

COVID-19

XXVII Meeting of PAHO's Technical Advisory Group (TAG) on Vaccine-Preventable Diseases

*Tailoring the SAGE Roadmap to the
Requirements of the Americas and the
Strategic Use of COVID-19 Booster Doses*

27 January 2022

Virtual

Questions for the TAG

1. Does the TAG endorse the updated SAGE Roadmap?
2. If yes, how can countries of the Americas adapt the SAGE Roadmap based on their current:
 - Vaccination coverage rate among the different priority groups
 - National policy on booster dose
3. If yes, how can PAHO support the TAG's recommendation on the use of COVID-19 vaccine in priority groups of the Americas (primary series and booster doses)?
4. If no, what is TAG's recommended strategy for COVID-19 vaccine prioritization in the Americas?

Operations for COVID-19 vaccination

Vaccination status at the global level

As of 15 February 2022, the world had recorded 412 million COVID-19 cases and over 5.8 million COVID-related deaths. Meanwhile, since December 2020, more than 10.2 billion doses of COVID-19 vaccines have been administered around the world. Eight vaccines were reviewed and approved by WHO's Emergency Use Listing (EUL) process and the Strategic Advisory Group of Experts (SAGE) on immunization. The vaccines are produced by pharmaceutical manufacturers Pfizer, Moderna, AstraZeneca, Janssen, Sinopharm, Sinovac, Bharat and Novavax. These vaccines have been authorized for use in different age groups and require specific handling. All vaccines approved by WHO and national regulatory agencies are safe and efficacious against COVID-19. The table below reports the characteristics, cold chain requirements and vaccine efficacy values for each vaccine.

Table 1. Characteristics of COVID-19 vaccines with EUL approval (as of 15 February 2022)

WHO SAGE Interim Recommendation	Pfizer – BioNTech BNT162b2	Moderna – mRNA-1273	AstraZeneca – Oxford University AZD1222	Janssen – Ad26.COV2.S	Sinopharm – BBIBP-CoV	Sinovac – CoronaVac	Bharat – Covaxin	Novavax – CoV2373
Vaccine platform	Messenger RNA	Messenger RNA	Viral Vector (Adenovirus)	Viral Vector (Adenovirus)	Inactivated whole virus vaccine	Inactivated whole virus vaccine	Inactivated whole virus vaccine	SARS-CoV-2 spike protein nanoparticle
Dosage	2 doses	2 doses	2 doses	1 dose	2 doses	2 doses	2 doses	2 doses
Interval	4-9 weeks	4-6 weeks	8-12 weeks	NA	3-4 weeks	2-4 weeks	4 weeks	3-4 weeks
Minimum age	5 years old	12 years old	18 years old	18 years	18 years	18 years	18 years	18 years
Use in pregnant women	Yes	Yes	Yes	Yes	Yes	Yes	Yes, if the benefits of vaccination outweigh the potential risks.	Yes, if the benefits of vaccination outweigh the potential risks.
Use in lactating women	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Use in immunocompromise	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional doses / Booster	Highest risk groups (health workers, elderly, immunocompromised): 4-6 months after the 2nd dose	Immunocompromised persons	Immunocompromised persons	Immunocompromised persons	Immunocompromised: 1-3 months after the 2nd dose Persons aged 60 or older: 3-6 months after the 2nd dose	Immunocompromised: 1-3 months after the 2nd dose Persons aged 60 or older: 3-6 months after the 2nd dose	Immunocompromised persons	Immunocompromised persons
Coadministration with the influenza vaccine	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Storage requirements	Ultra Cold Chain: -85°C to -60°C Freezer: -20°C (2 weeks) Thawed: 2°C to 8°C (31 days)	Freezer: -20°C Thawed: 2°C to 8°C (30 days)	Standard Cold Chain: 2°C to 8°C	Freezer: 20°C (24 months) Thawed: 2°C to 8°C (3 months)	Standard Cold Chain: 2°C to 8°C	Standard Cold Chain: 2°C to 8°C	Standard Cold Chain: 2°C to 8°C	Standard Cold Chain: 2°C to 8°C
Vaccine efficacy	Symptomatic infection --> 95% Severe disease --> 92% Hospitalization --> 87%	Asymptomatic infection --> 63% Symptomatic infection --> 93% Severe disease --> 98%	Symptomatic infections --> 76% Persons aged 65 or older --> 85%	Symptomatic infection --> 67% Severe illness --> 85% Hospitalization --> 100%	Symptomatic infection --> 79% Hospitalization --> 79%	Symptomatic infection --> 67% Hospitalization --> 85% Death --> 80%	Asymptomatic infection --> 64% Symptomatic infection --> 78%	Symptomatic infection --> 90% Severe disease --> 87%

<https://www.who.int/groups/strategic-advisory-group-of-experts-on-immunization/covid-19-materials>

Safe and effective vaccines require equitable distribution to all countries of the world to significantly impact global incidence and mortality rates. However, as of 10 January 2022, 36 WHO Member States

have vaccinated fewer than 10% of their population, and 90 vaccinated fewer than 40%. High-income countries administered 14x more doses per inhabitant compared to low-income countries. Vaccines are effective against severe disease caused by the variants, but variants will continue to flourish if the globally inequitable rollout of vaccines is not addressed.

At the same time, the unchecked use of COVID-19 booster doses (which, by definition, are administered to the “fully vaccinated”) further widens the gap between those who are protected against SARS-CoV-2 and those who are not. As of 12 January 2022, the WHO reports that at least 812 million booster/additional doses have been administered globally, representing 8.5% of total doses deployed. At this time, booster doses represent 59% of the daily administered doses globally. At least 20.6 million booster doses are administered on a daily basis, but this figure is likely to be underestimated.

Vaccination status in the Americas

The Region of the Americas remains the Region with the highest level of social and economic inequality in the world. The arrival of the COVID-19 pandemic further exacerbated these trends and sparked the most serious economic contraction of the past 120 years in Latin America and the Caribbean (LAC). An additional 22 million people were plunged into poverty. Persons living in situations of vulnerability (e.g., persons living in extreme poverty, migrants, indigenous groups, afro-descendant populations, workers in the informal sector) have been especially impacted. The closure of schools continues to affect the prospects of millions of children.

Under these difficult conditions, the countries and territories of the Americas were able to mount strong vaccination operations against COVID-19. As of 15 February 2022, all 51 countries and territories of the Americas are implementing vaccination operations. Through bilateral agreements, COVAX Mechanism, local production and donations, the Region administered 1.64 billion vaccine doses to date. Over 64% of the population of LAC countries has received two doses.

In October 2021, WHO set [global vaccination targets](#) with the goal of reaching 70% vaccination coverage rate in each country by 30 June 2022. Already 14 countries and territories of the Americas have achieved this target, and another 24 are on track. However, 13 countries and territories continue to report vaccination coverage rates below 40% (which was the WHO target for 31 December 2021). Haiti remains the only country with a coverage rate well below 10%.

Within countries, PAHO continues to detect strong inequities in COVID-19 vaccine distribution as well as negative attitudes towards vaccines among large swaths of the population. When we stratify countries by income level, we see that, the proportion of the “0 dose” population is 22.5% among high-income countries. In middle-income countries, this proportion is 27.8%. In low-income countries, this proportion is above 54%. The inequity between high- and low/middle-income countries is maintained in the application of vaccine booster policies. High-income countries started introducing booster doses in Q3 2021 and expanded the use to lower priority groups – often before achieving high vaccination coverage rates with a primary series among highest risk groups. Low/middle-income countries started applying the booster policy slowly and in much smaller quantities. Some of these countries also launched booster doses before achieving high vaccination coverage rates with a primary series among highest risk groups.

Operations on COVID-19 vaccine supply, procurement, and deployment in the Americas

The COVAX Mechanism was established to provide an equitable allocation strategy to participating countries, so they could procure enough COVID-19 vaccine doses to cover 20% of the population. Nevertheless, given the bilateral agreements between vaccine manufacturers and high-income countries, export bans and vaccine nationalism, COVAX was able to deliver only 1 billion doses by January 2022, representing 10% of the vaccine doses administered worldwide.

During this same period, COVAX was able to procure only 12% (96.3 million doses) of all doses used in countries of Latin America and the Caribbean (LAC). Most of the delivered doses were procured through bilateral deals (depending on the country's financial resources). Another important source of vaccine doses were donations of vaccine doses from the United States, Spain, Canada, France, Germany, Japan, Sweden, Norway, and Denmark. Donors provided the Region with 28 million COVID-19 vaccine doses to the Americas and continue to provide financial support for all aspects of the COVID-19 vaccine introduction process.

Leveraging over 40 years of experience, PAHO's Revolving Fund (RVF) for Access to Vaccines is an integral component of the COVAX Mechanism. RVF provides strong technical support to countries on all aspects of the COVID-19 vaccine delivery process (e.g., regulatory aspects, cold chain, budget, and agreements with some producers of WHO EUL vaccines). Also, manages the COVID-19 vaccine procurement and logistics operations to serve the participating 33 countries of the Region. Of these, 23 are self-financing participants (SFP), and 10 are Advanced Market Commitment (AMC). Each country has its own combination of vaccine supply options. Many AMC countries (ex., Nicaragua) use COVAX as their primary source. Others (ex., Belize, Barbados) depend significantly on bilateral donations. Finally, many use a combination of bilateral agreements and COVAX services (ex., Mexico, El Salvador, Honduras, Bolivia). Only Cuba relies on the national production of COVID-19 vaccines. Also, all countries employ a combination of COVID-19 vaccines to immunize the populations.

Ensuring the supply of the right product, in the right quantity, under the right conditions, and at the right time are key principles to support national vaccination programs. However unofficial data suggest that, within the Americas, there are countries with assured sources of supply to complete the primary vaccination series and administer booster doses to all citizens, while others have made procurement plans to cover fewer than 70% of the population.

As global vaccine supply continues to increase in 2022, it is imperative that countries and RVF will continue to work in close partnership to evaluate the national vaccine demand, monitor absorption dynamics, and meet the national needs. Therefore, countries should provide greater access to RVF regarding their bilateral supply agreements and stock levels. With this information, RVF will be better positioned to advocate for additional vaccine dose donations and allocations in accordance with countries' stated needs. The transition from individual bilateral agreements to a consolidated, regional-level demand statement through RVF strengthens the Region's negotiating power.

Recommendations from the SAGE extraordinary meeting, held on 19 January 2022

Updated SAGE Roadmap

The [WHO SAGE Roadmap for prioritizing use of COVID-19 vaccines](#) was updated on 21 January 2022. The recommendations are based on work conducted by the SAGE Working Group on COVID-19 Vaccines and SAGE members, including consultation with the Regional Immunization TAG (RITAG) chairs.

The latest iteration of the Roadmap builds on WHO's [Strategy to achieve global COVID-19 vaccination by mid-2022](#), which highlights four objectives that vaccination programmes must implement to achieve the overall goal of full recovery from the COVID-19 pandemic: a) Minimize deaths, severe disease and overall disease burden; b) Curtail the impact on health systems; c) Fully resume socioeconomic activity; d) Reduce the risk of emergence of new variants of concern. The first two remain the primary objectives of vaccine use in the context of the global COVID-19 response.

Emerging evidence indicates that vaccine effectiveness against SARS-CoV-2 infection and any symptomatic COVID-19 declines significantly over a period of six months after completion of the primary series, likely resulting from: a) waning protective vaccine-induced immunity; and b) lower vaccine-induced

neutralizing antibody activity against VOC (including the Delta and Omicron variants). By contrast, vaccine-induced protection against severe COVID-19 outcomes is maintained for at least six months after completion of the primary vaccination series. In the short-term, a third dose (booster) may fully or partially restore vaccine effectiveness.

Table 2. Prioritized use of primary series and booster doses, by vaccine coverage rates in higher + high priority groups

Categories	Vaccination coverage rates of highest + high priority groups			
	Low (<10%)	Moderate (10%-40%)	High (41%-70%)	Very high (>70%)
Highest priority group Health workers, older adults, immunocompromised persons	Primary series + additional dose/booster			
High priority group Adults with comorbidities, pregnant women, teachers and other essential workers, disadvantaged sociodemographic subpopulations at higher risk of severe COVID-19		Primary series + booster		
Medium priority group Remaining adults, children and adolescents with comorbidities			Primary series + booster	
Lowest priority group Healthy children and adolescents				Primary series + booster*

<https://www.who.int/publications/i/item/who-sage-roadmap-for-prioritizing-uses-of-covid-19-vaccines>

* Safety and effectiveness data on booster doses are available for only children aged 12 or older

Available evidence on COVID-19 booster doses and recommendations on their use

All studies to date (pre-print and peer-reviewed) suggest a strong anamnestic immunological response achieving the peak antibody levels following the primary immunization series. The use of a booster dose improves vaccine effectiveness against both Delta and Omicron variants. These results are valid for both homologous and heterologous vaccine schedules (primary series and booster). However, the duration of increased protection is unknown, since studies only consider a short follow-up time. Also, there is evidence of effectiveness waning over time.

Achieving high rates of primary series coverage among the groups at higher risk of severe disease and death remains a critical priority to optimize the impact of available COVID-19 vaccine supply. WHO recommends for low, moderate, and high primary series coverage rates in higher priority-use groups that:

- Countries with low rates of primary series coverage should first achieve high primary series coverage rates among the higher-risk priority groups before offering vaccine doses to lower risk priority groups

- Countries with moderate-to-high primary series coverage rate in higher-risk priority groups should usually prioritize available vaccine supply to first achieve high booster dose coverage rates in higher risk priority groups before offering vaccine doses to lower priority groups.

Updated recommendations on the COVID-19 vaccine produced by Pfizer

- Eligible population: Persons aged 5 or older
- Administration: Two doses
 - 30µg, 0.3ml for persons aged 12 or older
 - 10µg, 0.2ml for persons aged 5-11 years
- Interval: The recommended interval between doses is 4-8 weeks, with a preference for an 8-week interval.
- Interchangeability: Both homologous and heterologous schedules are encouraged
- Booster doses: A booster dose is recommended for the highest priority risk groups after 4-6 months from the completion of the primary series.
- Countries could consider using the Pfizer vaccine in children aged 5-17 only when high vaccine coverage rates (primary series and booster) are achieved in higher priority groups.
- Myocarditis following vaccination with Pfizer is a very rare event. The benefits of vaccinating against COVID-19 remain much higher compared to the risk of myocarditis. Nonetheless, it is important to note that:
 - In males aged 16-17, the reporting rate is 70.2 per 1 million vaccinated with the 2nd dose of Pfizer. In males aged 12-15, the reporting rate is 45.7 per 1 million vaccinated with the 2nd dose of Pfizer.
 - In females aged 16-17, the reporting rate is 7.6 per 1 million vaccinated with the 2nd dose of Pfizer. In females aged 12-15, the reporting rate is 3.8 per 1 million vaccinated with the 2nd dose of Pfizer.
 - Long-term studies on the impact of the Pfizer vaccine on the heart muscle are ongoing.
 - Very early data from Israel on the reporting rate of myocarditis after a booster dose: the data suggest a lower rate of myocarditis after the 3rd dose than after the 2nd dose of Pfizer vaccine.

Tailoring the SAGE Roadmap to the requirements of the Americas and the strategic use of COVID-19 booster doses

Current implementation of the SAGE Roadmap in the Americas

On 16 July 2021, WHO published the second iteration of the [WHO SAGE Roadmap for prioritizing use of COVID-19 vaccines](#). The Roadmap enables further reduction of mortality/morbidity and contributes to further reduction in transmission and social and economic disruption. It is intended to aid prioritization of high-risk groups for vaccination within the coverage goals set by the country. These groups are identified in Table 3. Also, the Roadmap states that: “Opening vaccine eligibility to the whole population without first achieving the desired coverage among older age groups and other high-priority groups will reduce the impact that could otherwise be secured with the initial limited vaccine supply.”

Since the start of the COVID-19 vaccine introduction process, countries of the Americas have followed many of the technical recommendations of the SAGE and the TAG to implement their vaccination prioritization strategy. Specifically:

- Almost all countries launched COVID-19 vaccination operations by offering doses first to the higher risk groups. Countries followed the SAGE’s risk categorization when expanding vaccine eligibility.
- Among the 25 countries that report age-stratified vaccination data to PAHO, 21 report higher vaccination coverage rates among persons aged ≥60 years compared to the rates among younger age groups.
- In most countries, children and adolescents became eligible for COVID-19 vaccination after all other risk groups had been offered vaccination.

However, vaccine eligibility has expanded in multiple directions in the last six months of 2021. The SAGE recommendations on prioritization of highest risk priority groups have been superseded by the political, economic, and epidemiological considerations of each country. Specifically:

- Extensive deployment of COVID-19 vaccine doses for booster shots, while national coverage rates in the general population remained below 70% in most countries.
- Extensive use of COVID-19 vaccine doses to protect children and adolescents younger than 18 in all countries and territories except Haiti.
- Vaccination rates among pregnant women remain low, despite their classification as a group at high risk of severe COVID-19 disease.
- The 20 countries that report vaccination data among health workers to PAHO cannot calculate the coverage rate achieved for lack of reliable denominators.

Multiple reasons were identified for the discrepancies between SAGE prioritization recommendations and countries’ policy decisions: a) Rapidly changing epidemiological situation, including the emergence of the Omicron variant of concern; b) Multiple factors (e.g., vaccine availability, attitudes towards vaccines) affecting a country’s absorption capacity; c) Limited supply of COVID-19 vaccine doses (especially in Q1-Q3 2021) for countries relying on the COVAX Mechanism for procurement; d) Limited guidance from WHO as new conditions emerge, since the Organization must collect and evaluate scientific evidence before issuing recommendations.

Application of the updated SAGE Roadmap to the Americas

The [Roadmap](#) was updated on 21 January 2022. As reported in Table 2, the SAGE identified four priority groups, ordered by level of their risk of severe COVID-19 disease and death. Depending on the national vaccination coverage rate achieved among the highest + high priority groups, countries can offer booster doses to an expanding subsection of the population – up to and including all healthy adults and adolescents aged 12 or older.

Objective

After assessing the gaps in the implementation of the previous version of the Roadmap, PAHO FPL/IM assesses how the current version of the Roadmap may be implemented in the Americas – given national booster dose policy, vaccine procurement options, and COVID-19 vaccination coverage.

Data sources

- Information on each country’s booster dose policy was obtained from two sources: 1) the PAHO COVID-19 vaccination database, with information provided by the countries via the electronic Joint Reporting Form (eJRF) each week; and 2) a WHO compilation of booster dose policies for countries where the information is publicly available. Countries can be categorized in two groups:

“universal booster policy” (i.e., all persons aged 18 or older); and “high-risk booster policy” (i.e., health workers, elderly and/or immunocompromised persons only).

- The PAHO Revolving Fund collects information on the vaccine procurement options of each country. They are: bilateral agreements with vaccine manufacturers, COVAX Mechanism, local production and donations. Most countries rely on a combination of sources. Also, two countries (Canada and United States) rely exclusively on self-procurement strategies.
- Every Friday, FPL/IM compiles COVID-19 vaccination data up to the current epidemiological week. The denominator is the UN estimate for total population. For countries with fewer than 100,000 inhabitants, PAHO uses the population estimates of the International Programs Center, Population Division, U.S. Census Bureau IDB. PAHO’s calculation of the cumulative vaccination coverage rate is for the country as a whole. Few countries provide additional variables to allow for systematic stratification of the coverage rates.

Methodology

1. PAHO FPL/IM categorizes countries of the Americas by the COVID-19 vaccination coverage rate achieved as of 21 January 2022. It is important to note that this is the national rate, while the SAGE Roadmap recommends that countries consider the vaccination coverage rate of highest + high priority groups.
2. The information is further stratified by vaccine procurement mechanism.
3. Countries are classified as having a “universal booster policy” or a “high-risk booster policy”. Haiti does not administer booster doses, so it is not included in this analysis. The purpose of this additional classification is to assess whether countries are administering boosters in accordance with the current SAGE prioritization strategy (see Table 2).

Results

Based on this analysis, the two main roadblocks to the implementation of the SAGE Roadmap in the Americas are:

1. Limited availability of stratifying data (e.g., subnational unit, age, sex, priority group) to identify the priority groups outlined by the SAGE.
 - If the vaccination coverage in the highest and high priority groups cannot be calculated, the SAGE prioritizations strategy cannot be applied as recommended.
 - When the national vaccination coverage rate is used to guide the prioritization strategy, many underperforming areas and subpopulations may not achieve the necessary coverage rates to curb national-level trends in hospitalization and death.
 - Subpopulations in the highest + high priority groups may not achieve high vaccination coverage rates, but the country continues to expand vaccine eligibility and booster dose policies under the assumption that the most susceptible persons have achieved sufficient vaccination rates.
2. The scenarios of the SAGE Roadmap do not account for the wide differences within and between countries of the Americas.
 - Of the 51 countries and territories, 25 report a “high” national vaccination coverage rate (41%-70%), and 14 report a “moderate” coverage rate (10%-40%).

- 50/51 countries and territories are implementing COVID-19 booster dose policies, despite SAGE's recommendation in July 2021 that booster doses should not be administered.
- There is large variation between countries on population size, epidemiological situation, vaccine procurement options, absorption capacity, socioeconomic status, and booster dose policy already in effect.
- SAGE recommendations are not sufficiently detailed to guide countries on how and when to expand their use of COVID-19 vaccination primary series and booster doses.

Questions for the TAG

1. Does the TAG endorse the updated SAGE Roadmap?
2. If yes, how can countries of the Americas adapt the SAGE Roadmap based on their current:
 - a. Vaccination coverage rate among the different priority groups
 - b. National policy on booster dose
3. If yes, how can PAHO support the TAG's recommendation on the use of COVID-19 vaccine in priority groups of the Americas (primary series and booster doses)?
4. If no, what is TAG's recommended strategy for COVID-19 vaccine prioritization in the Americas?

Recommendations

1. In July 2021, the TAG declared that the Region was facing an impending crisis around vaccination services, and that ongoing attention must be given to sustaining and strengthening immunization, epidemiological surveillance, and other essential health programs. The Region continues to report its lowest levels of vaccination coverages for measles and DPT3 in the last 10 years. Also, Polio3 coverage for the Region in 2020 was only 82%, which is the lowest reported coverage since polio eradication in the Americas in 1994. Furthermore, the rate of reported AFP cases/100,000 children decreased by 39% in 2020 when compared to 2019. The Region's risk of outbreaks of previously controlled vaccine-preventable diseases is at its highest during the last 30 years, in the event of continuous measles/rubella transmission, WPV/VDPV importation or VDPV emergence. While countries must continue to manage the COVID-19 vaccine roll-out, they must reinvestigate their national immunization programs to close vaccine coverage gaps, reach all eligible persons, and promote the benefits of vaccinations for universal health. Failure to act now will result in outbreaks and continued low coverages of vaccines, which will significantly damage health and economies.
2. Considering the anticipated intensified influenza activity in the Northern and Southern Regions of the Americas in 2022, countries using the vaccine composition for the Southern hemisphere should carefully plan and implement influenza vaccination activities in the first quarter of 2022. These activities should include the Vaccination Week in the Americas, which has proven to be a strong platform to achieve high vaccination coverage rates against influenza across age groups.
3. After two years of almost exclusive focus on COVID-19 response operations, many indicators of healthcare performance, access and quality of services have declined. If this decreasing trend continues, further impacts in services and healthcare staff burn-out are anticipated, resulting in

further burden and loss of life from various health conditions. The TAG urges countries to start considering the potential need for longer term COVID-19 vaccination operations, to start strategic planning now, and to ensure the integration of COVID-19 vaccination activities in the routine national immunization programs.

4. The TAG commends countries and their health staff and frontline workers for their concerted response to the COVID-19 pandemic and the roll out of COVID-19 vaccines. The Region of the Americas has succeeded in achieving 64.5% of their population being fully vaccinated by 11 February 2022. However, 14 countries of the Americas did not reach 40% COVID-19 vaccine coverage by 31 December 2021, leaving large portions of their population at risk for severe disease, hospitalization, and death due to COVID-19.
5. The TAG strongly urges PAHO and other partners and stakeholders to provide additional financial and technical support to countries with low vaccination coverage rates. This support may include the provision of COVID-19 vaccine doses, technical support and deployment of personnel to support vaccine roll-out operations and provide relief to already exhausted field staff, purchase and maintenance of cold chain equipment, training activities to expand the health work force. Also, TAG recommends that PAHO and other technical partners expand field assessments and community engagement operations to understand the root cause of low COVID vaccine uptake.
6. The TAG endorses the WHO-SAGE Roadmap for prioritizing use of COVID-19 vaccines, in its most recent update from 21 January 2022, as an approach to optimize the global impact of COVID -19 vaccines, based on public health goals, global and national equity, and vaccine access and coverage scenarios, and emphasizes the following guidance:
 - a. Countries with low rates¹ of primary series coverage should first achieve high primary series coverage rates among the higher-risk priority groups (i.e., older adults, health workers and immunocompromised persons) before offering vaccine doses to lower risk priority groups.
 - b. Countries with moderate-to-high primary series coverage rate in higher-risk priority groups should usually prioritize available vaccine supply to first achieve high booster dose coverage rates in higher risk priority groups before offering vaccine doses to lower priority groups.
7. The TAG notes with concern that many countries do not collect information on the age and population subgroup of vaccinated persons. Therefore, the TAG strongly recommends that countries collect and compile COVID-19 vaccination data with stratification by age, sex and geographic area. The collection of other descriptors (e.g., health care workers, pregnant women) will enable further refinement of programmatic activities and guide vaccine prioritization operations. All required data points should be included in the COVID-19 vaccination electronic joint report form (eJRF) form that they already share weekly with PAHO.

¹ Specific coverage thresholds are not provided, as countries may have different abilities to reach these populations. As general guidance, very high coverage in the very high and high priority groups would be above 70%, and low coverage below 10%.

WHO/2019-nCoV/Vaccines/SAGE/Prioritization/2022.1: WHO-SAGE Roadmap

8. Pregnant women have been identified among the groups at high risk for severe disease and death from COVID-19, and COVID-19 burden in pregnant and lactating women in the Region is significant. The WHO-SAGE Roadmap reinforces that target women are a high-priority group for COVID-19 vaccination. Yet, vaccination rates for this particular priority group remain low across the Region. The TAG urges Member States to refocus efforts to vaccinate pregnant women, including pregnant adolescents.
9. Almost all countries of the Americas have introduced COVID-19 booster doses for selected population groups. The TAG welcomes the publication of the updated WHO-SAGE Roadmap for prioritizing COVID-19 vaccines and offers additional guidance for the timing and use of booster doses in countries of the Americas.
 - a. Countries with low to medium vaccination coverage rate¹: All efforts should be made to achieve high coverage with a primary series and booster among highest-and high-risk groups.²
 - b. Countries with high to very high vaccination coverage rate¹:
 - Countries that introduced a booster dose policy for all persons aged 18 or older should conduct a subnational analysis of the vaccination coverage rates by risk priority groups to ensure that highest and high priority groups receive a primary vaccination series and a booster.
 - Countries that introduced a booster dose policy for highest risk priority groups only should conduct national and subnational analyses to determine when and how to expand the use of booster doses in the national COVID-19 vaccination strategy.
10. The TAG salutes the support of donor countries, which contributed more than 28 million COVID-19 vaccine doses to the Americas and continue to provide financial support for various activities required for COVID-19 vaccine roll-out. On behalf of the people of the Americas, the TAG recognizes the important contributions of the United States, Spain, Canada, France, Germany, Japan, Sweden, Norway, and Denmark.
11. The TAG recognizes PAHO's strong technical support on COVID-19 vaccine deployment and introduction in 2021 and urges the Organization to maintain its high level of engagement.
12. The children of the Americas continue to face the worst educational crisis of the last century, with millions of children yet to return to the classroom. The TAG strongly urges countries to reopen schools and resume in-person learning, while reinforcing recommended public health and social measures (such as mask wearing, social distancing and ensuring adequate ventilation). Teachers and educational personnel are among high-priority groups for COVID-19 vaccination and should be prioritized for vaccination. The TAG echoes the words of the WHO's General Director and

² Highest priority-use: Older adults; Health workers; Immunocompromised persons; High priority-use: Adults with comorbidities; Pregnant persons; Teachers and other essential workers; Disadvantaged sociodemographic subpopulations at higher risk of severe COVID-19

PAHO's Director, as well as UNICEF recommendations in stating that vaccination of children and adolescents should not be a prerequisite for school reopening.

13. Regardless of the SARS-CoV-2 variant of concern in circulation, non-pharmaceutical public health and social measures continue to be effective and recommended strategies to reduce virus transmission and minimize the burden of COVID-19 in the society. The TAG urges countries to maintain these measures and integrate them into the national response strategy as one of the most important tools to mitigate the impact and minimize the effects of the pandemic.

Recommendations for the Revolving Fund

1. The TAG recognizes the efforts made by the COVAX Facility to support global and regional access, allocation and deployment of COVID-19 vaccines. However, TAG urges the COVAX Facility to take advantage of the mechanisms of the Revolving Fund to deliver vaccine doses to the countries of the Americas.
2. With improved supply of COVID-19 vaccine doses expected to be available in 2022, and the potential for shifting from a supply-based to a demand-based allocation approach, the TAG urges Member States to work in close partnership with the PAHO Revolving Fund and its technical units to evaluate national vaccine demand, monitor absorption and service delivery dynamics.
3. As countries advance with COVID-19 vaccination, TAG reinforces the importance of PAHO Member States transitioning their supply sources from bilateral agreements to the procurement of WHO-approved COVID-19 vaccines through the PAHO Revolving Fund, to achieve improved economies of scale for the mutual benefit of the countries and reinforce Pan-Americanism and Solidarity, as it is the case with other vaccines.
4. TAG urges Member States to improve immunization supply chain systems and cold chain infrastructure to ensure effective delivery of COVID-19 and other vaccines. Investing in better immunization supply chains along with achieving sustainable and affordable access to routine vaccinations and will be critical to advancing pandemic preparedness. TAG also urges Member States to seek active support from PAHO technical units and the Revolving Fund for immunization supply chain strengthening.

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