A report on current global access to new childhood vaccines



# VIEW-hub Report: Global Vaccine Introduction and Implementation

September 2020

Developed from data in VIEW-hub www.VIEW-hub.org Johns Hopkins Bloomberg School of Public Health International Vaccine Access Center (IVAC) Contact: Kirthini Muralidharan (kmuralidharan@jhu.edu)

NOTE: The coverage and access graphs have been removed from this report due to the COVID-19 pandemic.

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• The appendix includes a description of VIEW-hub, support and funding for VIEW-hub, and how to cite VIEW-hub as a source.

This report and the PowerPoint slides with the report graphics can be found at: <u>http://www.jhsph.edu/research/centers-and-insti-tutes/ivac/view-hub</u>. For all other VIEW-hub-related inquiries, please email Kirthini Muralidharan at kmuralidharan@jhu.edu.

Any data on projected introduction dates should not be reproduced or disseminated without prior consent from VIEW-hub personnel.



#### VACCINE INTRODUCTION DASHBOARD

The following section provides contextual historic information about Hib vaccine, PCV, rotavirus vaccine, and IPV introduction in low-, middle-, and high-income countries, as well as Gavi-supported countries. It also provides a summary snapshot of the cumulative number of countries that have introduced each vaccine to date (globally and for Gavi countries only).

#### Year of First Vaccine Introduction

| Income Level   | Hib Vaccine        | PCV                | Rotavirus Vaccine  | IPV                | HPV                |
|----------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| High-Income    | 1989 (Iceland)     | 2000 (US)          | 2006 (3 countries) | 1955 (2 countries) | 2006 (4 countries) |
| Middle-Income  | 1994 (2 countries) | 2008 (5 countries) | 2006 (5 countries) | 1959 (Hungary)     | 2009 (2 countries) |
| Low-Income     | 1997 (Gambia)      | 2009 (Rwanda)      | 2012 (Rwanda)      | 2014 (Nepal)       | 2011 (Rwanda)      |
| Gavi Supported | 2001 (2 countries) | 2009 (2 countries) | 2008 (Bolivia)     | 2014 (Nepal)       | 2009 (Bhutan)      |

#### Total number of countries that have introduced each vaccine, by program type

| Vaccine   | Global Introductions<br>(194 Countries) |                           |             | Total |
|-----------|-----------------------------------------|---------------------------|-------------|-------|
|           | Universal                               | Special Risk Populations* | Subnational |       |
| Hib       | 192                                     | 0                         | 1           | 193   |
| PCV       | 138                                     | 3                         | 5           | 146   |
| Rotavirus | 100                                     | 0                         | 6           | 106   |
| IPV**     | 190                                     | 0                         | 4           | 194   |
| HPV       | 98                                      | 0                         | 5           | 103   |

| Vaccine   | Gavi Introductions<br>(73 Countries) |                           |             | Total |
|-----------|--------------------------------------|---------------------------|-------------|-------|
|           | Universal                            | Special Risk Populations* | Subnational |       |
| Hib       | 73                                   | 0                         | 0           | 73    |
| PCV       | 57                                   | 0                         | 3           | 60    |
| Rotavirus | 50                                   | 0                         | 1           | 51    |
| IPV**     | 70                                   | 0                         | 3           | 71    |
| HPV       | 20                                   | 0                         | 3           | 23    |

\*This program type targets special populations at high risk, and will be hereforth referred to as "risk programs". Note: The definition of high-risk populations may vary by country.

\*\*IPV introduction defined as the inclusion of at least one dose of IPV into the child immunization schedule.



#### **EXECUTIVE SUMMARY**

The VIEW-hub Global Vaccine Introduction and Implementation report is an extension of the previous VIMS report, with enhanced content and figures generated by IVAC's newly launched VIEW-hub data visualization platform, now accessible at <u>www.VIEW-hub.org</u>. VIEW-hub is an interactive platform (supported by internal databases), developed and mainted by IVAC and supported by Gavi, The Vaccine Alliance, the Bill & Melinda Gates Foundation and the ROTA Council.

The VIEW-hub report displays data and figures on the introduction status of *Haemophilus influenzae* type b (Hib) vaccine, pneumococcal conjugate vaccine (PCV), rotavirus vaccine, inactivated polio vaccine (IPV), and human papillomavirus vaccine both globally and in the 73 Gavi countries. The images and text below describe: the number of countries that have introduced each vaccine or plan to in the future, global and Gavi rates of vaccine coverage and access, projected introduction dates for Gavi countries, historical trends in the rate of global vaccine introduction.

Since March 2016, new additions to the VIEW-hub report are information on countries' current product and dosing schedule for pneumococcal conjugate vaccine (PCV), rotavirus vaccine, and inactivated polio vaccine (IPV). Beginning in June 2016, besides the vaccine introduction dashboard section of the report, Hib updates will be limited to the global map of introductions and pie chart of introductions, given most countries (except 1) have already introduced the vaccine. Since July 2020, new additions to the VIEW-hub report are information on countries' human paillomavirus vaccine introduction, product, and dosing schedule.

The report concludes with a more detailed description of VIEW-hub and its uses.



#### **METHODS**

This report has been prepared using data and maps generated in VIEW-hub, a data visualization tool developed and maintained by the International Vaccine Access Center at the Johns Hopkins Bloomberg School of Public Health for use by IVAC and its affiliated partners and projects. Information in VIEW-hub was gathered from internationally recognized sources, such as the World Health Organization (WHO), UNICEF, Gavi, vaccine manufacturers, ministries of health, and news media.

# Current Introduction Statuses for Hib, Pneumococcal Conjugate, Rotavirus, Inactivated Polio Vaccines and Human Papillomavirus Vaccine

• Data on historical years of vaccine introduction are gathered from the WHO. Information on current introduction status are gathered from a variety of sources, such as WHO, UNICEF, Gavi, vaccine manufacturers, ministries of health, and news media. Forecasted introduction dates are from WHO and Gavi's Strategic Demand Forecast v12. For more information on sources, see the full data dictionary within VIEW-hub (www.VIEW-hub.org) or email Kirthini Muralidharan at kmuralidharan@jhu.edu.

#### Vaccine Introduction by Income Level

- Countries were classified using 2020 World Bank income classifications (2019 GNI data). Year of introduction or forecasted introduction was determined through WHO reports, news media, and Gavi's Strategic Demand Forecast v12.
- Countries Conducting PCV/Rotavirus Impact Evaluation
- Studies were identified for inclusion in the VIEW-hub impact study database via a literature search targeting published studies that evaluated the health impact of PCV/rotavirus vaccine in countries that have introduced the vaccine.

#### Table 1. Pneumococcal Conjugate Vaccine Introduction Forecast

• Projected introduction years for PCV were gathered from Gavi's Strategic Demand Forecast v12 and WHO sources.

#### Table 2. Rotavirus Vaccine Introduction Forecast

• Projected introduction years for rotavirus vaccine were gathered from Gavi's Strategic Demand Forecast v12 and WHO sources.

#### Table 3. Inactivated Polio Vaccine Introduction Forecast

• Projected introduction years for IPV were gathered from Gavi's Strategic Demand Forecast v12 and WHO sources.

#### Table 4. Projected Vaccine Introduction by Year for Gavi Countries

• Gavi countries' projected introduction years for HPV, PCV, and rotavirus vaccine were gathered from Gavi's Strategic Demand Forecast v12 and WHO sources.

Projected introduction dates for Gavi countries are taken from the most recently available Gavi Strategic Demand Forecast and WHO sources. For non-Gavi countries, WHO and a variety of other sources are used. Information on a particular country's Gavi application status or projected introduction date may be sensitive and should not be used for public circulation without prior consent from VIEW-hub personnel.







The coverage and access graphs have been removed from this report because the numbers are not accurate due to the COVID-19 pandemic. The coverage and access numbers presented in this report are calculated from the latest WUENIC estimates, the latest available estimates are from 2019. These numbers do not reflect the impact of the COVID-19 pandemic, and we do not want to present inaccurate data. The 2019 WUENIC estimates are available on www.VIEW-hub.org and the historical coverage and access graphs are available in historical VIEW-hub reports, which can be found at www.VIEW-hub.org/resources.

### **Global Hib Vaccine Introduction Status**

As of June 2020, 193 countries have introduced a Hib-containing vaccine into their National Immunization Program, Belarus introduced subnationally and Russia introduced to at risk populations. One country (China) has yet to make a decision regarding introduction.

A map of countries that have introduced Hib vaccine is below.







### Hib - Current Product



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# Hib - Current Dosing Schedule







### Gavi Hib Introduction by Year



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A map of Gavi countries that have introduced Hib is below.

Introduced into National Program 73 countries 100%





#### PCV

### Global PCV Introduction by Year



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### **Global PCV Introduction Status**

As of June 2020, 146 countries have introduced PCV into their National Immunization Program, including 138 universal, 5 subnational, and 3 risk programs. Fifteen countries have announced plans to introduce PCV into their NIP. Thirtythree countries have yet to make a decision regarding introduction.

A map of countries that have introduced PCV is below.









### **PCV - Current Product**



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# PCV - Current Dosing Schedule



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### Gavi PCV Introduction by Year



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### Gavi PCV Introduction Status

As of June 2020, 60 countries have introduced PCV into their National Immunization Program. Six countries have announced plans to introduce PCV into their NIP. Seven countries have yet to make a decision regarding PCV.

A map of Gavi countries that have introduced PCV is below.









### Global Rotavirus Vaccine Introduction by Year

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#### Rotavirus

### **Global Rotavirus Vaccine Introduction Status**

As of June 2020, 106 countries have introduced rotavirus vaccine into their National Immunization Program; six of these countries have introduced subnationally. Eighteen countries have announced plans to introduce rotavirus vaccine into their NIP. Three countries are known to have coverage through the private market. Sixtyseven countries have yet to make a decision regarding introduction.

A map of countries that have introduced rotavirus vaccine is below.







### **Rotavirus Vaccine - Current Product**



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# Rotavirus Vaccine - Current Dosing Schedule



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#### Rotavirus



Gavi Rotavirus Vaccine Introduction by Year

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#### Rotavirus

### Gavi Rotavirus Vaccine Introduction Status

As of June 2020, 51 countries have introduced rotavirus vaccine into their National Immunization Program, India has introduced in a phased manner. Four countries are approved, with or without clarification, for Gavi support to introduce. Nine countries have announced plans to introduce rotavirus vaccine into their NIP. Nine countries have yet to make a decision regarding introduction.

A map of Gavi countries that have introduced rotavirus vaccine is below.

Planning Introduction 9 countries 12% No Decision 9 countries 12% Gavi Approved/Approved with Clarification 4 countries 6% 6%





#### 200 180 160 140 Number of Countries 100 80 60 40 20 0 2 Ŷ, $\sim$ Ŷ $\hat{\sim}$ 2 5 ~ Ŷ <u>,</u>%

Global IPV Introduction by Year

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### **Global IPV Introduction Status**

As of June 2020, 194 countries have introduced IPV into their National Immunization Program; among these, four countries have introduced subnationally.

Currently, 50 countries are using IPV exclusively and 141 countries are using both IPV and OPV in their national immunization schedule.

A map of countries that have introduced IPV is below.







# **IPV - Current Product**



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## IPV - Current Dosing Schedule







### Gavi IPV Introduction by Year



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### Gavi IPV Introduction Status

As of June 2020, 73 countries have introduced IPV into their National Immunization Program, three of which have introduced subnationally.

Currently, all 73 Gavi countries that have introduced IPV are using both IPV and OPV in their national immunization schedule.

A map of Gavi countries that have introduced IPV is below.









### Global HPV Introduction by Year



The coverage and access graphs have been removed from this report because the numbers are not accurate due to the COVID-19 pandemic. The coverage and access numbers presented in this report are calculated from the latest WUENIC estimates, the latest available estimates are from 2019. These numbers do not reflect the impact of the COVID-19 pandemic, and we do not want to present inaccurate data. The 2019 WUENIC estimates are available on www.VIEW-hub.org and the historical coverage and access graphs are available in historical VIEW-hub reports, which can be found at www.VIEW-hub.org/resources.



### **Global HPV Introduction Status**

As of June 2020, 62 countries have introduced HPV into their National Immunization Program; additionally, twenty countries have introduced demonstration projects. Fifty-one countries have announced plans to add HPV to their national immunization programs. Eighty-one countries have yet to make a decision regarding introduction.

A map of countries that have introduced HPV is below.







### HPV - Current Product



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# HPV - Current Dosing Schedule





### Gavi HPV Introduction by Year



The coverage and access graphs have been removed from this report because the numbers are not accurate due to the COVID-19 pandemic. The coverage and access numbers presented in this report are calculated from the latest WUENIC estimates, the latest available estimates are from 2019. These numbers do not reflect the impact of the COVID-19 pandemic, and we do not want to present inaccurate data. The 2019 WUENIC estimates are available on www.VIEW-hub.org and the historical coverage and access graphs are available in historical VIEW-hub reports, which can be found at www.VIEW-hub.org/resources.



#### HPV

### Gavi HPV Introduction Status

As of June 2020, 5 countries have introduced HPV into their National Immunization Program, one of which has introduced subnationally. Twenty-nine countries have been approved, with or without clarification, for Gavi support to introduce. Eight have announced plans to add HPV to their national immunization programs. Thirty-one have yet to make a decision regarding introduction.

A map of Gavi countries that have introduced HPV is below.













Percentage of countries that have

INTERNATIONAL VACCINE ACCESS CENTER A line graph showing the proportion of high- and low-income countries that have introduced or are projected to introduce PCV and rotavirus vaccine for infants over time. Year of first introduction is 2006 for rotavirus vaccine and 2000 for PCV. It took 15 years for PCV vaccine to reach 70 percent of lowincome countries. Rotavirus vaccine is projected to reach 70 percent of low-income countries four years faster, protecting millions of children sooner from deadly diarrheal disease.

#### ACKNOWLEDGEMENTS AND NOTES

This report and VIEW-hub are supported by Gavi, The Vaccine Alliance and the Bill & Melinda Gates Foundation. This report has been generated using data and maps from VIEW-hub, developed and maintained by the International Vaccine Access Center (IVAC) at the Johns Hopkins Bloomberg School of Public Health for use by IVAC and its affiliated projects and partners. VIEW-hub is a new publicly-accessible interactive platform that allows real-time visualization of data on vaccine introduction, use, and impact. Information was gathered from internationally-recognized sources, such as WHO, Gavi, UNICEF, vaccine manufacturers, ministries of health, and news media.

Please note that all forecasted dates in this report rest on assumptions and actual dates may vary. Vaccine introduction dates do not imply an obligation by Gavi to support coverage.

<u>Disclaimer:</u> The presentation of VIEW-hub maps in this report is not by any means an expression of IVAC's opinion regarding the legal status of countries/territories, their governing authorities, or their official boundaries. On VIEW-hub's website, country borders which are not in full agreeement are displayed with dotted lines, which may be difficult to visualize at the global view presented in this report.

Definitions and sources are available within VIEW-hub at www.VIEW-hub.org.

This report and the PowerPoint slides with the report graphics can be found at: <u>www.VIEW-hub.org/resources</u>. All maps shown in this report were generated on <u>VIEW-hub</u> and can be replicated/updated on the site.

For any VIEW-hub-related inquiries, please email Kirthini Muralidharan at kmuralidharan@jhu.edu.



#### SOURCES

| Gavi Eligibility Status                        | Gavi, The Vaccine Alliance. Gavi Eligible Countries. 2016. Last accessed Jan 2016 at http://www.gavialliance.org/support/apply/countries-eligible-for-support/                                                                                                                                                                                                                                                                          |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTP3 Coverage Rate                             | WHO/UNICEF Estimates of National Immunization Coverage. 2019 data as of 15 Jul<br>2020. Retrieved from: http://www.who.int/immunization/monitoring_surveillance/<br>data/en/                                                                                                                                                                                                                                                            |
| Surviving Infants                              | United Nations Population Division. World Population Prospects (WPP): 2019 Revision.<br>Retrieved from: http://esa.un.org/unpd/wpp/                                                                                                                                                                                                                                                                                                     |
| Projected Introduction Dates                   | This information comes from a variety of sources, primarily the most recent Gavi<br>Strategic Demand Forecast and WHO regional projections. For more information,<br>please contact Kirthini Muralidharan at kmuralidharan@jhu.edu.                                                                                                                                                                                                     |
| Dates of Introduction                          | This information comes from a variety of sources, such as Gavi, WHO, UNICEF,<br>ministries of health, the news media, and IVAC partners/contacts. For more<br>information, please contact Kirthini Muralidharan at kmuralidharan@jhu.edu.<br>It is cross-referenced with WHO information (below).<br>World Health Organization. Immunization Repository. Includes data on introductions<br>through the end of Jun 2020, as of Jul 2020. |
| Current Vaccine Use Status and<br>Program Type | This information comes from a variety of sources, such as Gavi, WHO, UNICEF,<br>ministries of health, news media, and IVAC partners/contacts. For more information,<br>please contact Kirthini Muralidharan at kmuralidharan@jhu.edu                                                                                                                                                                                                    |



#### SELECTED KEY TERMS

For any definitions not provided below, please refer to the data dictionary in VIEW-hub.

Approved: the application meets all the criteria and is approved for Gavi support.

Approved with clarification: the application lacks specific pieces of data, which must be provided generally within a month. Data must be received before the application is considered officially approved for Gavi support.

Children with access: the number of children (based on surviving infants 2015) who live in a country that has introduced the vaccine into the national immunization program. This does not include countries with widespread market use or high-risk programs. For regional introductions, those regions that have introduced may be included and the regions which have not introduced excluded.

Children vaccinated: the number of surviving infants who received the vaccination based on the 2018 coverage rates of countries who have introduced. The WHO/UNICEF estimates of national immunization coverage (WUENIC) coverage rates are used for this figure.

Introduced into national immunization program: the vaccine has been incorporated into the national government's immunization program, either for all children or for special populations at high-risk of disease, and it may include programs that are being phased in over time. This status can apply to any country, regardless of Gavi eligibility. For IPV, this status covers all countries that have introduced at least one dose of IPV into its child national immunization schedule.

Subnational introductions: the vaccine has been introduced into the vaccination schedule for a geographic subset of the country. This status can apply to any country, regardless of Gavi eligibility. Subnational introductions in this report refers to countries with phased national rollouts as well as countries that have introduced only on a subnational level (with no known plans of national scale up).

Gavi application submitted under review: the country has submitted a New and Underused Vaccines Support (NVS) application for this vaccine and is awaiting Gavi evaluation.

Gavi approved/approved with clarification: the country's application to Gavi for New and Underused Vaccines Support (NVS) financing for this vaccine has been approved or approved with clarifications.

Gavi conditional approval to introduce: the application to Gavi for New and Underused Vaccines Support (NVS) for this vaccine does not fulfill specific or significant application requirements. Missing requirements must be provided in a subsequent round to complement the original application. If the conditions are not met within the given timeframe after the first submission, re-submission of a new application is required.

Gavi resubmission: the New and Underused Vaccines Support (NVS) application for this vaccine is incomplete and a full application should be submitted in a future round.

Gavi plan to apply: country has made a public statement (through government or other recommending body on vaccines) that they plan to introduce the vaccine and apply for Gavi New and Underused Vaccines Support (NVS), but has not yet submitted an application.

No decision: the country has not indicated a firm decision to introduce the vaccine into its national immunization program or to apply for Gavi New and Underused Vaccines Support (NVS) for the vaccine.



Non-Gavi planning introduction: a country that is not eligible for Gavi support has plans to introduce the vaccine into its national immunization program and has taken steps to initiate its program, such as contacting the vaccine manufacturer. OR: A country that is eligible for Gavi support and plans to introduce without it.

Planning introduction: is the combination of countries that have announced plans to apply for Gavi support, Gavi countries that have announced plans to introduce the vaccine without Gavi support, or non-Gavi countries that have announced a plan to introduce.

Risk: program for this vaccine only covers children in special populations at high-risk for disease; this may include children with health conditions, those of vulnerable socioeconomic statuses or ethnic groups, or those living in regions of high risk.

Widespread coverage through private market: most (over half) of the target population is receiving the vaccine through private market use.



#### **APPENDIX**

VIEW-hub is a new, interactive data visualization tool, which has replaced IVAC's previous Vaccine Information Management System (VIMS) - developed in 2008. VIMS was a web-based database with key information related to the vaccine introduction, which provided data for the quarterly VIMS Global Vaccine Introduction reports. VIEW-hub has retained important data elements (such as vaccine introduction information) previously found in VIMS, but has expanded both in scope and functionality to better meet the evolving needs of global vaccine stakeholders and decision makers.

Since the launch of VIEW-hub in 2016, the VIMS Global Vaccine Introduction reports developed by IVAC each quarter will now be known as the VIEW-hub reports. The data are continuously updated as information is received, so as to permit real-time reporting.

VIEW-hub was made possible with support from Gavi, The Vaccine Alliance, the Bill & Melinda Gates Foundation and the ROTA Council.

#### Use of VIEW-hub:

Through VIEW-hub, users can instantly visualize data on vaccine introductions, product usage, dosing schedules, access, coverage, impact studies, and more for a number of vaccines. Custom queries and maps, exportable data and graphics, and a map gallery are just some of the interactive features users can access. VIEW-hub extends the functionality and content of the former VIMS, allowing users to track progress and strategize ways to accelerate and optimize vaccine implementation.

Any data on projected introduction dates should not be reproduced or disseminated without prior consent from VIEWhub personnel.

If data are used in a presentation, please cite VIEW-hub accordingly:

Source: International Vaccine Access Center (IVAC), Johns Hopkins Bloomberg School of Public Health. VIEW-hub Global Vaccine Introduction Report, July 2020. www.jhsph.edu/ivac/view-hub. Accessed: [Day Month Year].

If you have any questions, please contact the Kirthini Muralidharan at kmuralidharan@jhu.edu.

