavirus, and HPV vaccines and PATH's new case study on **Developing a More Affordable PCV Vaccine.**

Why has PCV become even more important?

Every Breath Counts, **The Critical Role of Pneumonia-Fighting Vaccines in an Era of Respiratory Pandemics** (2021) - analysis that makes the case for PCV introduction and/or scale-up in the low- and middle-income countries with large numbers of child pneumonia deaths (see chart below).

Table 2: PCV Introduction Options with Gavi Support	Gavi support (in year of launch)
Routine (0-1 year) with simultaneous catch-up (1-5 years)	Vaccines for routine (with country co-financing) Vaccines for catch-up cohorts Vaccine Introduction Grant Operational support
Routine phased (0-1 year specific target group) with national catch-up (1-5 years)	Vaccines for routine (with country co-financing) Vaccines for catch-up cohorts Vaccine Introduction Grant Operational support
Routine phased (0-1 year) with phased catch-up (1-5 years) over two or more years	Vaccines for routine (with country co-financing) Vaccines for catch-up cohorts Vaccine Introduction Grant Operational support
Routine (0-1 year)	Vaccines for routine (with country co-financing) Vaccine Introduction Grant
Routine phased (0-1 year) over two or more years	Vaccines for routine (with country co-financing) Vaccine Introduction Grant

55% of child pneumonia deaths are in countries with <60% PCV coverage (% PCV coverage)



*eligible for Gavi support | Sources: WHO/UNICEF 2020 and Global Burden of Disease 2019

Appendix

How PCV costs were calculated

The **PCV Cost Calculator** from PATH was used to calculate the costs of PCV introduction for the period 2023 through 2032 for each of the four countries - Somalia, Guinea, South Sudan, and Chad.

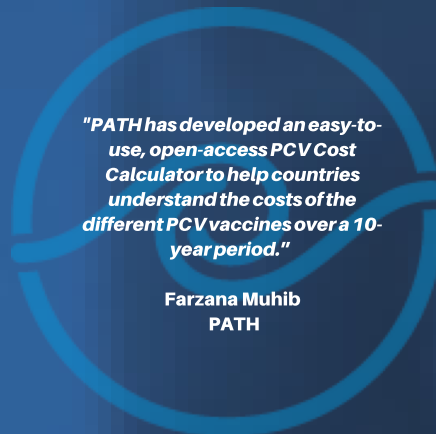
UN World Populations Prospects 2019 Revision estimates were used for birth cohorts and the annual rate of population growth in each country.

Target PCV coverage rates for each of the three doses were pegged to the latest **WHO/UNICEF 2020** estimates of coverage of the Diphtheria, Tetanus, and Pertussis (DTP) vaccine as PCV vaccines will be routinely delivered with this vaccine.

Note the PCV costs for each country include only the costs of PCV vaccines and supplies procurement and do not include any additional costs of introduction (e.g., promotion, training, cold chain, etc.). It is expected that many of these costs will be covered by the one-off Gavi Vaccine Introduction Grant which is included in the calculations and is equal to US\$0.80 per child in the birth cohort.

Vaccine costs are current at February 2022 and may change if Gavi policy changes.

Special thanks to Frédéric Debellut (PATH), Farzana Muhib (PATH), and Veronica Denti (Gavi) for their support finalizing these estimates.



Somalia Parameters

Somalia's costs are based on a 2023 birth cohort of 700,600 and a 2.9% annual population growth rate.

Expected PCV coverage is aligned with DTP coverage of:

- 52% (dose 1)
- 47% (dose 2)
- 42% (dose 3)

The Vaccine Introduction Grant is equal to US\$0.80 per child in the birth cohort. An 8% vaccine wastage rate was assumed.

Somalia PCV Costs	PNEUMOSIL (10 valent)	Synflorix (10 valent)	Prevenar (13 valent)
PCV Manufacturer	Serum Institute of India	GSK	Pfizer
PCV Presentation	5 dose vial	4 dose vial	4 dose vial
Somalia Vaccine Procurement Cost (2023)	\$US287,936	\$US287,936	\$US287,936
Somalia Vaccine Procurement Cost (2023-32)	\$US3,285,698	\$US3,285,698	\$US3,285,698
Gavi Cost (2023-32)	\$US24,701,549	\$US42,110,786	\$US37,052,324
Total Somalia + Gavi Cost (2023-32)	\$US27,987,247	\$US42,396,484	\$US40,338,022
Gavi Vaccine Introduction Grant (2023)	\$US560,480	\$US560,480	\$US560,480

Guinea Parameters

Guinea's costs are based on a 2023 birth cohort of 486,400 and a 2.6% annual population growth rate.

Expected PCV coverage is aligned with DTP coverage of:

- 62% (dose 1)
- 55% (dose 2)
- 47% (dose 3)

The Vaccine Introduction Grant is equal to US\$0.80 per child in the birth cohort. An 8% vaccine wastage rate was assumed.

Guinea PCV Costs	PNEUMOSIL (10 valent)	Synflorix (10 valent)	Prevenar (13 valent)
PCV Manufacturer	Serum Institute of India	GSK	Pfizer
PCV Presentation	5 dose vial	4 dose vial	4 dose vial
Guinea Vaccine Procurement Cost (2023)	\$US231,993	\$US231,993	\$US231,993
Guinea Vaccine Procurement Cost (2023-32)	\$US2,611,062	\$US2,611,062	\$US2,611,062
Gavi cost (2023-32)	\$US19,629,705	\$US31,080,367	\$29,444,558
Total Guinea + Gavi cost (2023-32)	\$US22,240,767	\$33,691,429	\$US32,055,620
Gavi Vaccine Introduction Grant (2023)	\$US389,440	\$US389,440	\$US389,440

South Sudan Parameters

South Sudan's costs are based on a 2023 birth cohort of 395,000 and a 2.1% annual population growth rate.

Expected PCV coverage is aligned with DTP coverage of:

- 51% (dose 1)
- 50% (dose 2)
- 49% (dose 3)

The Vaccine Introduction Grant is equal to US\$0.80 per child in the birth cohort. An 8% vaccine wastage rate was assumed.

South Sudan PCV Costs	PNEUMOSIL (10 valent)	Synflorix (10 valent)	Prevenar (13 valent)
PCV Manufacturer	Serum Institute of India	GSK	Pfizer
PCV Presentation	5 dose vial	4 dose vial	4 dose vial
South Sudan Vaccine Procurement Cost (2023)	\$US172,701	\$US172,701	\$US172,701
South Sudan Vaccine Procurement Cost (2023-32)	\$US1,899,695	\$US1,899,695	\$US1,899,695
Gavi cost (2023-32)	\$US14,281,715	\$US22,612,716	\$US21,422,573
Total South Sudan + Gavi cost (2023-32)	\$US16,181,410	\$US24,512,411	\$US23,322,268
Vaccine Introduction Grant (2023)	\$US316,000	\$US316,000	\$US316,000

Chad Parameters

Chad's costs are based on a 2023 birth cohort of 706,200 and a 2.8% annual population growth rate.

Expected PCV coverage is aligned with DTP coverage of:

- 69% (dose 1)
- 61% (dose 2)
- 52% (dose 3)

The Vaccine Introduction Grant is equal to US\$0.80 per child in the birth cohort. An 8% vaccine wastage rate was assumed.

Chad PCV Costs	PNEUMOSIL (10 valent)	Synflorix (10 valent)	Prevenar (13 valent)
PCV Manufacturer	Serum Institute of India	GSK	Pfizer
PCV Presentation	5 dose vial	4 dose vial	4 dose vial
Chad Vaccine Procurement Cost (2023)	\$US374,632	\$US374,632	\$US374,632
Chad Vaccine Procurement Cost (2023-32)	\$US4,255,392	\$US4,255,392	\$US4,255,392
Gavi cost (2023-32)	\$US31,991,611	\$50,653,384	\$47,987,416
Total Chad + Gavi cost (2023-32)	\$US36,247,003	\$54,908,776	\$US52,242,808
Vaccine Introduction Grant (2023)	\$US564,960	\$US564,960	\$US564,960

Endnotes

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"Perhaps the silver lining of a pandemic that affects the respiratory tract is that the focus on diseases like pneumonia has increased the engagement of political leaders."

Veronica Denti
Gavi