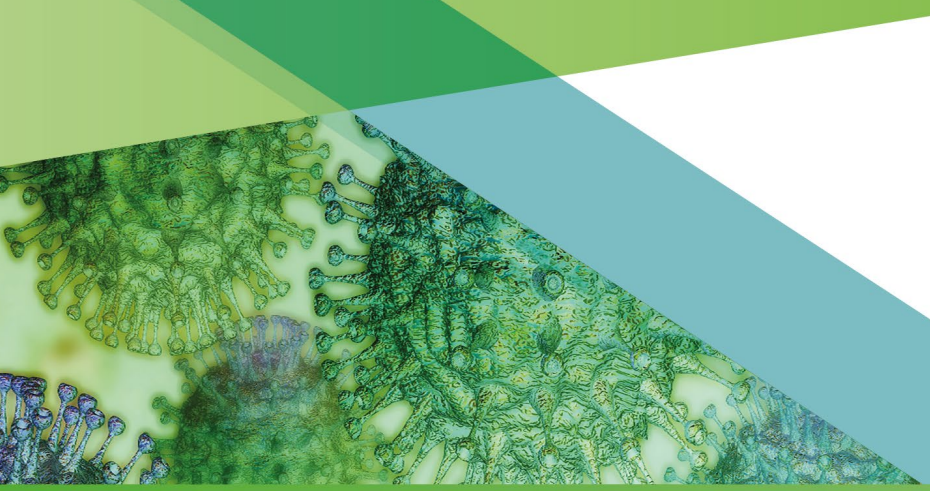


TECHNICAL REPORT

# Overview of the implementation of COVID-19 vaccination strategies and deployment plans in the EU/EEA

31 January 2022

## Key messages

This report provides an updated overview of the progress with national COVID-19 vaccination strategies and deployment in European Union/European Economic Area (EU/EEA) countries, including updates on:

- overall vaccine uptake and uptake by target group;
- vaccination strategies and policies;
- challenges and good practice with the roll-out, including vaccine acceptance and uptake.

### Vaccine COVID-19 roll-out overview

- As of 23 January 2022, over 827 million vaccine doses have been administered in the EU/EEA, 317 million people have completed the primary vaccination course and over 198 million individuals have already received a vaccine dose in addition to the primary course (all 30 countries reporting).
- Since the start of COVID-19 vaccine deployment in December 2020, the cumulative vaccine uptake in the total population in the EU/EEA has reached 70% (range: 28.7–83.5%) for the complete primary course and 42.6% (range: 7.4–62.9%) for an additional dose, while among adults (aged 18 years and older) the cumulative vaccine uptake reached 81.4% (range: 34.3–94.5%) for the complete primary course and 51.8% (range: 9.1-79.6%) for an additional dose (pooled data from 30 reporting countries). However, progress differs across countries, with three countries still reporting less than 50% of the total population having completed the primary vaccination course (Bulgaria, Romania and Slovakia).
- As vaccine campaigns expand to younger age groups and to rapidly provide additional doses to eligible individuals, the median uptake of full vaccination with a completed primary course among older adults aged 60 years and above has reached a plateau at just above 90%. However, uptake is still slowly increasing among younger adults (90.8% in those aged 60+ years; 73.3% in 18–24 year-olds; 78% in 25–49 year-olds; 85.1% in 50–59 year-olds; 28 countries reporting), as well as in eligible adolescents and children (18.6% in those aged under 18 years, 29 countries reporting; 70.2% in 15–17 year-olds and 34.8% in 10–14 year-olds, 17 countries reporting). Among older adults aged 60 years and over the median uptake for an additional dose has already reached 78.4% (range: 11.8–96.1%; 28 countries reporting).

Suggested citation: European Centre for Disease Prevention and Control. Overview of the implementation of COVID-19 vaccination strategies and deployment plans in the EU/EEA. 31 January 2022. Stockholm: ECDC; 2021.

Stockholm, January 2022

## Vaccination strategies and policies during roll-out

- All EU/EEA countries offer vaccination to those aged 12 years and over and 23 countries (of the 26 countries who responded) are offering to all children 5–11 years.
  Twenty-two countries recommend specific COVID-19 vaccine products for particular population groups. The adaptation is mainly based on age-specific recommendations for Vaxzevria, Spikevax and COVID-19 Vaccine Janssen.
- All 30 countries recommend an additional primary dose as an extension of the primary course for those with weakened immune systems and all countries are recommending a booster dose to different population groups to improve protection in individuals whose immunity may wane after completing the primary course[1]. Most EU/EEA countries (19/30) are recommending booster doses for all adults 18 years and over while one country is recommending them to priority groups, including those aged 40 years and over. For younger age groups, a total of ten countries are recommending boosters for adolescents.
- Nineteen countries have changed their vaccination strategy in light of the circulation of the Omicron variant of concern (VOC), with the majority of countries having reduced the timing for administration of the booster dose after completion of the primary course and enhanced risk communication initiatives.
- In the majority of countries vaccination is not mandatory. Six countries have mandatory vaccination in place for different population groups, in particular for healthcare workers and/or workers in long-term care facilities, and two countries are planning to make vaccination mandatory in the future.

## Vaccine acceptance, hesitancy, and uptake

- Many countries are trying to reach those population groups that still have low uptake, such as under-served and vulnerable groups and young people.
- Countries are using a range of strategies to encourage vaccine acceptance and address vaccine hesitancy or increase uptake. These include measures such as mobile and pop-up vaccination teams/clinics; targeted communication strategies; outreach initiatives and intersectoral partnerships for community-based interventions. Some countries have also introduced incentives to be vaccinated and many countries require vaccination certificates in order to gain access to places/events.

The roll-out of national vaccination campaigns is an ongoing process, and this report provides a snapshot of the progress to date.

# Scope of this document

ECDC has previously published seven technical reports on vaccination strategies and vaccine deployment across EU/EEA countries, on 2 December 2020 [1], 1 February 2021 [2], 29 March 2021 [3], 6 May 2021 [4], 14 June 2021 [5], 23 September 2021 [6] and 11 November 2021. This eighth technical report provides an updated overview of the progress with national COVID-19 vaccination strategies in EU/EEA countries, including updates on vaccine uptake overall and by target group; vaccination strategies and policies in place; vaccine acceptance and hesitancy; challenges faced by countries in increasing uptake and good practices to mitigate these challenges.

# Target audience

Target audiences for this document are the European Commission, the Health Security Committee (HSC), the EU/EEA National Immunisation Technical Advisory Groups (NITAGs), national public health institutes and ministries of health in the EU/EEA, and public health experts and decision-makers at sub-national level responsible for implementing vaccine deployment plans.

[1] **Explanation of distinction between 'additional' and 'booster' doses**: booster doses are for people who responded adequately to the primary vaccination series, whereas additional primary doses are for those with weakened immune systems who did not respond adequately to primary vaccination. Booster doses are given to vaccinated people (i.e. those who have completed a primary series of COVID-19 vaccination) to restore protection after it would have waned. On the other hand, additional primary doses may be given to people with severely weakened immune systems as part of a primary vaccination series, since they may not achieve an adequate level of protection from the standard primary vaccination.

# Methods

The information provided in this report was collected from the following sources:

## Integrated Situational Awareness and Analysis report

Questions on vaccines are sent by the European Commission to EU/EEA countries for the Integrated Situational Awareness and Analysis (ISAA) report. The ISAA report is prepared under the Integrated Political Crisis Response Mechanism (IPCR) of the Council of the European Union [7,8].

- Since 9 December 2020, a weekly set of questions has been sent via the ISAA report to representatives of countries, as validating authorities of the IPCR, to gather regular information on various topics related to COVID-19. One section of these questions covers vaccination strategies and deployment. The representatives gather the responses to the questions from different agencies and ministries in their countries.
- This report is based on responses from countries to the vaccine-related questions received between 26 October 2021 and 10 January 2022. Where relevant, data are included from responses provided before October 2021. The response rate from countries to each question is specified in the sections below.
- On 19 January 2021, a draft version of this report was sent to the Health Security Committee Members for verification and validation, and to complement any missing information.

## Data from The European Surveillance System

ECDC has implemented a monitoring system to collect information on vaccine roll-out (the number of doses distributed to EU/EEA countries and administered, including by age groups and other prioritised populations) since mid-January 2021, in conjunction with the World Health Organization's Regional Office for Europe. EU/EEA countries have been reporting data on the COVID-19 vaccine roll-out through The European Surveillance System (TESSy), which can be viewed in the COVID-19 Vaccine Tracker [9] and in the weekly COVID-19 country overviews on ECDC's website [10]. The information on the COVID-19 vaccine roll-out presented in this report is based on the most recent data reported by EU/EEA countries to TESSy and displayed in the Vaccine Tracker as of 23 January 2022 The Vaccine Tracker may be consulted for additional details and country-specific disclaimers on data.

# Results

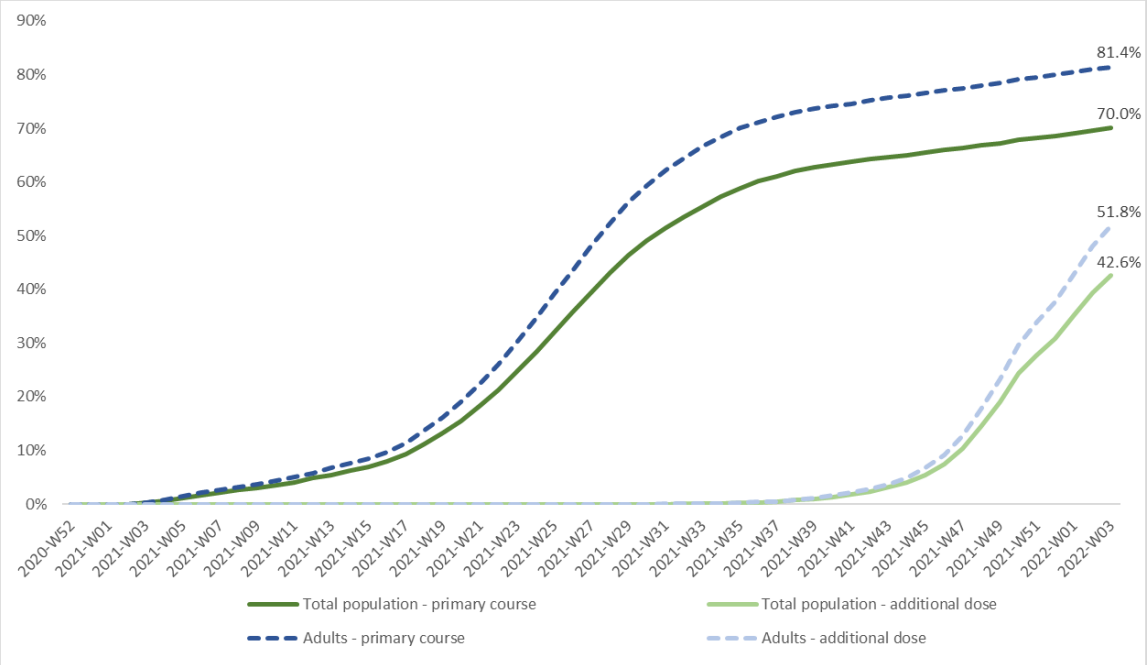
## COVID-19 vaccine roll-out overview

As of 23 January 2022 (week 3, 2022), over 827 million vaccine doses have been administered in the EU/EEA, 317 million people have received a complete primary vaccination course and over 193 million individuals in the EU/EEA have already received a vaccine dose in addition to the primary course (this includes both booster doses and additional primary doses administered as an extension of the primary course, for instance, in severely immunocompromised individuals) [9].

Since the start of COVID-19 vaccine deployment in December 2020 and as of 23 January 2022, the cumulative vaccine uptake in the total EU/EEA population has reached 70% (range: 28.7–83.5%) for the completed primary course and 42.6% (range: 7.4-62.9%) for an additional vaccine dose (pooled data from 30 reporting countries). Among adults (aged 18 years and over) in the EU/EEA, the cumulative vaccine uptake reached 81.4% (range: 34.3–94.5%) for the complete primary course and 51.8% (range: 9.1–79.6%) for an additional vaccine dose (pooled data from 30 reporting countries) (Figure 1) [10].

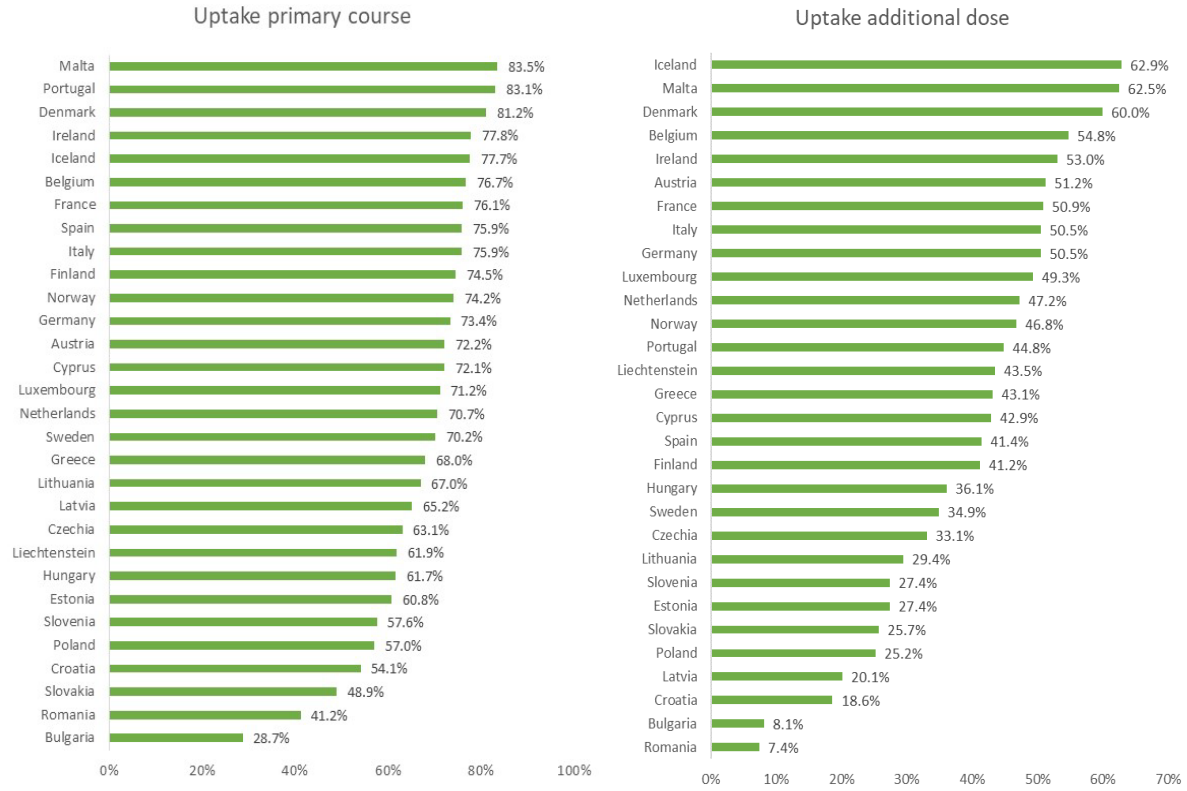
As the cumulative uptake of the primary course is above 80% in the adult population of the EU/EEA, the increase in vaccine uptake in most countries is currently being driven by the administration of the primary course in younger age groups and the rapid deployment of booster and additional doses to eligible individuals. On the other hand, progress continues to vary across EU/EEA countries (Figure 2). It is notable that a few EU/EEA countries are lagging behind, with three still reporting less than 50% uptake of the primary vaccination course in the total population (Bulgaria, Romania and Slovakia).

**Figure 1. Cumulative vaccine uptake of a complete primary course and an additional dose of COVID-19 vaccines among adults (18+ years) and total population in EU/EEA countries as of week 3, 2022**




*Source: TESSy data reported by 30 countries as of week 3, 2022. The total population includes children and adolescents for whom the vaccine is not yet indicated (e.g. under five years) or who may not be included in national target groups yet.*

**Figure 2. Cumulative uptake of a complete primary course and additional dose of COVID-19 vaccines in the total population by EU/EEA country as of week 3, 2022**

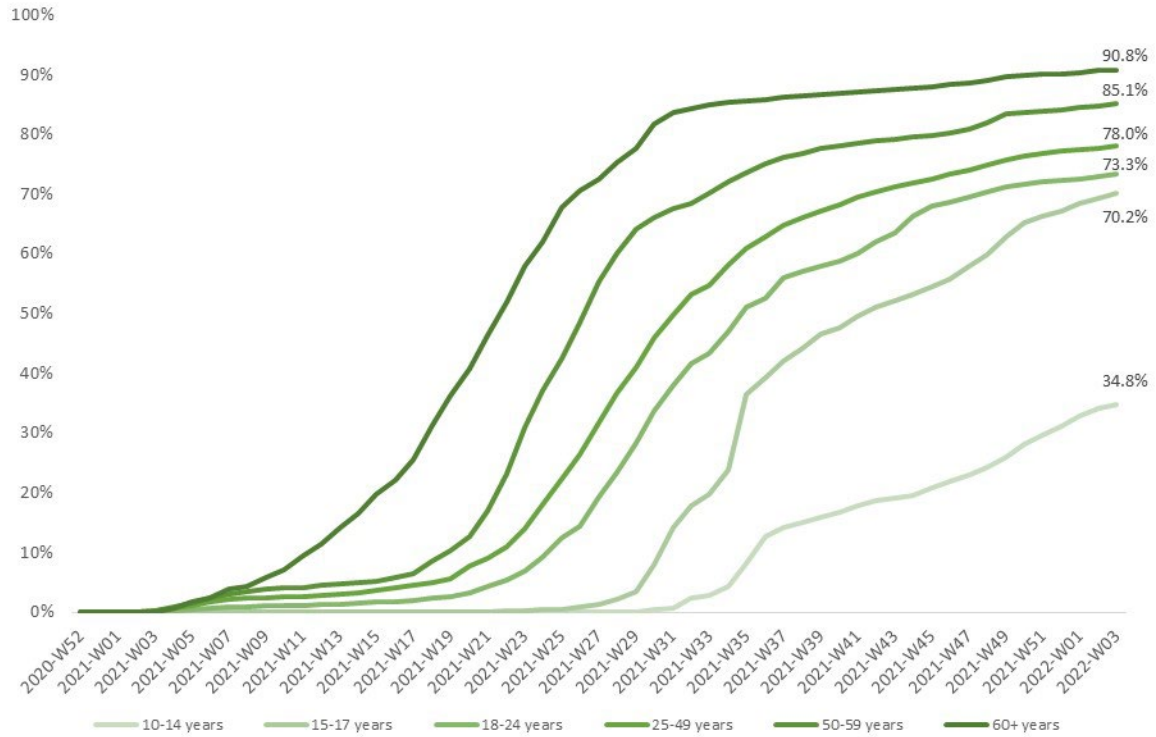



*Source: TESSy; data reported by 30 countries as of week 3, 2022. See the Notes on data in the ECDC Vaccine Tracker for country-specific disclaimers. Note: "additional primary doses" refer to doses administered in addition to the primary course as an extension of the primary course (e.g. in immunocompromised individuals) or a booster dose to individuals who completed the primary course.*

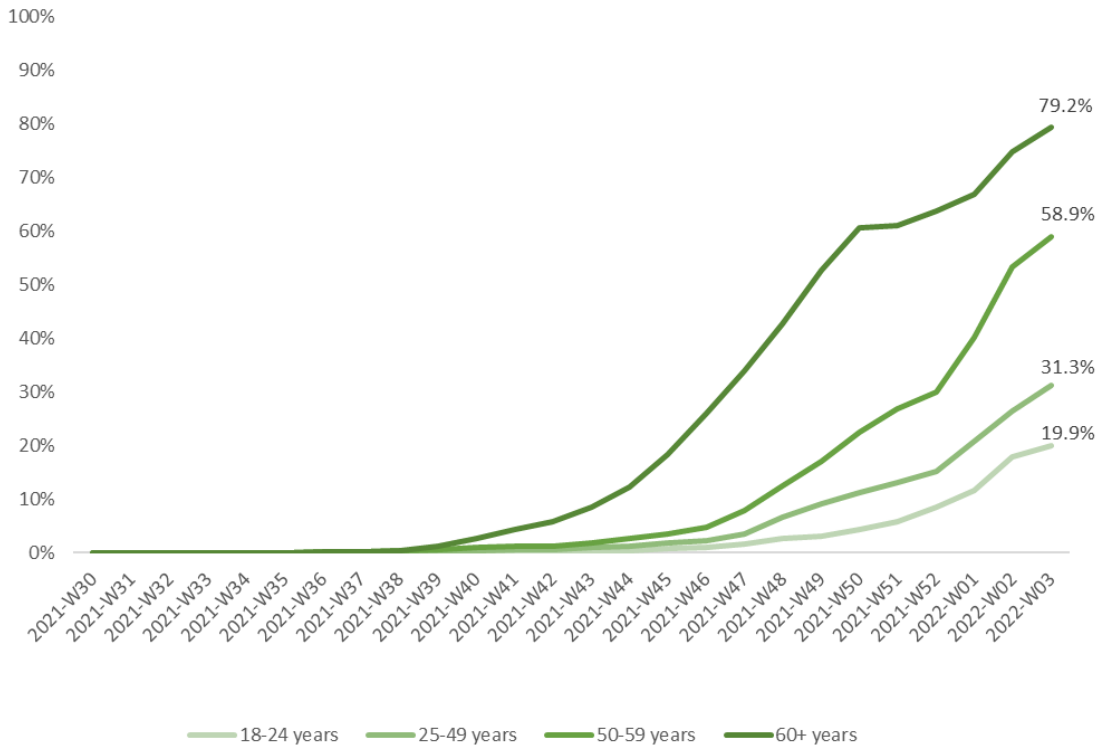
As of 23 January 2022, the median uptake of the primary course among older adults aged 60 years and above in the EU/EEA reached a plateau at just above 90%. However, uptake is still slowly increasing among younger adults, (90.8% in those aged 60+ years; 73.3% in 18–24 year-olds; 78% in 25–49 year-olds; 85.1% in 50–59 year-olds; 28 countries reporting) and in eligible adolescents and children (18.6% for those aged under 18 years, 29 countries reporting; 70.2% in 15–17 year-olds and 34.8% in 10–14 year-olds, 17 countries reporting) (Figure 3). Among older adults aged 60 years and above the median uptake for an additional dose has already reached 78.4% (range: 11.8–96.1%; 28 countries reporting).

**Figure 3. Median cumulative uptake of vaccination with a) a primary course and b) an additional dose by age group in EU/EEA countries, as of week 3, 2022**

**a) Primary course**




**b) Additional dose**




*Source: TESSy data reported by 28 countries as of week 3, 2022 (missing Liechtenstein and the Netherlands); for age groups 10–14 and 15–17 years, data are available for 17 countries (Belgium, Bulgaria, Estonia, France, Germany, Hungary, Italy, Liechtenstein, Malta, the Netherlands, Norway, Romania and Slovenia are missing).*

Table 1 shows a summary of the cumulative uptake of the primary course and additional dose in the total population, adults (18+ years), elderly (60+ years) and individuals under 18 years. More information on the COVID-19 vaccine roll-out in EU/EEA countries can be found on the ECDC Vaccine Tracker [9] and in the weekly COVID-19 country overviews [10].

**Table 1. Summary table of COVID-19 vaccine uptake by target population as of week 3, 2022**

| Vaccine uptake | Uptake (range) | Reporting countries |
|---|---|---|
| Primary course in the total population | 70% (range: 28.7–83.5%) | All 30 EU/EEA countries. |
| Additional dose in the total population | 42.6% (range: 7.4–62.9%) | All 30 EU/EEA countries. |
| Primary course among adults (18+ years) | 81.4% (range: 35–94.5%) | All 30 EU/EEA countries. |
| Additional dose among adults (18+ years) | 51.8% (range: 9.1–79.6%) | All 30 EU/EEA countries. |
| Primary course among people aged 60+ years (median) | 90.8% (range: 36.9–100%) | 28 (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden). |
| Additional dose among people aged 60+ years (median) | 78.4% (range: 11.8–96.1%) | 28 (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden). |
| Primary course among those under 18 years (median) | 18.6% (range: 0.0–41.2%) | 29 (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden). |

**Source: TESSy; data reported as of week 3, 2022.*

# Vaccination strategies and policies during roll-out

Countries continue to adapt vaccination strategies and policies based primarily on the changing epidemiological situation at country and sub-national level, vaccine supply, new information regarding the efficacy of the various COVID-19 vaccines, safety, effectiveness and new evidence on the virus and its impact on human health.

The vaccination policies captured in this section include vaccination of adolescents aged 12–17 years and children 5–11 years; recommendation for vaccination for pregnant women; timing between doses; recommendation for vaccination in those previously infected; recommendations regarding vaccine products for age or target groups; recommendations for an additional primary vaccine dose or a booster dose; administration of a heterologous combination of vaccine doses; changes in vaccination strategies in light of the Omicron VOC; mandatory vaccination and use of vaccination certificates.

## Priority groups defined for vaccination

Due to the limited availability of COVID-19 vaccines at the start of vaccination campaigns, most countries opted to prioritise vaccination for those individuals at greatest risk of severe disease (e.g. the elderly and residents in long-term care facilities), as well as healthcare workers. Vaccination phases differed by country, ranging from two to 16 different phases, depending on their specific prioritisation strategies and vaccine availability.

As vaccines have become widely available, all countries have now opened vaccination to the general population and are no longer in the prioritisation phase of vaccinating only those at risk of severe disease and healthcare workers. All responding countries have now opened vaccination to those aged 12 years and over, based on current indications for use of the available mRNA-based COVID-19 vaccines: Comirnaty and Spikevax.

## Vaccination of 12–17-year-olds

All reporting countries are now recommending vaccination for all 12–17-year-olds.

**Table 2. Countries recommending vaccination of 12–17-year-olds (n=30)**

| Vaccination of adolescents aged 12–17 years | Countries |
|---|---|
| Yes, for all adolescents. | Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Liechtenstein, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden. |

All responding countries report that the vaccination of adolescents is taking place, and several countries provided details of where the vaccinations are taking place. All countries are offering adolescent vaccination at vaccination centres, with GP clinic/family doctors as the second most popular option. Some countries also offer vaccinations at schools, hospitals, paediatric clinics, mobile vaccination sites or pharmacies.

## Vaccination of children aged 5-11 years

Following authorisation of a lower dose of Comirnaty for children aged 5 to 11 years by the European Medicines Agency (EMA) [11], 23 of the 26 responding countries report that they are currently recommending vaccination for all children aged 5–11 years. Three countries are only recommending vaccination for those children aged 5–11 years with risk factors.

**Table 3. Countries recommending vaccination of children aged 5–11 years (n=25)**

| Vaccination under the age of 12 years | Countries |
|---|---|
| Yes, for all children. | Austria, Belgium, Bulgaria, Cyprus, Czechia, Denmark, Estonia, Greece, Hungary, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain. |
| Yes, but only for children with risk factors. | Finland, Germany, Sweden. |

The majority of the responding countries are following the EMA authorised indication using Comirnaty for this age group; two doses given with a three-week interval between dose one and dose two. In Spain children aged 5 to 11 years are recommended two doses of the Comirnaty paediatric formulation, with an interval of eight weeks and upwards between doses (to achieve a better immune response and safety profile). Norway report that two doses of

vaccine with 8–12 week interval is being recommended for children with severe underlying conditions, and the vaccine is being made available for healthy children in the same age group if parents would like to vaccinate their children. In Portugal, children aged 5–11 years are recommended two doses of the Comirnaty paediatric formulation, with an interval of six to eight weeks in between.

**Table 4. Locations/sites providing vaccinations for children aged 5–11 years (n=25)**

| COVID-19 vaccination sites for children aged 5–11 years | Member States |
|---|---|
| Vaccination centres | Austria, Belgium, Bulgaria, Cyprus, Czechia, Denmark, Estonia, Finland, Germany, Greece, Ireland, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Iceland, Norway. |
| Schools | Austria, Finland, Spain*. |
| Paediatric clinics | Austria, Estonia, Germany,Greece, Latvia, Lithuania, Poland, Slovakia, Slovenia. |
| GP clinics/family doctors | Austria, Denmark, Estonia, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Poland. |
| Hospitals | Austria, Bulgaria, Estonia, Hungary, Latvia, Luxembourg, Malta, Poland, Slovakia, Slovenia, Spain. |
| Local health centres | Slovenia. |
| Pharmacies | Ireland. |

*Spain and Austria: only some regions are offering vaccination in schools.*
*Austria: only some regions are offering vaccination in hospitals.*

# Recommendation of primary vaccination for pregnant women

All 30 responding countries recommend vaccination for pregnant women. Ten countries reported that they recommend vaccination after the first trimester (Austria, Croatia, Czechia, Denmark, France, Germany, Iceland, Liechtenstein, Norway and Portugal). Twenty-two countries report that they recommend vaccination with one of the currently authorised mRNA vaccines (Comirnaty or Spikevax) (Austria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Malta, the Netherlands, Norway, Portugal, Slovakia (Comirnaty), Slovenia and Spain).

**Table 5. Recommendation of vaccination for pregnant women (n=30)**

| Vaccination recommended for pregnant women | Countries |
|---|---|
| Yes, any of the vaccine products are recommended. | Poland, Romania |
| Yes, but only certain vaccine products are recommended. | Austria, Belgium, Bulgaria, Croatia, Czechia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden. |

# Recommendation of COVID-19 primary vaccination in individuals previously infected with SARS-CoV-2

Based on the most recently reported information, 17 countries currently recommend the full primary vaccination schedule for people who have previously been infected, while 13 countries recommend only one dose (for vaccines with a two-dose schedule).

**Table 6. Recommendations of COVID-19 vaccination in individuals previously infected (n=29)**

| Recommended vaccination dose for individuals previously infected with SARS-CoV-2 | Countries |
|---|---|
| Full vaccination course. | Belgium, Bulgaria, Cyprus, Czechia, Denmark, Hungary, Ireland, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Romania, Poland, Slovakia, Slovenia, Sweden. |
| One dose (for those vaccines that have a two-dose regimen). | Austria*, Croatia, Estonia^, Finland France, Germany, Greece, Iceland, Italy, Latvia, Norway, Portugal^, Spain. |

** A second dose may be administered in accordance with the EMA Summary of Product Characteristics (SmPC) if there is a need (e.g. problems entering a country that requires two doses even from those who have recovered from COVID-19). Otherwise, a second dose is recommended, but only as of four months after the first dose.*
*^ A second dose may be administered if there is a need (e.g. problems entering a country that requires two doses even from those who have recovered from COVID-19).*

# Recommendations of specific COVID-19 vaccine products to any target group/age group

Six of the 28 responding countries follow the EMA Summary of Product Characteristics (SmPC) for all vaccines (Bulgaria, Hungary, Latvia, Lithuania, Poland, Romania), whereas twenty-two countries recommend specific COVID-19 products to certain target and/or age groups, mainly relating to the use of Vaxzevria and/or COVID-19 Vaccine Janssen only in older age groups above a certain age. Nine countries have suspended or paused the use of certain COVID-19 vaccine products in their vaccination campaigns: Vaxzevria is not being used in Denmark, Malta, the Netherlands or Norway. COVID-19 Vaccine Janssen is not being used in Denmark, Finland or Sweden and in Norway it is not being used routinely (only in specific situations). The use of Spikevax has been paused in Sweden for anyone born 1991 or later and in Finland Spikevax is not given to men under 30 years. In Iceland, Spikevax has been paused and is only being used for booster doses in individuals over 60 years. Spikevax has been temporarily suspended in Slovenia, and in Austria, France, Germany and Norway Spikevax is only recommended for those aged 30 years and over.

**Table 7. Details of country recommendations for specific COVID-19 vaccine products in specific age or target groups (n=22)**

| Country | Comirnaty | Spikevax | Vaxzevria | COVID-19 Vaccine Janssen |
|---|---|---|---|---|
| Austria | Preferably recommended for pregnant women. | ≥30 years | | |
| Belgium | | | ≥41 years | ≥41 years |
| Croatia | | | ≥50 years | |
| Cyprus | Recommends preference for mRNA vaccines in individuals <50 years. | Recommends preference for mRNA vaccines in individuals <50 years. | Not recommended for individuals with thrombotic/thrombocytopenia syndrome. | Not recommended for individuals with previous capillary leak syndrome. |
| Denmark | | | Vaccine no longer used but can be given to people who want it after consultation with a doctor. | Vaccine not used but can be given to people who want it after consultation with a doctor. |
| Estonia | | | ≥50 years | ≥18 years |
| Finland | | Men ≥30 years | Vaccine no longer used. | ≥65 years |
| France | | ≥30 years | ≥55 years | ≥55 years |
| Germany | From the age of five years and upwards. The only vaccine recommended for pregnant women. | ≥30 years | ≥60 years | ≥60 years |
| Greece | | | ≥60 years | |
| Iceland | | Stopped use other than for booster doses or individuals >60 years. | >55 years women<br>>40 years men<br>without risk factors that increase the risk of thrombosis. | |
| Ireland | | | ≥50-69 years;<br>not recommended for pregnant women. | ≥50-69 years;<br><50 years if two-dose vaccine not feasible.<br>Not recommended for pregnant women. |
| Italy | | | ≥60 years | ≥60 years |
| Latvia | Recommended for adolescents and young adults (12-25 years). | Recommended for adolescents and young adults (12-25 years). | | |
| Luxembourg | mRNA vaccine for people under <30 years and pregnant women.<br>For people aged 30-54 years at risk of severe COVID-19, preference should be given to mRNA vaccines, if available. | mRNA vaccine for people under <30 years and pregnant women.<br>For people aged 30-54 years at risk of severe COVID-19, preference should be given to mRNA vaccines, if available. | Those aged 30–54 years can register to be voluntarily vaccinated.<br>≥55 years | ≥30 years |

| Country | Comirnaty | Spikevax | Vaxzevria | COVID-19 Vaccine Janssen |
|---|---|---|---|---|
| Malta | Recommended from five years. | Recommended from 12 years. | Not being used. | ≥18 years |
| The Netherlands | Recommended for pregnant women. | Recommended for pregnant women. | Not used in current vaccination programme. | Only on explicit request for people ≥ 18 years (pregnant women are excluded and risk groups are advised to be vaccinated with an mRNA vaccine). |
| Norway | | ≥30 years | Not used | Only used in specific situations |
| Portugal | | | ≥ 60 years | Recommended for all people ≥50 years and only for males <50 years |
| Slovenia | Recommended for those under 30 years. | | Only recommended in the event of contraindication of other vaccines or on explicit request from the individual. | Temporarily suspended |
| Spain | Recommended for the elderly (≥70), pregnant women, individuals with high-risk conditions. For other age groups – according to availability. | Recommended for elderly (≥70), pregnant women and individuals with high-risk conditions. For other age groups – according to availability. | ≥60 years | Recommended primarily for those > 40 years and for socially vulnerable groups |
| Sweden | | Paused for individuals born 1991 or later. | ≥65 years | Suspended. |

## Additional primary dose and booster dose recommendations

Booster doses are for people who responded adequately to the primary vaccination series, whereas additional primary doses are for those with weakened immune systems who did not respond adequately to primary vaccination. Booster doses are given to vaccinated people (i.e. those who have completed a primary series of COVID-19 vaccination) to restore protection after it would have waned. On the other hand, additional primary doses may be given to people with severely weakened immune systems as part of a primary vaccination series, since they may not achieve an adequate level of protection from the standard primary vaccination.

All 30 countries recommend an additional primary dose as an extension of the primary vaccination course for those with weakened immune systems. They are also recommending booster doses for waning immunity to different age groups. In the previous report, the majority of countries were recommending a booster dose for those most vulnerable to severe disease and death (i.e. residents in long-term care facilities and the elderly). Most EU/EEA countries (19/30) are now recommending booster doses for all adults aged 18 years and over and one country is recommending them for priority groups including those aged 40 years and over. For younger age groups, ten countries are recommending boosters for adolescents. In particular, two countries are recommending boosters to all those aged 16 years and over (Iceland and Ireland) and eight countries are recommending them to all those aged 12 years and over (Austria, France, Germany, Hungary, Italy, Liechtenstein, Luxembourg and Romania).

**Table 8. Details of recommendations for an additional dose and/or a booster dose (n=30)**

| Country | Recommendation of an additional primary vaccine dose and booster dose | Population groups are currently indicated | Homologous or heterologous regimen | Timing of additional primary dose and booster dose |
|---|---|---|---|---|
| Austria [12] | Additional primary dose and booster dose | **Additional primary dose:**<br>- Immunocompromised/ immunosuppressed individuals ≥5 years of age,<br>**Booster dose**:<br>Recommended to all people ≥12 years.<br>Individuals 5−11 years of age only if immunocompromised and after individual risk-benefit-evaluation with physician.<br>Additional fourth vaccine dose for immunocompetent individuals is not generally recommended due to lack of scientific data, but can be considered in high-risk and system-relevant settings following individual risk-benefit-evaluation with physician and at the explicit request of the person to be vaccinated. | mRNA vaccine. Generally, homologous mRNA schedules are preferable. However, in individuals <30 years Comirnaty should be used exclusively.<br>Individuals who received one dose of COVID-19 Vaccine Janssen should preferably receive an mRNA-vaccine as a second dose, although in this case administration of COVID-19 Vaccine Janssen is also possible. | **Additional primary dose:** at least 28 days after second dose. In the event of negative neutralising antibody test four weeks after third dose, administration of fourth dose is recommended.<br>**Booster dose**: Individuals aged 18 and above: as of four months after the second dose; persons aged 12 to 17 years: as of six months after the second dose.<br>After one dose with COVID-19 Vaccine Janssen a second dose is recommended as of 28 days after the first dose (preferably with mRNA-vaccine), COVID-19 Vaccine Janssen can also be used again for the second dose, in this case an interval of at least two months between the first two doses is recommended and a third dose at the above-indicated intervals (four months) is also recommended for people vaccinated with COVID-19 Vaccine Janssen.<br>Additional fourth doses can be considered as of six months after third dose in high-risk and system-relevant settings, following individual risk-benefit-evaluation with physician and at the explicit request of the person to be vaccinated. |
| Belgium [13] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose**:<br>Recommended for all those ≥18 years. | mRNA vaccine | **Additional primary dose:** at least 28 days after second dose<br>**Booster dose**: At least four months after primary vaccination with mRNA-based vaccines; four months after primary vaccination with Vaxzevria; two months after single dose of COVID-19 Vaccine Janssen |
| Bulgaria [14] | Additional primary dose and booster dose | **Additional primary dose**:<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended to all those people ≥18 years but prioritised and currently recommended for long-term care facility (LTCF) residents, healthcare workers, individuals aged >65 years. | mRNA vaccine | **Additional primary dose:** at least 28 days after second dose.<br>**Booster dose**: at least three months after primary vaccination. |
| Croatia [15] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years. | mRNA vaccine | **Additional primary dose:** at least eight weeks after second dose.<br>**Booster dose**: at least three months after primary vaccination; two months after single dose of COVID-19 Vaccine Janssen. |
| Cyprus [16] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose**:<br>Recommended for all those ≥18 years. | mRNA vaccine<br>Those who received the COVID-19 Vaccine Janssen may receive a homologous booster or an mRNA one. | **Additional primary dose**: at least four weeks after second dose.<br>**Booster dose**: at least five months and two weeks after primary vaccination. |
| Czechia [17] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose**:<br>Recommended for all those ≥18 years but prioritised and currently recommended for- people aged >60 years, LTCF residents and staff, healthcare workers and people with chronic conditions at risk of severe COVID-19 disease. | mRNA vaccine | **Additional primary dose:** at least one month after second dose.<br>**Booster dose**: at least three months after primary vaccination for those >60 years, LTCF residents and staff, healthcare workers and people with chronic conditions. For the rest of the population six months after primary vaccination. |

| Country | Recommendation of an additional primary vaccine dose and booster dose | Population groups are currently indicated | Homologous or heterologous regimen | Timing of additional primary dose and booster dose |
|---|---|---|---|---|
| Denmark [18] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose**:<br>Recommended for all those ≥18 years. | mRNA vaccine | **Additional primary dose**: At least one month after second dose and a maximum of eight months afterwards or at earliest convenience (different timings depending on the risk group).<br>**Booster dose**: at least 140 days after primary vaccination. |
| Estonia [19] | Additional primary dose and booster dose | **Additional primary dose:**-<br>immunocompromised/immunosuppressed individuals.<br>**Booster dose**:<br>Recommended for all those ≥18 years. | mRNA vaccine | **Additional primary dose**: at least one month after second dose.<br>**Booster dose**: At least three months after primary vaccination with mRNA-based vaccines; and Vaxzevria; two months after single dose vaccination with COVID-19 Vaccine Janssen. Recovered individuals – five months after recovery. |
| Finland [20] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose**:<br>Recommended for all those ≥18 years. | Homologous mRNA vaccines | **Additional primary dose:** at least two months after second dose.<br>**Booster dose**: at least three months after primary vaccination.<br>(For those aged 60+ years, a booster dose is recommended 3−4 months after primary course. For those aged 18−60 years, a booster dose is recommended 4−6 months after primary course. For those vaccinated with COVID-19 Vaccine Janssen, a booster dose is recommended two months after primary course). |
| France [21] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥12 years. | mRNA vaccine | **Additional primary dose:** at least one month after second dose.<br>**Booster dose**: at least three months after primary vaccination. |
| Germany [22] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>- individuals who received a single dose of COVID-19 Vaccine Janssen.<br>**Booster dose:**<br>Recommended for all people ≥12 years especially those aged ≥70 years, those with pre-existing conditions, LTCF residents, healthcare workers, those receiving supportive care and nursing services at home. | mRNA vaccine | **Additional primary dose**: at least one month after second dose.<br>**Additional dose COVID-19 Vaccine Janssen**: at least one month after first dose.<br>**Booster dose**: at least three months after primary vaccination. |
| Greece [23] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those aged ≥18 years. | | **Additional primary dose**: at least four weeks after second dose.<br>**Booster dose**: at least three months after primary vaccination. Two months after primary vaccination with COVID-19 Vaccine Janssen. |
| Hungary [24] | Additional primary dose and booster dose | **Additional primary dose/booster dose:**<br>Recommended for all those ≥12 years (initially for children aged 12−17 years with high-risk conditions for COVID-19 infection, followed by all children in this age group). | Heterologous recommended (homologous available) | **Additional primary dose:** at least 28−56 days after second dose.<br>**Booster dose**: at least four months after primary vaccination. |
| Iceland [25] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals<br>- Over 70 years.<br>**Booster dose**:<br>Recommended for all those ≥16 years especially:<br>- LTCF residents and other very vulnerable welfare service recipients ≥60 years, healthcare workers, other people ≥60 years, individuals who received a single dose of COVID-19 Vaccine Janssen. | mRNA vaccine | **Additional primary:** at least three months after second dose.<br>**Booster dose:** at least five months after primary vaccination. |
| Ireland [26] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals aged 12 years or older. | mRNA vaccine | **Additional primary dose**: at least two months after second dose. |

| Country | Recommendation of an additional primary vaccine dose and booster dose | Population groups are currently indicated | Homologous or heterologous regimen | Timing of additional primary dose and booster dose |
|---|---|---|---|---|
| | | **Booster dose:**<br>Recommended for all those ≥16 years especially:<br>- LTCF residents, healthcare workers, all those aged 16−59 years who have an underlying condition. | | **Booster dose:** at least three months after primary vaccination. |
| Italy [27] | Additional primary dose and booster dose | **Additional primary dose**:<br>- immunocompromised people, transplant recipients.<br>**Booster dose:**<br>Recommended for all those ≥12 years. | mRNA vaccine | **Additional primary dose:** at least 28 days after second dose.<br>**Booster dose:**<br>At least four months after primary vaccination |
| Latvia [28] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years. | mRNA vaccine | **Additional primary dose:** one month after second dose.<br>**Booster dose:** at least three months after primary vaccination with mRNA vaccines. Two months after single dose of COVID-19 Vaccine Janssen. Five months after primary vaccination with Vaxzevria. |
| Liechtenstein [29] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥12 years in order of priority:<br>- LTCF retirement home residents and those attending daycare facilities for senior citizens, people ≥65 years<br>- Vulnerable people <65 years<br>- The rest of the population prioritised by descending age cohort. | mRNA vaccine, heterologous vaccination with COVID-19 Vaccine Janssen (i.e. mRNA booster after primary immunisation or COVID-19 Vaccine Janssen booster after mRNA primary immunisation with serious side effects). | **Additional primary dose:** at least 28 days after second dose.<br>**Booster dose**: at least four months after primary vaccination. |
| Lithuania [30] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years. | mRNA vaccine. Those who have been vaccinated with COVID-19 Vaccine Janssen can be vaccinated with second dose of this vaccine. | **Additional primary dose**: at least 28 days after second dose.<br>**Booster dose:** At least four months after primary vaccination with Comirnaty; at least six months after primary vaccination with Spikevax; four months after single dose of COVID-19 Vaccine Janssen. |
| Luxembourg [31] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥12 years. | mRNA vaccine | **Additional primary dose:** according to a schedule of first dose at 0, second dose at four weeks, third dose at 12 weeks<br>**Booster dose:**<br>At least three months after primary vaccination with mRNA-based vaccines; four months after primary vaccination with Vaxzevria; one month after single dose of COVID-19 Vaccine Janssen |
| Malta [32] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>- Over 65 years.<br>**Booster dose:**<br>Recommended for all those >18 years | mRNA vaccine | **Additional primary dose**: at least 28 days after second dose.<br>**Booster dose:** at least three months after primary vaccination. |
| The Netherlands [33] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years. | mRNA vaccine | **Additional primary dose**: at least four weeks after second dose.<br>**Booster dose**: at least three months after primary vaccination |
| Norway [34] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals<br>**Booster dose:**<br>Recommended for LTCF residents, healthcare personnel, those aged ≥45 years, ≥18 years in risk groups.<br>- Made available for the rest of the population aged 18-44 years. | Heterologous and homologous | **Additional primary dose**: at least four weeks after second dose.<br>**Booster dose:** At least 20 weeks after primary vaccination with mRNA-based vaccines; 8−12 weeks after single dose of COVID-19 Vaccine Janssen.<br>At least 3 month interval for immunocompromised/immunosuppressed individuals having received 3 doses according to the primary schedule. |

| Country | Recommendation of an additional primary vaccine dose and booster dose | Population groups are currently indicated | Homologous or heterologous regimen | Timing of additional primary dose and booster dose |
|---|---|---|---|---|
| Poland [35] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years. | Additional dose: mRNA vaccine.<br>Booster dose: heterologous and homologous. | **Additional primary dose:** at least four weeks after second dose.<br>**Booster dose:** at least five months after primary vaccination; two months after single dose of COVID-19 Vaccine Janssen. |
| Portugal [36] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years prioritised in the following order:<br>- LTCF residents and staff, healthcare workers, those aged 18−39 years with underlying risks, and those aged 40 years or over by decreasing age group, those aged ≥18 years who received a single dose of COVID-19 Vaccine Janssen, those aged 18−39 by decreasing age group. | mRNA vaccine | **Additional primary dose:** three months after second dose (minimum 28 days).<br>**Booster dose:** six months (minimum five months) after primary vaccination for mRNA vaccines and Vaxzevria. Three months after primary vaccination with COVID-19 Vaccine Janssen. |
| Romania [37] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥12 years, especially:<br>- people at high risk of exposure, vulnerable people and on request for those who completed the full vaccination course more than six months ago. | mRNA vaccine | **Additional primary dose**: 28-120 days after second dose.<br>**Booster dose:** at least 180 days after primary vaccination |
| Slovakia [38] | Additional primary dose and booster dose | **Additional primary dose:**<br>- Immunosuppressed/compromised patients (e.g. cancer patients, after transplantation, rheumatoid arthritis, etc.)<br>**Booster dose:**<br>Recommended for all those ≥18 years. | mRNA vaccine | **Additional primary dose:** at least four weeks after second dose.<br>**Booster dose:** At least three months after primary vaccination. |
| Slovenia [39] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years especially:<br>- Residents of LTCF and other social welfare institutions, people aged 50 years and over, particularly vulnerable individuals with certain underlying health conditions, family members of immunocompromised individuals, those with higher occupational exposure, those who received a primary vaccination course with vector vaccines. | mRNA vaccine. Spikevax is recommended only for individuals aged over 30 years. Only if the use of an mRNA vaccine is contraindicated can a vector vaccine be used. | **Additional primary dose**: at least four weeks after second dose.<br>**Booster dose:** at least three months after primary vaccination with mRNA vaccines or mixed schedule; at least two months after primary vaccination with Vaxzevria or COVID-19 Vaccine Janssen. |
| Spain [40] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Currently recommended for:<br>- LTCF residents, social/healthcare workers, individuals ≥40 years, individuals who received a single dose of COVID-19 Vaccine Janssen. | mRNA vaccine | **Additional primary dose**: different timings depending on the risk group: Solid organ transplant recipients: 28 days after second dose.<br>**Booster dose:** at least six months after primary vaccination with mRNA vaccines; at least three months after primary vaccination with Vaxzevria or COVID-19 Vaccine Janssen. |
| Sweden [41] | Additional primary dose and booster dose | **Additional primary dose:**<br>- immunocompromised/immunosuppressed individuals.<br>**Booster dose:**<br>Recommended for all those ≥18 years in order of priority:<br>- LTCF residents, individuals receiving home care, people ≥80 years<br>- Those aged 65-79 years, staff in LTCF for the elderly, staff working in home healthcare and home care.<br>- Those over 18 years requiring assistance and people with risk factors for severe disease,<br>- Those aged 50−64 years<br>- Those aged 18−49 years. | mRNA vaccine | **Additional primary dose**: at least two months after second dose.<br>**Booster dose:** at least five months after primary vaccination. |

*Sources: ISAA survey responses and validation from countries. Rapid desk review of official sources*

**Table 9. Incorporation of the booster dose in the annual seasonal influenza vaccination campaign (n=26)**

| Incorporation of the booster dose in the yearly seasonal influenza vaccination campaign | Countries |
|---|---|
| Incorporation in the annual seasonal influenza vaccination campaign | Austria, Greeece, Hungary, Ireland, Luxembourg, Malta, Portugal, Slovenia, Spain, Sweden. |
| No incorporation in the annual seasonal influenza vaccination campaign | Belgium, Bulgaria, Cyprus, Czechia, Denmark, Estonia, Finland, Latvia, Liechtenstein, the Netherlands, Norway, Poland, Romania. |
| Under discussion | Croatia, Germany, Lithuania. |

Countries provided further details:

- In Germany the incorporation of the booster dose into the annual seasonal influenza vaccination campaign is under discussion. For those eligible now, concomitant use is recommended.
- Ireland has recommended that a booster dose can be given at the same time or at any interval before or after seasonal influenza vaccine.
- In Lithuania it will be possible to be vaccinated against COVID-19, influenza and pneumococcal infection during one visit, according to the latest recommendations from the Lithuanian Society of Infectious Diseases (LID).
- In Malta both vaccinations are offered.
- In Slovenia, both primary vaccination doses and booster doses can be delivered at the same time as the influenza vaccination.
- In Latvia and Luxembourg there will be a two-week interval between influenza vaccination and COVID-19 vaccination.
- Spain reported that they anticipate administering the COVID-19 additional dose and booster dose together with the influenza vaccine, depending on the epidemiological situation and feasibility.
- In Portugal, COVID-19 vaccination, including booster doses, is being provided at the same locations as influenza vaccines, and administration of both is allowed.

# Administration of a heterologous combination of vaccine doses for primary vaccination

Twenty-four countries are administering a heterologous combination of vaccine doses (mixed schedule) for primary vaccination under specific circumstances, with the majority administering Vaxzevria as the first dose, followed by Comirnaty or Spikevax for the second dose. The majority of countries reported that a heterologous combination can be used in the event of adverse reactions following a first dose of vaccination.

Seven countries are routinely recommending an mRNA vaccine as a second dose following a first dose of Vazxevria (Cyprus, Finland, Germany, Ireland, Lithuania, Norway, Slovenia). In Portugal and Spain individuals below the age of 60 years are recommended a second dose of an mRNA vaccine following a first dose of Vaxzevria. Finland reported that Comirnaty is not recommended for men under 30 years. In Sweden for individuals under 65 years who received Vaxzevria as their first dose, an mRNA vaccine is recommended for second dose and individuals under 30 years vaccinated with a first dose of Spikevax are recommended Comirnaty as a second dose.

In Luxembourg it is possible for individuals under the age of 55 years without vulnerability criteria to receive a second dose of an mRNA vaccine following a first dose of Vaxzevria. People are able to choose to have an mRNA vaccine for a second dose. In the Netherlands individuals have the option of receiving an mRNA vaccine as a second dose following a first dose of Vaxzevria. In Greece and Hungary any combination of vaccines is accepted based on the recommendation of a physician. In Norway some people are offered a combination of either of the two mRNA vaccines for dose one and dose two (Comirnaty and Spikevax).

**Table 10. Administration of a heterologous combination of primary vaccine doses (n=30)**

| Country administering a heterologous combination of vaccine doses | Countries |
|---|---|
| Yes | Austria^, Bulgaria, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Liechtenstein, Lithuania, Luxembourg, Malta^, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden. |
| No | Belgium, Czechia, Denmark, Latvia, Romania~, Slovakia~. |

*^ A heterologous combination can be used in the event of adverse reactions that constitute a medical contra-indication for a second vaccine dose with the same vaccine or in the event of pregnancy occurring after the first dose with the second dose regimen of vector vaccine or if the vaccinated person explicitly requests a heterologous schedule.*
*~ A heterologous combination of vaccine doses is only possible in certain cases due to side effects, as indicated by a doctor.*

# Changes in vaccination strategies in light of the Omicron VOC

Of the 20 countries that responded to this question, 19 reported that they have changed their vaccination strategy in light of the circulation of the Omicron VOC with the majority of countries reducing the interval for administering the booster dose after completion of the primary vaccination course. The Netherlands reported that several of the strategies mentioned above had already been put in place prior to increased concern over the circulation of the Omicron VOC. Romania reported that they have not changed their vaccination strategy due to the Omicron VOC.

**Table 11. Changes in vaccination strategies in light of the Omicron VOC (N=19)**

| Changes in vaccination strategies | Countries |
|---|---|
| Reducing the interval for administering the booster dose after completion of the primary series. | Austria, Czechia, Denmark, Estonia, Finland, Greece, Ireland, Latvia, Liechtenstein, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal Slovenia. |
| Enhanced risk communication initiatives to increase uptake of primary series and boosters. | Estonia, Finland, Greece, Hungary, Latvia, Liechtenstein, Luxembourg, Malta, the Netherlands, Portugal, Slovenia. |
| Extending the eligibility criteria for booster doses. | Belgium, Finland, Malta, Portugal, Slovenia, Spain. |
| Re-opening community-based vaccination sites to accelerate deployment of booster doses. | Belgium, Latvia, Lichtenstein, Luxembourg, Malta, Poland, Spain. |
| Re-opening health facility-based vaccination sites to accelerate deployment of boosters. | Hungary, Lichtenstein, Luxembourg, Malta, Spain. |

# Mandatory vaccination

At the start of vaccination campaigns in the EU/EEA, vaccination was not mandatory in any of the countries for any population groups. There are now six countries with mandatory vaccination in place for healthcare workers and/or workers in long-term care facilities (France, Greece, Hungary, Italy, Latvia, Poland). There are some countries specifying that vaccination is mandatory for other groups, including Hungary, where legislation has been introduced to make COVID-19 vaccination mandatory for those working in public education, law enforcement, the military, the civil service and the tax inspectorate. In addition, in Hungary employers have the right to require their employees to get vaccinated. In Latvia, vaccination is mandatory for employees and officials of state and local government institutions, educational staff, medical staff, security and rescue staff, prison staff and those working in specific private institutions. In Lithuania, there are plans to introduce mandatory vaccination against COVID-19 and the government has decided to submit amendments to the Law on the Prevention and Control of Communicable Diseases of the People to the Seimas (Lithuanian Parliament). These amendments will provide for compulsory vaccination for medical and social workers. In Austria, there are plans to implement general mandatory vaccination in February. Vaccination is not mandatory in any other EU/EEA countries.

**Table 12. Mandatory vaccination (n=30)**

| Mandatory vaccination | Countries |
|---|---|
| Yes, for certain population groups. | France, Greece, Hungary, Italy, Latvia, Poland. |
| Planned mandatory vaccination. | Austria, Lithuania. |
| No. | Belgium, Bulgaria, Croatia, Czechia, Cyprus Denmark, Estonia, Finland, Iceland, Ireland, Germany, Liechtenstein, Luxembourg, Malta, the Netherlands, Norway, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden. |

# COVID-19 vaccination certificates

Countries are using vaccination certificates for medical purposes, and the majority are also using them for travel purposes. Several of the responding countries are also using vaccination certificates for access to specific locations/events (e.g. restaurants, museums, concerts, etc.): Austria, Belgium, Bulgaria, Croatia, Cyprus, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lichtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Romania, Slovenia and Spain (officially only in one autonomous region). In Poland a vaccination certificate is not obligatory in order to access specific locations/events but those that do have a certificate are exempt from limitations.

# Current challenges and good practice with vaccine roll-out

## Vaccine uptake and acceptance

It is vital to reach pockets of unvaccinated individuals in order to increase vaccination coverage and protection against severe disease, hospitalisation and death. There is no 'one-size-fits all' approach to increasing vaccination uptake in diverse populations as this is a complex issue and the underlying reasons for lower uptake vary considerably among and within countries. Countries are using several different strategies to increase uptake in their populations.

## Percentage of population who are not yet vaccinated but are willing, uncertain or unwilling to get vaccinated

There were sixteen countries that gave details on the percentage of their population who have not yet been vaccinated but are willing, uncertain or unwilling to get vaccinated. Eight countries said that they did not have this information (Bulgaria, Croatia, Cyprus, Finland, Lithuania, Malta, Romania, Poland). Seven countries reported that there are less than 10% of the population that have not yet been vaccinated and are not willing to get vaccinated (Estonia, Denmark, Germany, the Netherlands, Norway, Spain and Sweden), and five countries report that 10-30% of the population are not yet vaccinated and are not willing to get vaccinated (Austria, Belgium, Czechia, Hungary, Latvia), Slovenia reported 20−30% and Poland around 40% of the population that are not yet vaccinated and not willing to get vaccinated.

In Austria, current research (Austrian Corona Panel Project, December 2021) found that 80% of the population are vaccinated with at least one dose, 1% are unvaccinated but willing, 7% are hesitant, 41% of the unvaccinated population is waiting for the availability of other vaccines and 12% of the population is opposed to vaccination. In Ireland, a vaccine tracker survey indicates that in late 2020, 73% of respondents said that they definitely/probably would get the COVID-19 vaccine. This rose to +90% as the months progressed [42].

**Table 13. Percentage of the population who have not yet been vaccinated but are willing, uncertain or unwilling to get vaccinated (N=16)**

| Countries | Percentage of the population that have not yet been vaccinated but are willing to get vaccinated | Percentage of the population that have not yet been vaccinated and are uncertain if they will get vaccinated | Percentage of the population that have not yet been vaccinated and are unwilling to get vaccinated |
|---|---|---|---|
| Austria | <10% | <10% | 10-30% |
| Belgium | 10-30% | - | 10-30% |
| Czechia | 10-30% | 10-30% | 10-30% |
| Denmark | <10% | <10% | <10% |
| Estonia | <10% | <10% | <10% |
| Germany [43] | <10% | <10% | <10% |
| Hungary | - | 10-30% | 10-30% |
| Latvia[44] | <10% | <10% | 10-30% |
| Luxembourg | - | 10-30% | - |
| The Netherlands [45] | <10%* | <10%** | <10%** |
| Poland[46] | - | - | 40% |
| Portugal | <10% | <10% | - |
| Slovenia | - | - | 20-30% |
| Spain | <10% | <10% | <10% |
| Norway | - | - | <10% |
| Sweden | <10% | <10% | <10% |

**Research by the National Institute for Public Health and the Environment (RIVM) shows that ~1.3% are willing or have made an appointment for COVID-19-vaccination.*
*** In total, 90% willingness for uptake for first vaccination (this percentage includes both those that have been vaccinated or are willing to be vaccinated). Overall, 10% are not yet vaccinated and part of this will be due to hesitancy. This percentage is possibly underestimated.*

# Challenges in increasing vaccine uptake in different population groups

## Healthcare workers and LTCF workers

The majority of countries that responded to this question reported that they were not facing challenges with the increase of uptake in healthcare workers and LTCF workers. Belgium and Croatia reported challenges with the increase of uptake in healthcare workers and six countries reported challenges with the increase of uptake in both healthcare workers and LTCF workers (Austria, Bulgaria, Czechia, Finland, Slovenia, Sweden).

**Table 14. Challenges with increasing vaccine uptake in healthcare workers and/or LTCF workers (n=23)**

| Facing challenges with increasing vaccine uptake in healthcare workers and/or LTCF workers | Countries |
|---|---|
| No challenges to the increase of uptake in these groups. | Cyprus, Denmark, Estonia, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Romania, Spain. |
| Challenges to the increase of uptake in healthcare workers. | Belgium, Croatia. |
| Challenges to the increase of uptake in both healthcare workers and LTCF workers. | Austria, Bulgaria, Czechia, Finland Slovenia, Sweden. |

## Elderly population

Seven of the 23 reporting countries indicated that there were challenges to increasing vaccine uptake among the elderly.

**Table 15. Challenges with increasing vaccine uptake in the elderly population (n=23)**

| Challenges with increasing vaccine uptake in the elderly population | Countries |
|---|---|
| No challenges to increasing vaccine uptake in the elderly population. | Austria, Belgium, Croatia, Cyprus, Denmark, Finland, Germany, Hungary, Iceland, Ireland, Luxembourg, Malta, Portugal, Romania, Spain, Sweden. |
| Yes, facing challenges with increasing vaccine uptake in the elderly population. | Bulgaria, Czechia, Estonia, Latvia, Lithuania, the Netherlands, Slovenia. |

## Young people and children

More than half of the 23 countries who responded to this question are facing challenges with increasing vaccine uptake in young adults and adolescents (approximately 12–35 years of age) and nine countries are facing challenges with increasing vaccine uptake in children over five years.

**Table 16. Challenges with increasing vaccine uptake in young adults and adolescents (approx. 12-35 years) (n=23)**

| Challenges with increasing vaccine uptake in young adults and adolescents | Countries |
|---|---|
| No challenges with increasing vaccine uptake in young adults and adolescents. | Belgium, Bulgaria, Denmark, Iceland, Ireland, Latvia, Malta, Portugal, Romania. |
| Yes, facing challenges with increasing vaccine uptake in young adults and adolescents. | Austria, Croatia, Cyprus, Czechia, Estonia, Finland, Germany, Hungary, Lithuania, Luxembourg, the Netherlands, Slovenia, Spain, Sweden. |

**Table 17. Challenges with increasing vaccine uptake in children 5-11 years (n=17)**

| Challenges with increasing vaccine uptake in children aged 5–11 years | Countries |
|---|---|
| No challenges with increasing vaccine uptake in young adults and adolescents. | Belgium, Germany, Ireland, Luxembourg, Malta, the Netherlands, Portugal, Spain. |
| Yes, facing challenges with increasing vaccine uptake in young adults and adolescents. | Austria, Denmark, Estonia, Finland, Hungary, Iceland, Latvia, Lichtenstein, Slovenia. |

## Socially vulnerable or underserved populations

Countries identified the various socially-vulnerable populations with whom they are facing challenges in relation to increasing uptake or access to vaccines. The majority of countries are facing challenges increasing uptake among ethnic minorities. Some countries consider that there are challenges with access and uptake in all the socially-vulnerable groups identified below, however this remains unquantified.

**Table 18. Challenges with increasing vaccine uptake in socially-vulnerable or underserved populations (n=15)**

| Main population groups in which there are challenges for the increase of vaccine uptake | Countries |
|---|---|
| Ethnic minorities | Austria, Czechia, Denmark, Finland, Latvia, Lithuania, the Netherlands, Sweden |
| Irregular migrants | Austria, Denmark, Latvia, Lithuania, Sweden |
| People experiencing homelessness | Austria, Denmark |
| People with alcohol or drug dependence | Austria, Denmark |
| People with mobility issues | Austria, Latvia |
| Prison populations | Latvia |
| Low socio-economic strata | Austria, Denmark, Hungary, Latvia, the Netherlands, Sweden |
| Other | Austria, Germany, Iceland, The Netherlands, Slovenia, Spain. |

Other groups identified as being a challenge for the increase of vaccine uptake include groups in the Netherlands who are generally more hesitant towards the government and governmental institutions and anti-vaccination groups in Spain. Similarly, in Germany there is a percentage of the population (less than 10%) who are not willing to receive vaccination and not open to being persuaded to do so. Iceland reported that some migrant workers come to the country without vaccination and although the reason was unknown, it could be lack of access to healthcare. Programmes had been put in place to try and reach these groups - e.g. through their employers.

# Drivers of low vaccination

A few countries described some of the drivers of low vaccination acceptance and uptake in different population groups. Many countries mentioned issues of mistrust, misinformation and low perception of risk in young people as some of the main drivers of low vaccination in different population groups.

**Table 19. Drivers of low vaccination (n=14)**

| Country | Drivers of low vaccination in different population groups |
|---|---|
| Austria | Current research (Austrian Corona Panel Project, September 2021) shows that 34% are concerned about possible side effects; 21% are of the opinion that the certified vaccines are not safe; 44% do not feel sufficiently informed about the mode of action of the vaccines; 65% see vaccination as self-protection and only 51% assumed that this contributed to the protection of others. |
| Croatia | Misinformation about vaccine side effects and a strong anti-vaccination campaign, distrust of leading institutions. |
| Cyprus | There is mistrust and a low perception of risk in younger age groups, particularly in the age group 16-29 years. |
| Estonia | The main issues are related to vaccine hesitancy, chiefly mistrust about vaccine safety. In addition, misinformation on vaccine efficacy and low risk perception is challenging. There is a lack of understanding as to why the younger population has to be vaccinated. |
| Finland | Among those of migrant origin the main reasons for lower vaccine uptake include insufficient access to reliable and official information on vaccine safety, misinformation, mistrust towards the public authorities and structural barriers in access to vaccines (poor digital skills, poor access to information as to who is entitled to vaccines and where these are organised).<br>There are concerns regarding the safety of vaccines for adolescents (12−15 years). Additionally, parents who have not been vaccinated themselves are not likely to allow their children be vaccinated. The age structure of persons of migrant origin in Finland is younger than that of the general Finnish population. The challenges in vaccine uptake among young people of migrant origin are similar to those observed among the general population. It may be challenging for young people to perceive COVID-19 as a danger to themselves. Additionally, some key influencers in social media have also been distributing misinformation on vaccines. |
| Germany | In Germany, according to the results from a survey on repeated cross-sectional monitoring of knowledge, risk perception, protective behaviour and trust during the current COVID-19 outbreak [43], people who hesitate to get vaccinated tend to rely on others, look for a great deal of information for and against the decision and weigh up the risks heavily. They also consider the vaccination to be a little less safe and are less convinced that by vaccinating they will be able to return to normal, have more contact with others or make a contribution towards combatting the pandemic. People who completely refuse to get vaccinated (compared to vaccinated people) have stronger safety concerns and consider vaccination unnecessary as they believe that COVID-19 poses no threat to them. In contrast to other unvaccinated individuals, practical barriers do not play a role. They are less convinced that they will be able to return to normal through vaccination and have more contact with others. |

| Country | Drivers of low vaccination in different population groups |
|---|---|
| Hungary | Misinformation and low perception of the risk of infection could be key factors. Major access issues in vaccine availability have not been observed. |
| Latvia | For the elderly, minorities and population groups with low socioeconomic status, there is misinformation and mistrust about the safety of vaccines and a low perception of risk. |
| Lithuania | According to empirical data, there is a distrust of COVID-19 vaccines and there are many rumours and false information being spread on the internet. To try and counter this, vaccination promotion measures are being implemented and the COVID-19 certificate is widely used in Lithuania. |
| Malta | Malta has managed to fully vaccinate over 96% of the eligible population (>12 years). The remaining pockets of hesitancy are among migrant workers due to exposure to a large volume of misinformation from their home countries. It can also be difficult to communicate with them through health messages and education campaigns organised by the Ministry for Health because this population group is less likely to follow local media - both mainstream and social media. |
| The Netherlands | Some of the drivers of low vaccination acceptance and uptake in different groups are low perception of risk, doubt about long-term effects/side effects, trust in government in general, misinformation or insufficient information. |
| Slovenia | There is distrust around vaccine safety and a low perception of risk of COVID-19 in young people. Young people are mainly concerned about the side effects of vaccination, the long-term impact of the vaccine on health and the safety of vaccines. |
| Spain | Spain reported a low perception of risk in young people, access issues in some socially vulnerable groups (such as seasonal agricultural workers) and mistrust in anti-vaccination groups. |
| Sweden | In Sweden, low vaccination coverage is associated with age (fewer young adults vaccinated), income and education (fewer vaccinated among those with low income and education), country of birth (fewer vaccinated among people born outside Sweden) and pregnancy (fewer vaccinated among pregnant women). |

# Strategies and measures in place for increasing vaccine uptake and acceptance

Countries are putting in place a number of strategies and measures to increase vaccine uptake and acceptance in certain population groups. The majority of countries are using mobile and pop-up vaccination teams and clinics, followed by targeted communication strategies, other outreach initiatives and intersectoral partnerships for community-based interventions.

**Table 20. Strategies and measures in place for increasing vaccine uptake and acceptance (n=25)**

| Strategies in place for increasing vaccine uptake and acceptance | Countries |
|---|---|
| Mobile and pop-up vaccination teams/clinics | Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Finland, Germany, Greece, Iceland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden. |
| Targeted communication strategies | Austria, Belgium, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Latvia, Liechtenstein, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden. |
| Outreach initiatives | Austria, Belgium, Cyprus, Czechia, Estonia, Finland, Germany, Greece, Iceland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Spain, Sweden. |
| Intersectoral partnerships for community-based interventions | Austria, Bulgaria, Czechia, Denmark, Finland, Germany, Greece, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Spain, Sweden. |
| Community participation in service delivery | Austria, Cyprus, Czechia, Denmark, Finland, Germany, Greece, Latvia, Lithuania, Malta, the Netherlands, Portugal, Slovenia, Spain, Sweden. |
| Social media campaigns | Austria, Belgium, Croatia, Cyprus, Czechia, Denmark, Estonia, Germany, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovenia, Sweden. |
| Working with community or faith leaders | Belgium, Denmark, Germany, Greece, Malta, The Netherlands, Portugal, Sweden. |
| Incentive schemes (e.g. vouchers or lottery) | Austria, Cyprus, Estonia, Greece, Poland, Romania. |
| Mandatory vaccination | Austria, Hungary, Latvia. |

A number of countries provided further information and examples of some of the specific strategies or good practices they have found to be effective in increasing vaccine uptake.

**Table 21. Examples of specific strategies and good practices for increasing vaccine uptake and acceptance in different population groups (n=17)**

| Countries | Examples of strategies and good practices used by countries to increase vaccine uptake and acceptance |
|---|---|
| Austria | Target group-oriented communication plays a major role. In addition to the 'Austria vaccinates' campaign, which has a broad impact in informing the public and providing comprehensive information about vaccination options, the Ministry of Health focuses on specific stakeholder communication and knowledge transfer.<br>In the course of a comprehensive stakeholder analysis, relevant groups were addressed individually and clustered according to their communication needs. Among others, senior citizens' associations, associations for the disabled, care and nursing institutions, family associations, associations/associations for work with children & youth, educators, cultural associations and associations for migrant target groups (Turkish, Romanian, Bosnian-Croatian-Serbian (BKS), etc.). The exchange with these stakeholders is also important to ascertain additional information needs.<br>Materials are prepared in communication with different stakeholders according to the target group. In particular, great attention has been and will be paid to materials in different languages. The goal is to communicate honestly, transparently, comprehensibly and as promptly as possible. For example, various videos have been produced by experts and the Ministry, dubbed or subtitled in several languages. In particular, the multilingual vaccination appeal by Federal Minister Mückstein was a great success [47].<br>To counter the flood of misinformation, the Ministry of Health continuously posts facts about COVID-19 vaccination on the website as well as the Ministry's social media channels. Similarly, folders and fact sheets on various topics have been created that can be forwarded or simply printed out and posted. In addition, there have been online Q&A sessions with experts from the Ministry of Health and continuous exchange with stakeholders. In addition to active target-group-specific communication, individual inquiries from citizens are answered on an ongoing basis.<br>Scepticism among long-term care facility workers is a problematic factor and is being addressed by a campaign of the Austrian Professional Nurses Association (ÖGKV – Österreichischer Gesundheits- und Krankenpflegeverband), funded by the Ministry of Health, with the campaign slogan "Sicher leben, sicher pflegen" prior to the upcoming general mandatory vaccination in February.<br>Vaccination rates are lower in younger age groups and there is an ongoing public debate about the pros and cons of vaccinating children aged 5-18 years. Targeted communication measures are being rolled out to enable both parents and young adults themselves to make informed choices.<br>A personal letter with a designated appointment for the vaccination from the Ministry of Health to all adults who were still in need, caused major uproar including legal and security issues, although a moderate increase in uptake rates was noted from this initiative.<br>Local vaccination campaigns seem to work out well, with a constant offer of vaccination especially in every village and town. Vaccination buses are well established in parts of Austria. Special events to promote vaccination, such as vaccination in a military plane, using dinosaurs in a science museum and others have been very successful in terms of media coverage, however they do not seem to have had such a broad effect on the vaccination uptake. |
| Bulgaria | Mobile vaccination locations for disabled people and old people have been set up countrywide. |
| Croatia | Mandatory COVID certificates have been introduced for healthcare and LTCF workers. |
| Cyprus | Press releases and communication from the Ministry of Health has helped, as well as the introduction of the Mandatory Safe Pass (proof of completed vaccination, previous infection or negative PCR/RAT test) for access to all public places which has been an effective measure. |
| Estonia | The main challenges relate to the age group 80+ years, which has a lower vaccination rate than other elderly groups. Different targeted campaigns and activities have been set up, mainly through GPs and local municipalities, medical students have been also involved in disseminating information to the target groups. Information seminars and vaccination can be organised at the workplace upon request by the employer. Nationwide vaccination campaigns led by general practitioners have been carried out. An incentive scheme has been introduced for long-term care institutions, financial support is offered to those institutions meeting the vaccination targets for personnel (at least 90% coverage with primary vaccination). In addition, booster vaccination targets have been set for long-term care clients. |
| Finland | Measures have been taken to improve vaccine uptake among persons of migrant origin by the Finnish Institute for Health and Welfare (THL) and the local authorities. There is emphasis on collaboration between health authorities and NGOs, as well as key community representatives/influencers. Community participation involves encouraging key representatives to raise the issue in the community, e.g. talks at mosques and on social media, radio and TV in specific language groups. Lower vaccine uptake among persons of migrant origin has been addressed through collaboration between public authorities, NGOs and key community representatives, community dialogue and co-creation. Examples of measures that have been taken so far include:<br>• production and marketing of multilingual and multichannel communications on vaccination disseminated through community members;<br>• setting up of walk-in and pop-up vaccination points;<br>• dissemination of multilingual information on vaccines in public spaces;<br>• targeted visits by healthcare professionals to various large gatherings and NGO facilities where various activity groups are held, schools and construction sites and, when possible, arrangement of vaccinations in connection with these;<br>• Multilingual TV and radio appearances by experts from THL;<br>• An amendment to the Infectious Disease Act came into force on 1 January 2022 requiring employees of specific social and healthcare professions taking care of persons at risk of severe COVID-19 infection to have proof of vaccination or recovery from natural infection.<br>General communications campaigns have recently focused on targeting the age groups with lower levels of vaccine uptake, most recently people between the ages 18 and 34 years. Some of the best practices include:<br>• using a multi-channel approach to ensure high coverage;<br>• offering vaccination without reservation;<br>• qualitative testing of campaigns before and after running them, and A/B-testing materials on digital channels (A/B testing is a user experience research methodology [48]);<br>• producing free communication materials, both physical and digital, for municipalities and healthcare providers to distribute via their own channels;<br>• Leveraging new and innovative marketing channels (e.g. the dating app Tinder). |

| Countries | Examples of strategies and good practices used by countries to increase vaccine uptake and acceptance |
|---|---|
| Greece | • Mobile vaccination units for disabled people and remote places;<br>• Introduction of proof of completed vaccination or previous infection for access to public places;<br>• Information about COVID-19 vaccination on official website;<br>• Provision of vouchers for individuals aged 18-24 years;<br>• Evidence-based communication on a weekly basis;<br>• Communication campaigns in the media;<br>• Free-of-charge vaccines and vaccination services. |
| Hungary | Mandatory vaccination has been introduced for healthcare workers and other workers in the healthcare system. In the elderly population there has been a campaign for those who are unvaccinated to try and reach them personally through their family doctors. Among healthcare workers and long-term care facility workers mandatory vaccination is a precondition for employment. The vaccination campaigns in November and December were a great success. Most of the booster vaccinations were given at that time. During the campaign weeks no prior registrations were necessary and vaccination was also available at the weekend.<br>Several measures have been introduced to increase vaccine uptake in those aged 65+ years, including direct consultation possibilities with family doctors and newly-graduated physicians in their homes, easing registration requirements prior to vaccination and administration of the vaccine at easy-to-reach sites or at home.<br>A school vaccination campaign has been started for children aged 12−17 years. Specific communication adverts have been developed which are broadcasted widely in mass media with popular actors, sports personalities, celebrities and well-known scientists. Four vaccination campaign weeks were organised during which those aged 12 years and over who wished to be vaccinated against COVID-19 could do so without prior registration. In view of its great success, the government has extended the vaccination action. In January, vaccination campaign weekends are being organised at vaccination centres and GP clinics. |
| Ireland | Social media campaigns are an effective strategy. |
| Latvia | To increase vaccine uptake in the elderly, collaboration with municipalities and social services, mobile and pop-up vaccination teams and motivational programmes for physicians have all been effective measures. To increase uptake in minority groups in Latvia collaboration with the media, newspapers and activities on social media have been effective. There has been support provided for physicians to increase their competence in answering questions about vaccination, especially to address hesitancy among elderly people who either want 'to wait' or want to get a consultation from their physician. There is also involvement of the municipalities in consultations and the organisation of the vaccination roll-out. |
| Lithuania | Good practices have included:<br>• implementing mobile vaccination teams to reach people;<br>• information regarding COVID-19 vaccination being provided on official websites of the Government of Lithuania, local municipalities, local healthcare institutions and enterprises;<br>• the Ministry of Health initiated a vaccination awareness raising campaign "Shoulder for Freedom" (Petys už laisvę!);<br>• the government and public authorities introduced national and local vaccination hotlines;<br>• both the vaccine itself and the vaccination service are free of charge;<br>• if citizens are unable to come to the vaccination centre due to mobility problem, disability or health problem, they may be vaccinated in a premises closer to their home (dispensary) or at home;<br>• mobile vaccination sites in public spaces, supermarkets, markets, events;<br>• direct calling to companies and organisations of mobile teams carrying out vaccination in companies;<br>• day without registration throughout Lithuania – every Thursday;<br>• the vaccination site network is being expanded from vaccination centres to GPs' offices. Vaccination is also carried out at pharmacies;<br>• Statistics Lithuania monitors the effectiveness of vaccines and possible side effects in Lithuania and publishes the results. Those aged 75+ years who have not been vaccinated against COVID-19 will receive financial benefits (EUR 100) for getting fully vaccinated;<br>• vaccination is also available for refugee and migrant populations (mobile vaccination teams are being organised);<br>• the widespread use of national certificates has played a significant role in the increase in vaccination. |
| Malta | Effective strategies have included:<br>• strong leadership;<br>• flexible methodology to ensure agility throughout the programme, to ensure the best possible use of vaccination throughput, maintain momentum in all vaccination hubs and focus on cohorts with low uptake;<br>• strong multi-disciplined team;<br>• 'Just-in-time' inventory strategy;<br>• data-driven decision making at all the stages of the programme;<br>• increasing accessibility;<br>• incentives;<br>• evidence-based communication;<br>• using different types of media to ensure the whole population has been reached. |
| The Netherlands | Effective strategies have included:<br>• vaccine ambassadors (key persons in specific communities);<br>• pop-up locations or locations where many people pass by (such as railway stations) or where target groups are located (such as hospitals) or locations in regions where vaccine uptake is low;<br>• recommendations from healthcare providers to vaccinate;<br>• vaccinations without appointments;<br>• campaigns focused on target groups (such as youngsters and pregnant women). |
| Poland | Communication campaigns in the media have been implemented to increase vaccination acceptance and uptake in certain population groups. |

| Countries | Examples of strategies and good practices used by countries to increase vaccine uptake and acceptance |
|---|---|
| Slovenia | Interest in vaccination has increased after the adoption of a decree that all employees and users of services or activities in Slovenia (with a few exceptions) must either be vaccinated, have recovered from COVID-19 or have negative test result for COVID-19. |
| Spain | The participation of social institutions (such as NGOs, etc.) in service delivery and outreach initiatives has been an effective strategy for increasing uptake. |
| Sweden | Action is being taken in a variety of languages, such as a national telephone hotline, fact sheets and films and collaboration with the Swedish Agency For Support For Faith Communities (SST) to disseminate information and capture needs. |

## Monitoring the scale-up and impact of different strategies to increase vaccination uptake in various population groups

Some countries outlined how they assess the impact of the different strategies used to increase vaccination uptake. Nine countries conduct regular surveys on the willingness to be vaccinated in the population (Austria, Belgium, Estonia, Finland, Germany, Latvia, the Netherlands, Norway, and Spain). Austria and the Netherlands said that they monitor the effect of pop-up vaccination locations on vaccine uptake. The majority of countries reported that they regularly monitor vaccination uptake in different population groups (Croatia, Cyprus, Denmark, Estonia, Finland, France, Hungary, Latvia, Liechtenstein, Lithuania, the Netherlands Portugal, Slovenia, Sweden, and Spain). In Austria surveys (market research) have provided information on groups that should be targeted with more intensive communication. The communication strategy and target group approach are constantly being monitored and adjusted. The indicators used to monitor the impact of vaccination strategies include vaccination probability, confidence in the effectiveness of vaccination, confidence in safety, etc.

## Limitations of the information collected in this report

The information presented in this report is not exhaustive. Some countries did not respond to the vaccine questions collected via the ISAA report and there were different response rates to the questions from week to week. Countries will continue to adapt strategies and plans as the vaccination roll-out continues, and this report provides an overview of progress at the current time.

# Conclusions

As of 23 January 2022, since the start of the COVID-19 vaccine deployment in December 2020 the cumulative uptake of full vaccination in the total EU/EEA population has reached 70% (range: 28.7–83.5%) and 42.6% (range: 7.4–62.9%) for an additional vaccine dose (pooled data from 30 reporting countries). Among adults (aged 18 years and older) in the EU/EEA, the cumulative vaccine uptake reached 81.4% (range: 34.3–94.5%) for the complete primary course and 51.8% (range: 9.1–79.6%) for an additional vaccine dose (pooled data from 30 reporting countries). Nevertheless, vaccination uptake continues to differ among EU/EEA countries.

All 30 EU/EEA countries are recommending primary vaccination for those aged 12 years and over and 23 countries of the 25 who responded have also started vaccinating all children over five years of age. All EU/EEA countries are recommending additional primary doses and booster doses, with around half of the countries recommending booster doses to adults over 18 years and ten countries currently recommending boosters for younger age groups under 18 years. With the increased circulation of the Omicron VOC, a number of countries have made changes to their vaccination strategies. Most countries have reduced the interval for administration of the booster dose after completion of the primary vaccination course and enhanced risk communication initiatives. There are now six countries that have introduced mandatory vaccination for various population groups, in particular for healthcare workers and long-term care facility workers, with two countries planning mandatory vaccination in the near future. A majority of countries are now using vaccination certificates to enable individuals to access specific locations/events.

Although full primary vaccination uptake in the total EU/EEA population has substantially increased, there are still differences in vaccination uptake among countries and at sub-national level, where pockets (geographical areas or population groups) of low uptake persist. This also includes countries that have achieved high levels of vaccination coverage overall.

There is emerging evidence that vaccine effectiveness decreases over time and that current vaccines may be less effective against the Delta VOC, or less so against the Omicron VOC. Therefore, vaccination of all eligible individuals who are currently unvaccinated is a priority, as is the protection with a booster dose of all eligible vaccinated individuals at risk of severe COVID-19 or high risk of exposure to the virus due to their activities or living conditions. In addition, due to the current Omicron VOC wave, all other eligible vaccinated adults should also consider getting a booster shot (at least three months after the completion of the primary vaccination course), in accordance with national recommendations, to reduce their individual risk of infection and disease [49,50].

It will be especially important to continuously monitor vaccine uptake and associated social determinants to understand where and in which population groups and communities the immunity gap persists. A successful COVID-19 vaccination programme can only be built on an understanding of, and a proper response to individuals' and communities' beliefs, concerns and expectations regarding the vaccine and the disease. The '5Cs' model – Confidence, Constraints, Complacency, Calculation, and Collective responsibility – is one framework that can be used for understanding these concerns and designing strategies to facilitate COVID-19 vaccination acceptance and uptake [51]. Countries are putting in place a number of measures and strategies to increase vaccination in the population, especially among population groups with low uptake.

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## Disclaimer

All data published in this report are correct to the best of our knowledge at the time of publication.

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