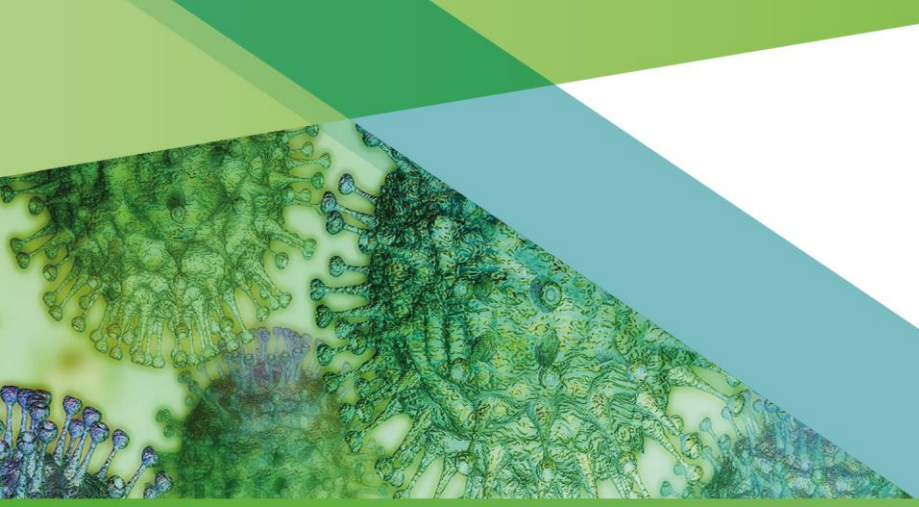

TECHNICAL REPORT

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

1 February 2021

Key findings

On 19 January 2021 the European Commission set out actions to step up the response against the COVID-19 pandemic and accelerate the rollout of vaccination campaigns across the EU, with the aim to vaccinate a minimum of 70% of the adult population by the summer of 2021 [1].

This report provides an updated overview of national COVID-19 vaccination rollout across the EU/EEA, including new insights into some of the critical aspects and challenges Member States are experiencing with the implementation of national deployment plans in the EU/EEA.

Vaccine deployment plans and rollout of vaccination

- All EU/EEA countries have developed strategies or plans for the deployment of the COVID-19 vaccine at the national level, which address, among other elements, the selection of priority groups by phase of implementation, as well as key elements of the logistics of implementation.
- All EU/EEA countries have initiated their national COVID-19 vaccination campaigns and 26 reporting countries confirmed that the administration of the COVID-19 vaccination is not mandatory.
- In most countries, the vaccination campaigns started between the 26 and 31 December 2020, shortly after the first lots of vaccines (Pfizer/BioNTech, Comirnaty) were delivered to all EU/EEA countries by the manufacturer. In addition to Comirnaty, by the 28 January, at least 22 countries reported having started administering the COVID-19 Vaccine Moderna. Additional brands will be introduced as soon as authorised for use.
- Following the update of EMA's product information on 8 January 2021 for Comirnaty with the additional specification that each vial contains up to six doses of the vaccine if low dead-volume syringes and/or needles are used, 22 countries responded that they intend to extract a sixth dose from the five-dose vial to increase the availability of doses. This decision is still under review in one country.

Suggested citation: European Centre for Disease Prevention and Control. Overview of the implementation of COVID-19 vaccination strategies and vaccine deployment plans in the EU/EEA – 1 February 2021. ECDC: Stockholm; 2021.

- Considering the option of delaying the administration of the second dose to ensure the highest possible coverage of the first dose with the initial limited vaccine supply, and considering the vaccination course included in current EMA product information for Corminaty (two doses 21 days apart) and COVID-19 vaccine Moderna (two doses 28 days apart), and WHO's recommendation based on currently available clinical trial data that the interval between vaccine doses may be extended up to 42 days (six weeks), most countries replied that for the time being they will not extend the timing between the first and second dose (14 countries), or that the decision is still pending (six countries). Two countries have extended the 21-day dose interval for Comirnaty (one of them to 28 days and the other to up to 42 days); one other country is also planning to extend the timing between the first and second dose.
- As of 29 January 2021, 23 EU/EEA countries reported complete or partial data on the rollout of their national COVID-19 vaccination campaign to The European Surveillance System (TESSy) (vaccine doses distributed to EU/EEA countries and administered to individuals, including by age and other prioritised groups). Regarding the proportion of the total number of doses distributed to EU/EEA countries that have been administered, as of 29 January 2021, the value ranges between 21.5% and 100%. The estimate of the national vaccine uptake for the first dose among adults (18+), as of 29 January 2021, varies between 0.9% and 3.8%. Data should be interpreted with caution at this stage and all possible factors affecting vaccine deployment in each country should be considered, as well as data completeness and quality. Overall data reporting and completeness need to be improved to provide estimates by age groups and in the 80+ population for all countries. ECDC is working with countries to achieve this.

Priority groups

- Vaccinations are being rolled out through various phases. All 30 EU/EEA countries have started vaccinating the priority groups included in their first phase, which were selected based on their higher risk of developing severe disease, as well as to protect healthcare and other front-line workers. Some countries have already progressed to groups included in subsequent phases.
- Countries primarily prioritised elderly people (with various lower age cut-off across countries), residents and personnel in long-term care facilities, healthcare workers, social care personnel and those persons with certain comorbidities. Some countries also prioritise workers of essential public services other than those in health such as police, firefighters and educational institutions workers.
- Considering the limited vaccine supply in the first phase, adjustments are made to the priority groups as countries roll out their campaigns. For example, some countries (Austria, Czechia, Croatia, France, Malta, the Netherlands, Portugal, Romania, Slovakia) further adapted the prioritised groups to be vaccinated including healthcare workers in different settings, educational workers and both residents and emergency services affected by the earthquake in Croatia.
- A few other countries (Latvia, Luxembourg, Norway and Spain) are currently discussing adjustments of priority groups.

Vaccine delivery options, workforce capacity and supply chain management

- EU/EEA countries are currently using a variety of settings for administering vaccinations. Most countries will continue to utilise existing vaccination structures and some plan to scale up, once more vaccine doses become available, such as increasing or introducing mass vaccination centres.
- Most countries now have adequate storage, cooled transport and cold chain available for the deployment of vaccines, and 20 out of the 23 responding countries said that health authorities and civil authorities are coordinating the deployment of the vaccines.
- Supply chain management will likely need to be adapted based on the delivery settings and types of vaccines used. In addition, as the rollout continues, an increase in vaccination sites will likely be needed as well as an increase in the workforce to provide vaccinations.

Systems to monitor vaccination administration and coverage

- As of 28 January 2021, electronic immunisation registries for the monitoring of individual and population-level vaccine uptake are available at the national or subnational level in 21 countries.
- Five countries have an ad hoc electronic system, four countries are using specific electronic immunisation cards and one country is manually recording the vaccinations. Documentation regarding which vaccine product has been administered and when is key to the success of vaccination programmes. Such documentation is also important for monitoring any safety signals, such as an adverse event following immunisation (AEFI) that may arise for any of the vaccine products, and for producing reliable estimates of vaccine effectiveness. Information in these registries could serve as the basis for immunisation cards.

Current and future challenges with the rollout of vaccination campaigns

- Challenges countries are facing with the rollout of the vaccines include, among others: shortage of equipment, in particular a lack of low dead space syringes and needles; communication challenges and the spread of disinformation; challenges with monitoring systems such as consolidating quality of registry data, logistical challenges and limited vaccine supply.
- Challenges countries expect to face in the future include, discrepancy between advised and actual vaccination prioritisation due to logistical and practical deployment needs; limited vaccine supply; reaching homogenous vaccination coverages in different regions; and public trust in the vaccination campaign, communication, misleading information and vaccine acceptance.
- Some countries shared some lessons learned so far in the vaccination rollout such as the need for extensive coordination between national and local authorities and the multidisciplinary participation required in the planning and the implementation of the vaccination strategy.

Communicating effectively about prioritisation of population groups and the rationale behind the choices, vaccine characteristics in terms of safety and efficacy, and any adaptations that are made to vaccination strategies during the rollout is vital for maintaining trust in the vaccination campaigns.

Scope of this document

This technical report provides an updated overview of the progress of national COVID-19 vaccination strategies including vaccine deployment plans and their rollout in the EU/EEA. It also provides new insights into some of the critical aspects and challenges of the implementation.

Target audiences for this document are the European Commission, the Health Security Committee (HSC), the EU/EEA NITAG Collaboration and national public health institutes and ministries of health in the EU/EEA, as well as public health experts and decision-makers at subnational level in charge of implementing vaccine deployment plans.

Background

Since 31 December 2019 and as of 24 January 2021, 99 727 853 cases of coronavirus disease 2019 (COVID-19) including 2 137 670 deaths have been reported worldwide, of which 18 849 065 cases and 449 395 deaths were in the EU/EEA [2,3]. Based on most recent data and trend analysis, the transmission of SARS-CoV-2 virus in EU/EEA countries is still widespread and some countries are experiencing a resurgence in COVID-19 case rates, including among older age groups, as well as an increase in hospital or ICU admissions and/or occupancy due to COVID-19 [3]. At the same time, EU/EEA countries are facing the challenge of the appearance of SARS-CoV-2 variants of concern, with the overall risk associated with their introduction and community spread currently assessed as being high/very high [4,5].

Therefore, to effectively contain the pandemic, the deployment of effective and safe vaccines for the protection against COVID-19 is needed along with non-pharmaceutical interventions and antivirals. A global effort has led to the development of multiple vaccine candidates with several different established and new vaccine production technologies [6]. As outlined in a previous ECDC Technical Report, for the successful deployment of COVID-19 vaccines in the EU/EEA, a set of key components need to be in place, aligned with strategic considerations in preparing for deployment of COVID-19 vaccines [7] and vaccination in the European Region published by WHO [8]. These components include: a robust COVID-19 disease surveillance system; post-marketing studies on effectiveness and impact; active and passive monitoring of adverse events following immunisation; robust and timely vaccination coverage data; evidence-based decision-making; legal and regulatory frameworks for vaccine deployment; vaccine delivery infrastructure and supply chain management; monitoring of vaccine acceptability and behavioural research; communication plans; and ethical and equitable access to vaccination.

To enable a successful deployment of the COVID-19 vaccines and their integration into national vaccination schedules, the European Commission (EC) published several Communications on the European Union (EU) Strategy for COVID-19 vaccines to accelerate the development, manufacturing, and deployment of vaccines against COVID-19 in Member States [9], the preparedness for COVID-19 vaccination strategies and vaccine deployment and on additional COVID-19 response measures [10-12]. More recently, on the 19 January 2020, the EC set out actions to step up the response against the pandemic and accelerate the rollout of vaccination campaigns, with the targets of vaccinating at least 80% of people over the age of 80, and 80% of health and

social care professionals in every Member State by March 2021. In addition, a minimum of 70% of the adult population should be vaccinated by summer 2021 [1].

On 2 December 2020, ECDC published a technical report presenting an overview of COVID-19 vaccination strategies and vaccine deployment plans in the EU/EEA and the UK, focusing on the identification of priority groups for the first phase of vaccination campaigns (primarily elderly people, healthcare workers and persons with certain comorbidities) and the supporting evidence for their prioritisation. It also looked at logistical considerations for the rollout of COVID-19 vaccines, in terms of use of existing vaccination structures and delivery services, human resource training, procurement of equipment for the cold-chain requirements (ultra-low temperature requirement for some of the COVID-19 vaccines); as well as monitoring systems for vaccine coverage, safety, effectiveness, and acceptance [13]. A subsequent ECDC technical report, published on the 22 December 2020 used mathematical modelling to provide EU/EEA countries with information on factors that may affect the choice of COVID-19 vaccination strategies, according to different target groups and based on scenarios of hypothetical vaccine characteristics [14].

On 21 December 2020, the European Medicines Agency (EMA) recommended granting conditional marketing authorisation (CMA) for the vaccine Comirnaty, developed by Pfizer/BioNTech, to prevent COVID-19) in people from 16 years of age [15]. On 6 January 2021, EMA also recommended granting CMA for the COVID-19 Vaccine Moderna, developed by Moderna, for use in people from 18 years of age [16]. Both products are currently granted CMA across the EU by the EC and included in the Union Register of medicinal products for human use. A CMA is a regulatory mechanism that facilitates early access to medicines in emergency situations, such as the current pandemic. Manufacturers will continue to provide results from the main trial, as well as additional studies to provide further evidence on the pharmaceutical quality of the vaccines. In addition, since December 2020, the EMA Committee for Medicinal Products for Human Use initiated the rolling review procedure for additional vaccines (AstraZeneca/Oxford, Janssen-Cilag International NV) and on 29 January 2021 EMA recommended COVID-19 Vaccine AstraZeneca for CMA in the EU for use in people from 18 years of age [17,18].

At the time of this technical report, all EU/EEA countries have started implementing their national vaccination campaign against COVID-19. This report provides an updated overview of the progress of national COVID-19 vaccination strategies including vaccine deployment plans and their rollout, as well as new insights into some of the critical aspects and challenges of the implementation.

Methods

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

Questions on vaccines sent by the European Commission to Member States via 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 [19,20].

- Starting on 9 December 2020, a weekly set of questions is sent via the ISAA report to representatives of Member States, as validating authorities of the IPCR, in order to gather regular information on various topics around COVID-19. One section of these questions cover vaccination strategies and deployment. The representatives of Member States gather the responses to the questions from different agencies and ministries in their countries.
- The specific questions covering vaccines were updated in January to capture relevant information on the implementation of the rollout, including questions around any adaptions made to priority groups, updates of changes in vaccination policies and any challenges faced by Member States in the vaccination deployment.
- Responses from Member States to vaccine questions were received on 14 December 2020, 5 January 2021, 11 January 2021, 18 January 2021 and 25 January 2021.
- There were different response rates from Member States to each of the vaccine-related questions. The number of responses to each question is specified below in each table.

On 27 January 2021, a summary of results and analysis from the ISAA questions was sent to the Health Security Committee (HSC) Members, the EU/EEA National Immunisation Technical Advisory Groups (NITAG) collaboration members and the IPCR representatives of the Member States for verification, validation and to complement any missing information.

Grey literature search

Other information and data were collected through grey literature in order to update and complement the information on deployment plans and prioritisation strategies collected via the questions. These sources included official governmental and national public health websites.

Data from The European Surveillance System

ECDC, jointly with WHO/Europe, has implemented a monitoring system to collect information on vaccine rollout (number of doses distributed to EU/EEA countries and administered, including by age groups and other prioritised populations). These data are collected through The European Surveillance System (TESSy) and visualised on a COVID-19 vaccine tracker on the ECDC website.

Results

Vaccine deployment plans and rollout

As of 28 January 2021, all thirty EU/EEA countries have developed strategies or plans for the deployment of COVID-19 vaccines at the national level: Austria [21], Belgium [22] , Bulgaria [23] , Croatia [24], Cyprus [25], Czechia [26], Denmark [27], Estonia [28], Finland [29], France [30], Germany [31], Greece [32],Hungary [33] Iceland [34], Ireland [35], Italy [36], Latvia [37], Liechtenstein [38], Lithuania [39], Luxemburg [40], Malta [41], the Netherlands [42], Norway [43], Poland [44], Portugal [45], Romania [46], Slovakia [47], Slovenia [48], Spain [49], and Sweden [50]. National COVID-19 vaccine strategies and deployment plans address key elements of the implementation of national vaccination campaigns, such as the selection of priority groups, including their phased inclusion based on availability of doses as vaccines are rolled out, human resources, infrastructure and logistical considerations for the delivery of services, monitoring of vaccination data and communication plans, among others.

Most countries have developed web-based portals for their national COVID-19 vaccination campaign, which may contain an outline of the main elements of the national strategy or deployment plan, recommendations for population groups to be prioritised for vaccination, standard operating procedures and information for healthcare and other professionals involved in the deployment, information for the general public, progress reports and national vaccination trackers, and a link to web-based systems to schedule an appointment for the vaccination if the country adopted this strategy.

At the time of this report, all EU/EEA countries had started their national COVID-19 vaccination campaigns. In most countries, the campaigns started between the 26 and 31 December 2020 (Table 1), shortly after the first lots of vaccines (Pfizer/BioNTech Comirnaty) were delivered by the manufacturer to all EU/EEA countries at the same time on 26 December 2020. All countries started their vaccination campaigns administering the Pfizer/BioNTech Comirnaty vaccine, this being the only one with EC market authorisation in 2020. In addition, by the 25 January, at least 22 countries reported having started administering the COVID-19 Vaccine Moderna, shortly after EC's conditional market authorisation was granted on 6 January (Table 1). The total number of persons who received a first dose of a COVID-19 vaccine, gathered from ISAA reports as communicated by countries, is also included in Table 1, including the reference date if available.

EU/EEA countries were asked about COVID-19 vaccination being mandatory by national policy. None of the 26 reporting countries has mandatory vaccination (Austria, Belgium, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden) (data gathered from ISAA reports from 18 and 25 January 2021, updates received from HSC and NITAG members on the 28 January 2021; n=26 countries).

Table 1. Overview of COVID-19 vaccines in use, date of first administration of the COVID-19 vaccine and total number of persons who received a first dose in EU/EEA countries (n=30)*

Country	COVID-19 vaccines in use	Date of first administration of COVID-19 vaccine	Total number of persons who received a first dose (date)
Austria	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	153 859 (as of 27/01/21)
Belgium	Comirnaty COVID-19 Vaccine Moderna	29 December 2020	141 758
Bulgaria	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	
Croatia	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	53 115
Cyprus	Comirnaty	27 December 2020	
Czechia	Comirnaty COVID-19 Vaccine Moderna	26 December 2020	214 470 (as of 27/01/2021)
Denmark	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	183 973 (as of 27/01/21)
Estonia	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	25 415 (as of 28/01/2021)
Finland	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	105 620 (as of 24/01/21)
France	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	693 000 (as of 21/01/21)
Germany	Comirnaty COVID-19 Vaccine Moderna	26 December 2020	1 672 215 (as of 26/01/2021)
Greece	Comirnaty	27 December 2020	213 735 (as of 27/01/21)
Hungary	Comirnaty	26 December 2020	137 556 (as of 28/01/2021)
Iceland	Comirnaty COVID-19 Vaccine Moderna	29 December 2020	3 703
Ireland	Comirnaty COVID-19 Vaccine Moderna	29 December 2020	161 500 (as of 27/1/21)
Italy	Comirnaty	31 December 2020	
Latvia	Comirnaty COVID-19 Vaccine Moderna	28 December 2020	16 278 (as of 21/01/21)
Lithuania	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	58 451 (as of 25/01/21)
Liechtenstein	Comirnaty COVID-19 Vaccine Moderna	18 January 2021	456
Luxembourg	Comirnaty	28 December 2020	8 632 (as of 27/01/21)
Malta	Comirnaty	27 December 2020	20 677 (as of 26/01/21)
the Netherlands	Comirnaty COVID-19 Vaccine Moderna	6 January 2021	185 356 (as of 26/01/21)
Norway	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	80 358 (as of 26/01/2021)
Poland	Comirnaty COVID-19 Vaccine Moderna	26 December 2020	565 507
Portugal	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	313 220 (as of 27/01/21)
Romania	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	456 154 (27/01/2021)
Slovakia	Comirnaty	26 December 2020	115 399 (as of 27/01/21)
Slovenia	Comirnaty	27 December 2020	51 128 (as of 26/01/21)
Spain	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	1 060 484 (as of 25/01/21)
Sweden	Comirnaty COVID-19 Vaccine Moderna	27 December 2020	192 700

** Data on vaccines in use and date of first vaccine administration gathered from ISAA reports from 18 and 25 January 2021 and grey literature; data on vaccine first doses exclusively gathered from ISAA reports; updates received from HSC and NITAG members on the 28 January 2021.*

Apart from vaccines currently granted CMA, EU/EEA countries will introduce additional vaccines once they are authorised for use by the EC. Table 2 summarises the response received from 20 EU/EEA countries about their plans to use various vaccines by different manufacturers (Sanofi Pasteur/Glaxo Smith Kline, CureVac, Oxford/Astra Zeneca, Novavac, Johnson & Johnson/Janssen-Cilag).

Table 2. Vaccines that EU/EEA countries are planning to use once granted market authorisation (n=20)*

Countries	Vaccine brand				
	Sanofi Pasteur/Glaxo Smith Kline	CureVac	Oxford/Astra Zeneca	Novavac	Johnson & Johnson/Janssen-Cilag
Austria	Yes	Yes	Yes		Yes
Belgium	Yes	Yes	Yes		Yes
Croatia		Yes	Yes		Yes
Czechia	Yes	Yes	Yes	Yes	Yes
Estonia	Yes	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes		Yes
Germany	Yes	Yes	Yes	Yes	Yes
Greece			Yes		Yes
Iceland		Yes	Yes		Yes
Ireland		Yes	Yes		Yes
Latvia	Yes	Yes	Yes	Yes	Yes
Lithuania	Yes	Yes	Yes		Yes
Luxembourg			Yes		Yes
Malta	Yes	Yes	Yes	Yes	Yes
Poland		Yes	Yes		Yes
Portugal	Yes	Yes	Yes		Yes
Romania	Yes	Yes	Yes		Yes
Slovakia	Yes	Yes	Yes	Yes	Yes
Spain	Yes	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes		Yes
Total	**14**	**18**	**20**	**7**	**20**

** Data gathered from ISAA reports from 5 and 11 January 2021; updates received from HSC and NITAG members on the 28 January 2021.*

As countries worldwide face the challenge of rolling out their national COVID-19 vaccination campaigns, some countries, with their initial limited supply, have considered delaying the administration of the second dose to ensure the highest possible coverage within the population of with a first dose. Acknowledging that many countries are facing circumstances of vaccine supply constraints and high disease burden, WHO issued an interim guidance for use of the Pfizer–BioNTech COVID-19 vaccine, based on the advice issued by the Strategic Advisory Group of Experts on Immunization (SAGE) at its 5 January 2021 extraordinary meeting. For Comirnaty, the recommended interval between the first and second dose is 21–28 days. Nevertheless, countries experiencing exceptional epidemiological circumstances may consider delaying the administration of the second dose for a short period, as a pragmatic approach to maximizing the number of individuals benefiting from a first dose while vaccine supply continues to increase. On the basis of currently available clinical trial data, WHO's recommendation at present is that the interval between doses may be extended up to 42 days (six weeks) [51].

In January 2021, considering the epidemiology of COVID-19 in the United Kingdom (UK), the Department of Health and Social Care released advice from the Joint Committee on Vaccination and Immunisation (JCVI) that extends the administration of the second dose of authorised vaccines to up to 12 weeks following the first dose to allow the delivery of the first dose to as many eligible individuals as possible during the initial phase of the vaccination campaign in order to maximise the short-term impact of the programme [52].

The current EMA product information for Comirnaty states that the posology is a course of two doses at least 21 days apart [53] and for COVID-19 Vaccine Moderna the posology is a course of two doses 28 days apart [54]. Out of 23 EU/EEA countries that replied to the question on extending the timing between the first and second dose for currently authorised vaccines, 14 countries (Austria, Belgium Croatia, Estonia, Finland, Greece, Latvia, Lithuania, Malta, Norway, Poland, Romania, Slovenia and Sweden) replied that they will not extend the timing between the first and second dose; Ireland has extended the dose interval for Comirnaty from 21 to 28 days; the Netherlands decided to extend the dose interval for Comirnaty to up to 42 days; Czechia is currently planning to extend the timing between the first and second dose to provide the first dose to as many people in the priority groups as possible; while the decision is still under discussion in Denmark, France, Iceland, Luxemburg, Spain and Portugal (data gathered from ISAA reports from 18 and 25 January 2021, updates received from HSC and NITAG members on the 28 January 2021; n=23 countries).

On 8 January 2021, EMA recommended updating the product information for Comirnaty with the additional specification that each vial contains up to six doses of the vaccine if low dead-volume syringes and/or needles are used [55,56]. Adopting this approach can increase the number of doses available for administration at the national level. Nevertheless, if the amount of vaccine remaining in the vial after the fifth dose cannot provide a full dose (0.3 ml), the vial should be discarded and there should not be any pooling from multiple vials.

Out of 23 EU/EEA reporting countries, 22 (Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain and Sweden) responded that they intend to extract a sixth dose from the Comirnaty five-dose vial when possible, while in Czechia the extraction of the sixth dose is still under discussion (data gathered from ISAA reports from 18 and 25 January 2021, updates received from HSC and NITAG members on the 28 January 2021; n=23 countries).

Progress in COVID-19 vaccine rollout

This section of the report provides a preliminary overview of the progress in the rollout of COVID-19 vaccines in the EU/EEA using the data that countries have reported to TESSy.

Data collection

Since January 2021, EU/EEA countries have been asked to report data on the rollout of their national vaccination campaign on a biweekly basis. However, data may be uploaded any day of the week. As of 29 January 2021, 23 EU/EEA countries reported complete or partial data to TESSy: Belgium, Cyprus, Czechia, Denmark, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain and Sweden.

Preliminary results

The data included in Table 3 are cumulative and updated based on data reported to TESSy as of 29 January 2021. Considering the timing of reporting to TESSy, it is possible to find certain discrepancies between the data published by ECDC and figures published in national reports or vaccine monitoring websites that show real-time data. For certain indicators, the population denominators for total population and age-specific population are obtained from Eurostat/UN.

Table 3 presents the total number of vaccine doses distributed to each EU/EEA country by the manufacturers (as reported in TESSy), including doses distributed per hundred inhabitants (18+), the total number of doses administered to individuals (any of the first, second or unspecified dose) and the proportion of doses distributed to EU/EEA countries that have been administered, as well as the estimated uptake of the first vaccine dose among adults (18+).

Regarding the vaccine doses distributed to EU/EEA countries per hundred inhabitants (18+), as of 29 January 2021, the value ranges between 3.5 doses/100 inhabitants (Spain) and 9.8 per hundred inhabitants (Malta). Most EU/EEA countries with available information in TESSy (10 out of 16) received between four and six doses per hundred inhabitants (Cyprus, Greece, Hungary, Iceland, Luxemburg, the Netherlands, Poland, Portugal, Slovenia and Sweden). Regarding the proportion of doses distributed to EU/EEA countries that have been administered, as of 29 January 2021, the value ranges between 21.5% (Cyprus) to 100% (Lithuania).

In addition, an estimate of the national vaccine uptake for the first dose among adults is calculated as the number of first doses administered to individuals divided by the size of the population aged 18 years and above in the country, expressed as a percentage (%). Regarding the estimated vaccine uptake for the first dose among adults, as of 29 January 2021, the value ranges between 0.9% (Cyprus) and 3.8% (Iceland). The majority of countries with available information in TESSy (13 out of 18) present a first dose uptake among adults that ranges between 2% and 3% (Belgium, Czechia, Finland, Germany, Greece, Hungary, Italy, Lithuania, Luxemburg, Poland, Slovenia, Spain and Sweden).

As a general disclaimer on these results from the initial phase of rollout of national campaigns in the EU/EEA, they should be interpreted with great caution and comparisons across countries are not advisable at this stage. For their correct interpretation, all possible factors affecting vaccine deployment in each country should be considered, as well as data completeness and quality.

Factors that should be taken into account to interpret these data include the strategic approach of the first phase of the campaign including priority groups and adaptation of vaccine policies (e.g. delivering the first dose to the highest possible number of individuals vs. ensuring availability of complete course of two doses), the vaccination start date, vaccination policies and dosing guidelines (e.g. on timing of second dose and use of sixth doses from a five-dose vial), challenges in the logistics of deployment of the campaign, vaccine acceptance at the population level and late reporting at local level due to vaccination monitoring system delays,.

Overall data reporting and completeness need to be improved in order to provide estimates by age groups and in the 80+ population for all countries. ECDC is working with countries to achieve this.

Table 3. Total COVID-19 vaccine doses distributed; doses distributed per hundred inhabitants (18+); total doses administered; proportion of doses distributed that have been administered (%); national vaccine uptake for the first dose (%) among adults (data as of 29 January 2021; source: TESSy).

Countries	Total number of doses distributed to EU/EEA countries	Doses distributed to EU/EEA countries per hundred inhabitants (18+)	Total number of doses administered	Proportion of doses distributed that have been administered (%)	National vaccine uptake for the first dose among adults (%)
Belgium	350 625	3.8	246 870	70.4%	2.7%
Cyprus	28 110	4.0	6 050	21.5%	0.9%
Czechia			198 691		2.2%
Denmark	281 970	6.1			
Finland			151 686		3.1%
Germany			2 216 127		2.6%
Greece	422 970	4.8	213 555	50.5%	2.2%
Hungary	403 830	5.0	213 008	52.7%	2.2%
Iceland	16 410	5.9	15 218	92.7%	3.8%
Italy	1 805 875	3.6	1 374 137	76.1%	2.5%
Lithuania	82 874	3.6	82 874	100%	2.9%
Luxembourg	23 080	4.7	11 370	49.3%	2.0%
Malta	40 590	9.8	16 420	40.5%	3.7%
the Netherlands	757 020	5.4	215 498	28.5%	1.5%
Poland	1 257 300	4.0	1 097 296	87.3%	3.0%
Portugal	338 290	4.0	166 658	49.3%	1.6%
Slovenia	70 230	4.1	58 638	83.5%	3.0%
Spain	1 355 850	3.5	1 149 549	84.8%	2.7%
Sweden	409 575	5.1	229 796	56.1%	2.6%

Notes.
Slovakia reported subnational data only. Data from Ireland, Latvia and Norway currently under review and not included.
Doses distributed to EU/EEA countries per hundred inhabitants (18+): calculated as number of doses distributed to EU/EEA countries (as reported to TESSy) divided by the size of the population aged 18 years and above in the country. Population denominators for total population and age-specific population are obtained from Eurostat/UN.
The proportion of distributed doses administered may be affected by the country decision to delay the second dose to deliver the first dose to the highest possible number of individuals vs. to ensure availability of the complete course of two doses to those that have received the first dose. As of 28 January 2021: Austria, Belgium Croatia, Estonia, Finland, Greece, Latvia, Lithuania, Malta, Norway, Poland, Romania, Slovenia and Sweden do not extend the timing between the first and second dose; Ireland has extended the dose interval for Comirnaty from 21 to 28 days; the Netherlands decided to extend the dose interval for Comirnaty to up to 42 days; Czechia is currently planning to extend the timing between the first and second dose; while the decision is still under discussion in Denmark, France, Iceland, Luxemburg, Spain and Portugal (data gathered from ISAA reports from 18 and 25 January 2021; n=23 countries).
The estimate of the national vaccine uptake for the first vaccine dose (%) among adults is calculated as the number of first doses administered to individuals (18+) divided by the size of the population aged 18 years and above in the country, expressed as percentage (%). Population denominators for total population and age-specific population are obtained from Eurostat/UN.

Early monitoring of vaccine rollout may be performed by collecting aggregate data on doses administrated, to reflect the distribution of the vaccine to certain target groups and the initial uptake. However, the monitoring and the collection of vaccination coverage data, calculated using individual information on vaccination status through e-registries, remain the gold standard on acquiring information about the overall performance of the COVID-19 vaccination programme.

Priority groups defined for vaccination

Considering the limited availability of COVID-19 vaccine at the beginning of vaccination campaigns, most countries opted to prioritise vaccination for those individuals most at risk of severe disease (e.g. the elderly and residents in LTCF), as well as healthcare workers. The full range of target groups defined in national strategies and deployment plans of EU/EEA countries, irrespective of which phase of rollout they will be offered vaccination, are displayed in Annex 1. This section of the report focuses on population groups that are being offered vaccination at the current stage of the rollout (data gathered from ISAA reports since December 2020).

Prioritisation of target groups differs between countries and vaccination is being rolled out in various phases. The vaccination phases also differ by country, with a range of two to twelve different phases (see Annex 2), depending on their specific prioritisation strategies and vaccine availability. Twenty-four countries replied to the question about indicating which priority phase they are currently in (Table 4).

Most countries (Belgium, Croatia, Czechia, France, Germany, Greece, Luxembourg, Latvia, Malta, the Netherlands, Poland, Portugal, Romania, Spain and Sweden) are in vaccination phase 1, while Finland, Hungary, Ireland, Norway and Slovenia are in phase 2. Malta, Romania and Sweden have started vaccinating those groups included in phase 2 while phase 1 is still ongoing. Slovakia is in vaccination phase 3, while Denmark is currently in phases 1-6. Iceland has vaccinated priority groups 1,2 and 3 with both a first and second dose and the majority of priority group 4 has received a first dose. In Lithuania, healthcare workers and residents and staff in long-term care facilities have been vaccinated with the first dose, some of whom have received the second dose. The vaccination of other priority groups is in progress.

Table 4. Current vaccination phases in EU/EEA countries (n=24)*

Current vaccination phase	Countries
Phase 1	Belgium (phase 1A), Croatia, Czechia, France, Germany, Greece (phase 1 and 80+), Luxembourg, Latvia, Malta (completing phase 1 and started phase 2), Netherlands, Poland, Portugal, Romania (completing phase 1 with second dose being administered and started phase 2 on 15 January 2021), Spain, Sweden (phase 1 continuing while phase 2 starting)
Phase 2	Finland, Hungary, Ireland, Malta (completing phase 1 and started phase 2), Norway, Romania (completing phase 1 with second dose being administered and started phase 2 on 15 January 2021), Slovenia, Sweden (phase 1 continuing while phase 2 starting)
Phase 3	Slovakia
Other	Demark (phase 1-6), Iceland (priority groups 1, 2 and 3 have received both first and second dose; majority of priority group 4 has received first dose), Lithuania (HCW and residents/staff in LTCF are vaccinated with first dose, parts of them received the second dose; vaccination of other priority groups is in process)

* *information gathered from ISAA report on 25 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

The most common priority groups currently vaccinated by countries are the elderly (with various lower age cut-offs across countries), residents and personnel in long-term care facilities (LTCF), and healthcare workers (Table 5). Social care personnel and adults with comorbidities are also currently being vaccinated in some countries. Other groups that are currently being vaccinated include workers of essential public services other than health (response and rescue units, police, firefighters, coast guard, border guard, educational institutions worker).

Table 5. Overview of priority groups currently being vaccinated in EU/EEA countries (n=26)*

Countries	Priority groups currently being vaccinated						
	Elderly	Elderly in LTCF	Adults with co-morbidities	Healthcare workers	Personnel in LTCF	Social care personnel	Other risk groups (i.e. workers of essential public services other than health; others)
Austria	Yes (80+)	Yes	Yes	Yes	Yes		
Belgium	Yes	Yes	Yes	Yes	Yes (in nursing homes)		Yes
Croatia	Yes	Yes		Yes	Yes		Yes (emergency services, Red Cross, mountain service, police, firefighters etc. and citizens in the area affected by the earthquake)
Czechia	Yes	Yes		Yes	Yes	Yes	
Denmark	Yes	Yes	Yes	Yes	Yes		
Estonia	Yes	Yes	Will start in February; currently a pilot is ongoing	Yes	Yes		Yes (other staff in hospitals, GP centres or other health-care institutions)
Finland	Yes (80+)	Yes		Yes (front-line and critical healthcare personnel)	Yes (social and healthcare personnel in LTCF)	Yes (critical social care personnel)	
France	Yes (75+)		Yes	Yes (HCW at risk)	Yes	Yes (personnel at risk)	Yes (disabled/dependent persons)
Germany	Yes	Yes	Yes	Yes	Yes		Yes
Greece	Yes (80+)	Yes		Yes	Yes	Yes	
Hungary		Yes		Yes	Yes	Yes	
Iceland	Yes	Yes	Yes	Yes (HCW in COVID-19 wards, intensive care units and front-line personnel in primary health care clinics)			Yes (response and rescue units/officers from ambulance services, police, coast guard, border guard)
Ireland	Start in February	Yes		Yes			
Latvia				Yes			Yes (medical practitioners and medical treatment support persons who are employed in the medical treatment institutions specified in the order of the Minister for Health and who provide State paid health care services, and also employees who, upon performing their work duties, are in close contact with COVID-19 patients)
Lithuania	Yes	Yes	Yes	Yes	Yes	Yes	
Luxembourg		Yes		Yes	Yes		
Malta	Yes (85+)	Yes		Yes	Yes		Yes (other frontline workers)
the Netherlands	Yes	Yes	Yes	Yes	Yes		Yes (inpatients in mental health facilities)
Norway	Yes (85+)	Yes	Yes (aged 18-64)	Yes (with patient contact)			
Poland	Yes	Yes		Yes		Yes	Yes
Portugal	Yes	Yes	Yes	Yes	Yes		
Romania	Yes (65+)	Yes	Yes	Yes	yes	Yes	Yes
Slovakia	Yes	Yes		Yes	Yes	Yes	Yes (critical infrastructure)
Slovenia	Yes (80+)	Yes		Yes	Yes	Yes	
Spain	Yes	Yes		Yes (only if directly involved in COVID-19 care/treatment)	Yes	Yes	Yes (disabled/dependent persons)
Sweden		Yes	Yes	Yes	Yes	Yes	

**information gathered from ISAA reports on 11 January 2021, 18 January 2021, 25 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Even though EU/EEA countries adopted different approaches and definitions for a phased rollout of their national vaccination campaigns, by comparing the prioritisation target groups in national strategies and deployment plans (Annex 1) with the priority groups that are currently being vaccinated (Table 5), it is possible to identify commonalities across countries that further illustrate the pace of the phased rollout and which populations are still not covered. All countries prioritised the elderly population (using different age cut-offs; median: 65+) because of their higher risk of severe disease and mortality. However, in the first phases of national campaigns, countries had to further prioritise within this target group and start vaccinating only older individuals (80+ in Austria; 80+ in Finland; 75+ in France; 80+ in Germany; 80+ in Greece; 85+ in Malta; 85+ in Norway) or residents in LTCF (no age cut-off). The targeted elder population will only be fully covered in subsequent phases of the rollout with increasing supply of vaccines.

Another population group that is included in most national strategies and plans (Annex 1) is the adult population with underlying conditions and comorbidities that put them at higher risk of severe disease, (this includes individuals below the previously mentioned priority age cut-off). However, only 12 out of 26 reporting countries are currently offering the COVID-19 vaccine to this population, which will only be included in subsequent phases in other countries.

Nevertheless, to efficiently administer the COVID-19 vaccines to the target groups, adjustments to original plans have been made during the rollout and some countries described specific changes to their prioritisation of groups included in the current phase of the campaign:

- Austria: Austria prioritised people 80 years or older living in the community, people with underlying conditions, or people with special needs. These adjustments were defined due to the slow initial vaccine uptake in elderly care homes, the vaccine storage and supply chain capacity.
- Czechia: the country prioritised healthcare workers, social care workers and the elderly living in long-term care facilities over the initially prioritised group of people aged 65 years and older, and persons with comorbidities. These adjustments were based on the epidemiological situation at national and subnational levels, vaccine storage and supply chain capacity, and the availability of human resources for vaccination.
- Croatia: due to the earthquake in Croatia the country prioritised citizens, emergency services and volunteers in the affected areas for vaccination and redistributed some of the available vaccines to this target group.
- France: the country included some other groups such as home care workers, firefighters, and people with serious comorbidities.
- Malta: the country prioritised workers in the educational system in the third phase.
- The Netherlands: the country prioritised acute COVID-19 care staff in hospitals.
- Portugal: Portugal reported that they have adjusted priority groups based on the epidemiological situation at national and subnational levels, new evidence available about the virus and its impact on human health, new information regarding COVID-19 vaccine characteristics, and vaccine uptake and by whom and prioritised people 80 years older, besides the presence of underlying conditions.
- Romania: the country added workers in the educational system to the category of essential workers.
- Slovakia: the prioritisation phases have been adapted from originally including four phases to now including 11 phases.
- In Latvia, Luxembourg, Norway and Spain, the discussion about adjustments of priority groups is currently ongoing. Norway will base its potential adjustments on the epidemiological situation, pressure on the healthcare system, availability of different vaccines, and scientific evidence on overall vaccine effectiveness and in different age and risk groups.

Adjustments of vaccination strategies and policies during rollout

Depending on the evolution of the virus, the national and subnational epidemiological situation, and the availability, safety and effectiveness of the authorised COVID-19 vaccines, adjustment of vaccination strategies and policies are key. All responding countries reported they are planning to regularly review critical factors and consequently define, reassess and adapt COVID-19 vaccination objectives, targets, priorities and strategies accordingly.

Table 6. Critical factors identified by countries that require adjustment of the vaccination strategy during the rollout (n=24)*

Plans to regularly review critical factors based on:	Countries
Epidemiological situation at national and subnational levels	Austria, Croatia, Czechia, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
New evidence about the virus and its impact on human health	Austria, Croatia, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
Actual vaccine uptake by target group	Austria, Croatia, Czechia, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
Vaccine storage and supply chain capacities	Austria, Croatia, Czechia, Denmark, Estonia, France, Greece, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Spain
(Human) resources required for vaccination of the population	Austria, Croatia, Czechia, Estonia, France, Germany, , Greece, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
New information regarding COVID-19 vaccine characteristics	Austria, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden

** information gathered from ISAA reports on 14 December 2020, 05 January 2021, 11 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

National delivery infrastructure and logistics

The successful deployment of COVID-19 vaccines and their rollout at a national scale, especially for those that require storage at very low temperatures, involves having complex logistics and infrastructure in place. Transporting the vaccines from the place of production to different countries and then on to various vaccination delivery sites requires adequate storage, cooled transport and a fully functioning cold chain in place. Also, storage and transport requirements may differ for different types of vaccines. Countries were asked about the status of logistics and infrastructure around storage and transport requirements and if what is currently in place is adequate for vaccine deployment at scale. Most countries have progressed from the stage of developing logistics and infrastructure to now having adequate storage, cooled transport and cold chain (Table 7). Twenty-six countries reported that cooled transport is available, with 23 countries reporting that adequate cold chain is in place. Three Member States advised that the logistics and infrastructure around storage and transport continue to be developed.

Table 7. Overview of the status of national COVID-19 vaccination logistics and infrastructure (n=26)*

Status of national COVID-19 vaccination logistics and infrastructure (storage and transport needs)	Countries
Adequate storage capacities are available	Austria, Belgium, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden
Adequate cooled transport is available	Austria, Belgium, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden
Adequate cold chain is available	Austria, Belgium, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden
Logistics and infrastructure are under development	Croatia, France, Slovenia

** information gathered from ISAA reports on 11 January 2021, 18 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Vaccination delivery sites

Countries have reported that COVID-19 vaccines will be administered to people in a number of different settings (Table 8). The majority of countries responded that they are using existing vaccination structures. According to some countries, the administration settings will depend on the phase of prioritisation that a country is currently in, and as more vaccine doses become available, further vaccination sites will also be made available. For example, mass vaccination centres will be opened when a higher proportion of the entire population is eligible for vaccination. Nineteen countries will also use mobile vaccination teams and two countries will use mobile clinics to access those people who are harder-to-reach, such as those in rural communities.

Further details were provided from the following countries:

- Belgium: for phase 1A vaccination settings will include hospitals and long-term care facilities. The settings have not been defined for the others phases yet.
- Czechia: reported that vaccine distribution will be different for every stage/phase. Vaccination will be carried out in hospitals, vaccination centres of health institutes and the National Institute of Health, in general practitioners' offices, offices of other outpatient health service providers, contracted health insurance facilities, at workplaces (when there will be enough quantity of vaccines) and through mobile vaccination teams.
- Finland: the municipalities are responsible for the organisation of vaccinations with the support of hospital districts and the National Institute for Health and Welfare.
- France: during the first phase of vaccination, the vaccine will be delivered in long-term care facilities, in hospitals and by mobile teams.
- Germany and Norway: healthcare workers will be vaccinated in hospitals/at their workplace.

Table 8. Vaccination delivery sites (n=25)*

COVID-19 vaccines will be delivered in:	Countries
Existing vaccination structures	Austria, Croatia, Czechia, Estonia, Finland, France, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Slovenia, Spain, Sweden
Dedicated (mass) vaccination centres	Austria, Czechia, Denmark, Germany, Greece, Iceland, Ireland, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Sweden
GP practices/primary healthcare centres	Austria, Croatia, Czechia, Estonia, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Sweden
Pharmacies	Ireland
Long-term care facilities	Austria, Belgium, Croatia, Czechia, Estonia, France, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Spain, Sweden
Mobile clinics	Croatia, Romania
Mobile teams	Austria, Croatia, Czechia, Denmark, Estonia, France, Germany, Greece, Hungary, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
Workplace	Austria, Croatia, Czechia, Germany, Greece, Malta, Portugal, Romania
Schools	Austria
Prisons	Austria, Estonia, Latvia, Malta, Romania

* *information gathered from ISAA reports on 14 December 2020, 5 January 2021, 11 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Coordination of health authorities and civil protection authorities on the deployment of COVID-19 vaccines

Over the past weeks, countries have made decisions on various aspects on the coordination of the deployment of COVID-19 vaccines. Based on the responses, there are twenty countries where health authorities and civil protection authorities are coordinating with each other for the roll-out of the vaccines. For two countries, there is the possibility that coordination between the authorities may occur at some stage and for two countries there is no planned coordination.

The following countries gave further details:

- Austria: coordination between health authorities and the Federal Ministry of Defence.
- Spain: the coordination of health authorities is with State Security Forces and Bodies.
- Portugal: health authorities are coordinating with security forces civil protection and the armed forces.

- Norway: there is no coordination with civil protection authorities, the vaccine programme is fully managed by the health sector and they have sufficient resources to deploy the vaccine.

Table 9. Coordination of health authorities and civil protection authorities on the deployment of COVID-19 vaccines (n=23)*

Are health authorities and civil protection authorities coordinating on the deployment of COVID-19 vaccines?	Countries
Yes	Austria, Denmark, Croatia, Czechia, Estonia, Germany, Greece, France, Iceland, Ireland, Lithuania, Luxembourg, Malta, the Netherlands, Romania, Poland, Portugal, Slovakia, Spain, Sweden
Possibly	Latvia, Slovakia
No	Finland, Norway

** information gathered from ISAA reports on 14 December 2020, 5 January 2021, 11 January 2021, 18 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Scheduling people for vaccination appointments

Once the vaccines have been transported and stored in the various settings, effective communication with individuals who are eligible for vaccination is required to ensure that they are aware of when and where they are to receive their vaccination. Countries are using a variety of ways to invite eligible people for vaccination. Out of 16 countries that answered this question, 12 countries responded that the eligible person is called for vaccination through their healthcare provider or other health entity (e.g. local public health office, national insurance, insurance companies etc.) and ten countries responded that an eligible person for vaccination is asked to pro-actively book an appointment through dedicated phone systems, website or an app. Austria, Greece, Lithuania, Malta, Portugal and Romania will use a combination of calling the individual and the individual pro-actively booking an appointment themselves. Those countries with other mechanisms in place include:

- Malta: people who are 85+ years old receive a letter with an appointment, while healthcare professional are requested to book an appointment.
- Finland: the municipalities are responsible for organising the vaccinations and reaching the target population by means they consider the most effective.
- Germany: this is the responsibility of the Federal states.

Table 10. Mechanisms in place for inviting people eligible for vaccination (n=16)*

Mechanisms in place for inviting people eligible for vaccination	Member States
The eligible person is called for vaccination through their healthcare provider or other health entity (e.g. local public health office, national health insurance, insurance companies etc)	Austria, Estonia, Greece, Iceland, Ireland, Lithuania, Malta, Norway, Portugal, Romania, Slovenia, Spain
The eligible person is asked to pro-actively book an appointment through dedicated phone systems, website or app	Austria, Croatia, Czechia, Greece, Lithuania, Luxembourg, Malta, Portugal, Romania, Slovakia

** information gathered from ISAA reports on 18 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Workforce capacity and sufficient equipment to deliver the vaccine

To efficiently deliver the vaccines, countries need to ensure that there is sufficient workforce capacity and equipment, including personal protective equipment (PPE). As vaccine campaigns progress and more vaccine doses become available, further population groups will be eligible for vaccination and the need for an adequate workforce to deliver vaccines will increase. Twenty out of 24 countries answered that they have adequate workforce capacity at this stage to deliver COVID-19 vaccines (Table 11). Other countries responded that they are currently recruiting and/or training more people to increase the capacity. Germany reported that workforce capacity is the responsibility of the Federal States. The majority of countries who answered the question on PPE said that they have adequate and sufficient PPE to deliver the vaccine and 16 out of 22 countries will make use of the joint EU procurement to purchase supplies and materials for carrying out COVID-19 vaccinations.

Table 11. Availability of workforce to deliver COVID-19 vaccines (n=24)*

Workforce capacity to deliver the COVID-19 vaccine	Countries
Available	Austria, Denmark, Croatia, Estonia, Finland, France, Greece, Iceland, Ireland, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden
Currently being recruited/trained	Germany, Ireland, Lithuania, Latvia, Romania, Slovenia
No information available	Czechia

* *information gathered from ISAA reports on 14 December 2020, 5 January 2021, 11 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Table 12. Adequate and sufficient PPE to deliver the vaccine (n=24)*

Adequate and sufficient PPE to deliver the vaccine	Countries
Available	Austria, Denmark, Croatia, Czechia, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Norway, Slovakia, Spain, Sweden
Currently being purchased	Germany, Luxembourg, Latvia, Romania

* *information gathered from ISAA reports on 14 December 2020, 5 January 2021, 11 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Table 13. Use of joint procurement to purchase items required for COVID-19 vaccination (n=22)*

Use of joint procurement required for COVID-19 vaccination	Countries
Decided	Austria, Belgium, Czechia, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Spain
Planned	France
Not planned	Croatia, Denmark, Hungary, Sweden
No information available	Poland

* *information gathered from ISAA reports on 14 December 2020, 5 January 2021, 11 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Systems to monitor vaccination

Monitoring the administration of vaccination is key to vaccination campaigns. Many countries have progressed from developing systems for monitoring vaccinations to having systems in place and ready to use. As of 28 January 2021, 22 countries (Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain and Sweden) said that their monitoring systems are ready and two countries (Croatia, Poland) said their system is under development.

The majority of countries are using immunisation information systems that already exist and have been tailored to include the monitoring of COVID-19 vaccination to monitor individual vaccination status (Table 14). Five countries (France, Germany, Ireland, Luxembourg and Slovakia) are using ad-hoc electronic systems to record vaccinations and four countries reported they are using specific electronic immunisation cards (Croatia, Estonia, Germany, Portugal). Luxembourg said they will use an existing electronic immunisation system, ad-hoc electronic system and manually record vaccinations. Germany added a comment that even though they have an ad hoc electronic system in place, the system is unable to retrieve individual vaccination status.

Table 14. System types to monitor individual COVID-19 vaccination status (n=25)*

Monitoring of the vaccination status will be done by:	Countries
Existing electronic immunisation information system (IIS)	Austria, Belgium Czechia, Denmark, Estonia, Finland, France, Greece, Iceland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden
Ad hoc electronic systems	France, Germany, Ireland, Luxembourg, Slovakia
Specific electronic immunisation cards	Croatia, Estonia, Germany, Portugal
Manual recording	Luxembourg

* *information gathered from ISAA reports on 14 December 2020, 5 January 2021, 11 January 2021, 25 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Vaccination communication plans

Effective communication strategies, especially around prioritised populations and access to vaccines during the different stages of the rollout, are vital for the success of campaigns. Communication strategies adapted for a variety of audiences from different population groups around the development, effectiveness and safety of vaccines are also crucial for building trust, lowering hesitancy and for tackling misinformation and disinformation around vaccines, especially within social media. Countries have made progress in developing detailed communication plans (Table 15). Twelve countries have finalised their plans, five countries have drafted plans and seven countries are still developing their communication plans.

Table 15. Availability of detailed communication plans for COVID-19 vaccination (n=24)*

Availability of detailed communication plans	Member States
Already in place / finalised	Austria, Estonia, France, Germany, Greece, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Sweden
Drafted	Croatia, Denmark, Finland, Lithuania, Spain
Still under development	Belgium, Czechia, Latvia, Iceland, Ireland, Slovenia, Slovakia

* *information gathered from ISAA reports on 14 December 2020, 5 January 2021, 11 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Current and future challenges and lessons learned on vaccine rollout

With vaccination campaigns commencing across the EU/EEA, countries are starting to face different challenges around various aspects of the rollout. Fourteen countries shared information and most of them said they have faced challenges with shortages of equipment needed for vaccination such as low dead-space syringes. Other challenges that countries have reported are around issues with the systems put in place to monitor vaccinations and challenges with vaccine refusal, spread of misinformation, and vaccine hesitancy. Countries provided further details about current and future challenges, as well as lessons to share that may be helpful for other countries.

Table 16. Current challenges countries are facing with the rollout of COVID-19 vaccines (n=14)*

Challenges	Countries
Availability of storage capacities	Croatia, Latvia, Lithuania, Slovenia
Availability of cold chain	Latvia, Lithuania
Availability of shipping and transhipment	Croatia, Lithuania, Slovenia
Strategies to ensure optimal stock management and avoid expiration of stocks	France, Lithuania, Poland, Slovenia
Staffing shortages to administer vaccines	Latvia, Lithuania, Romania
Shortages of personal protective equipment to deliver the vaccine	Latvia
Shortages of equipment needed for vaccination, such as syringes, including shortage of low dead-space syringes/needles	Austria, Czechia, Latvia, Lithuania, Luxembourg, Malta, Slovenia
Size of centres set up for administering mass vaccinations	Latvia
Availability of vaccination sites in order to cover the population eligible for vaccination (e.g. reaching hard to reach populations)	Latvia, Poland
Managing different types of vaccines in regard to logistics, storage and/or administration	Latvia, Slovenia
Mechanisms in place for inviting people eligible for vaccination	Czechia, Latvia, Slovenia
People who are eligible and scheduled to receive vaccines are refusing to take the vaccine	Latvia
Spread of vaccine misinformation and disinformation	Croatia, Czechia, Latvia, Estonia
Communication challenges	Czechia, Latvia, Norway, Slovakia

* *information gathered from ISAA reports on 18 January 2021, 25 January 2021; updates received from HSC and NITAG members on the 28 January 2021*

Further details on current challenges countries face with vaccination rollout

Shortage of equipment needed for vaccination

Two countries (Austria and Malta) reported on challenges with the supply of low dead-space syringes and needles which are required to extract a sixth dose from the five-dose vial of Comirnaty vaccine. Malta replied that the Joint Procurement has up until now confirmed that there is no such needle in the contract awards.

Monitoring systems to record vaccinations

Austria is facing challenges with vaccination locations not registering all their administered vaccine doses properly in the national immunisation information system (IIS), which is partly due to a shortage of available hardware interfaces. Also, the number of administered doses is an estimation from distribution numbers and the IIS is not fully implemented in every region. This may impair the ability to differentiate between first and second dose administration in order to assess the national deployment of total vaccination doses. Spain is facing challenges with consolidating the quality of registry data.

Scheduling people for vaccination appointments

The implementation and information on subnational vaccination invitation systems is still under development in some regions of Austria which is challenging.

Limited vaccine supply

Three countries reported limited vaccine supply as a challenge (Finland, Latvia and Spain). In order to vaccinate as many people in the priority groups as possible when vaccine supply is low, countries are discussing postponing the administration of the second dose. Ireland has extended the dose interval for Comirnaty from 21 to 28 days; the Netherlands decided to extend the dose interval for Comirnaty to up to 42 days; Czechia is currently planning to extend the timing between the first and second dose to provide the first dose to as many people in the priority groups as possible; while the decision is still under discussion in Denmark, France, Iceland, Luxemburg, Spain and Portugal.

The aim set out by the European Commission for Member States to vaccinate a minimum of 70% of the adult population by summer 2021 is being severely hampered by limited vaccine production. Vaccine producers have announced that there will be delays in the delivery of vaccine doses for the EU. There are reports that these delays could lead to significant shortages in Member States, for example Germany reports an expected 10 weeks of vaccine shortages in Germany [57] and in Spain authorities have suspended the administration of first doses of the vaccine in Madrid for two weeks, due to reported low supplies of the vaccine, to ensure that people who have already received their first dose also receive their second dose within the recommended dosing schedule [58]. Authorities in France have also reported that from 2 February 2021 all deliveries of first doses of COVID-19 vaccines to medical establishments in Paris and two other regions would be suspended due to limited vaccine supply, however administration of second doses would continue [59]. The limited vaccine supply is expected to continue to have a significant impact on Member States implementation of their vaccine deployment plans and for reaching country targets. This may lead to further adjustments to prioritisation strategies and potential delays of vaccination for some target groups

Logistical, storage and workforce challenges

One of the reasons given for adjusting priority groups for vaccination in Austria and Czechia was based on challenges with vaccine storage and supply chain capacity. Czechia also reported adaptations based on the availability of human resources for vaccination.

Vaccine acceptance and communication challenges

Spain is facing challenges with hesitancy or refusal to be vaccinated in the elderly in long-term care facilities (although in general there is high coverage in people who are eligible but lower in staff working in long-term care facilities). Romania is seeing a spread of disinformation and Norway is finding it challenging to explain that there is no causality between the death of vaccinated people and the vaccine. Norway is also finding it challenging to communicate to the community that there is a second dose in stock and that they will hold onto it until it is time for it to be used. In Austria, one reason for adapting the priority groups for vaccination was linked to slow initial vaccine uptake in elderly care homes.

Further details on future challenges that countries expect with continued vaccine rollout

Shortages of equipment

In Austria there is an expected shortage of equipment needed for vaccination by March 2021 due to insufficient (global) availability of supply of equipment with the valid ISO certificates.

Logistical challenges

An anticipated future challenge is that the characteristics of available vaccines may not correspond with the logistical and practical deployment needs, this could lead to a discrepancy between the advised and the actual vaccination prioritisation (Austria).

Vaccine acceptance and communication challenges:

Future challenges may arise due to the difficulties in establishing a solid line of communication with various target groups leading to a lack of positive community reinforcements which may affect the uptake of vaccinations in those groups (Austria). Croatia expect a possible low response to vaccination in phase 3 (when more of the general population will be eligible for the vaccine). Latvia expect that future challenges will involve different levels of public trust in the vaccination campaign, communication, misleading information and people's readiness to vaccinate.

Production challenges

Malta expects to face future challenges with vaccination rollout if the manufacturer reduces allocation due to limited vaccine production. Romania also responded that insufficient supply due to insufficient manufacturing of the Pfizer COVID-19 vaccine would be a future challenge.

Challenges with coverage of vaccines

A future challenge mentioned by Spain may be the difficulty in reaching homogenous vaccination coverage in different regions, these differences in vaccination rates by region could become a challenge.

Lessons learned/good practices put in place that may be helpful for other countries around different aspects of vaccination rollout

Some countries have offered lessons learned and good practices from their vaccination campaigns. For example, from Spain: the need for multidisciplinary participation in the strategy and from Norway: the need for extensive coordination between national and local authorities to ensure successful deployment. The Netherlands have made the decision to include people 60+ and inpatients in mental health facilities as priority groups. Germany suggested regular monitoring of vaccination uptake and vaccine acceptance. The Robert Koch Institute in Germany publishes results on this monitoring in their Epidemiological Bulletin [60].

Discussion

This document provides a follow up to the ECDC technical report 'Overview of COVID-19 vaccination strategies and vaccine deployment plans in the EU/EEA' published on 2 December 2020 [13]. Following the start of the deployment of COVID-19 vaccines in EU/EEA countries, this document outlines the different aspects of the implementation of national COVID-19 vaccination strategies and vaccine deployment plans as well as the progress in the rollout across the EU/EEA, including challenges that countries are facing, or may face in the future, and lessons learned so far that other countries may find helpful.

All EU/EEA countries have developed a national COVID-19 vaccination strategy or vaccine deployment plan and have started their vaccination campaigns. Three COVID-19 vaccines have been granted conditional marketing authorisation by the European Commission (Comirnaty on 21 December 2020, COVID-19 Vaccine Moderna on 6 January 2021 and COVID-19 Vaccine AstraZeneca on 29 January 2021), and countries will introduce vaccines by other manufactures as soon as authorised for use by the European Commission.

For countries that have reported data to TESSy, as of 29 January 2021, the proportion of doses distributed to EU/EEA countries that have been administrated ranged between 21.5% and 100%. In addition, the estimated vaccine uptake for the first dose among adults varied between 0.9% and 3.8% as of 29 January. At this stage, data should be interpreted with caution and all possible factors affecting vaccine deployment in each country should be considered, while working to improve data completeness and quality.

Due to the limited supply of doses in the initial stages of the vaccine rollout, all countries have developed a phased approach to vaccination administration, indicating different priority groups eligible for vaccination in each phase. At this stage, vaccination campaigns should be focused on protecting those most at risk from severe disease, and reducing morbidity, mortality and the burden on healthcare systems. Vaccination of healthcare workers is beneficial since it improves the resilience of the healthcare system. Its benefit in healthcare settings would be further heightened if the vaccines are shown to be effective against infection, and therefore transmission; this would offer indirect protection to patients, residents of long-term care facilities and other high-risk individuals [14].

As the practicalities of vaccination rollout are experienced by EU/EEA countries, adaptations to the definition or approach to priority groups have occurred based on different factors, such as the slow uptake of the vaccine in elderly care homes, vaccine storage and supply chain capacity.

Countries are also adapting strategies and vaccination guidelines, due to changes in the epidemiological situation, new evidence about the virus, vaccine characteristics and updated product information. It is likely that further adaptations will occur as the rollout progresses and more evidence becomes available. Ensuring an iterative approach and flexibility to adapt national strategies is essential for an effective and efficient vaccine deployment.

Regarding vaccine delivery options, supply chain management systems and workforce capacity, most countries are utilising existing vaccination structures, while some plan to introduce further vaccination sites once more doses become available. The majority of countries reported that supply chain systems, including storage capacity, are currently adequate. However, some pointed out specific challenges related to shortages of equipment needed for vaccination, such as availability of low dead-space syringes. As the rollout continues, an increase in types as well as number of vaccination settings is expected as well as additional workforce. Coordination between different authorities at local and national level is showing to be a significant factor in the smooth rollout of the vaccines within countries.

Monitoring the date of vaccine administration, what dose and what vaccine product are used for every person is essential to monitor the delivery of the COVID-19 vaccination programme and to calculate population-based uptake and coverage estimates. Monitoring individual vaccination data is also important to generate supporting evidence for vaccine effectiveness and safety studies. The majority of countries have now reported that systems are in place for monitoring COVID-19 vaccines and most are using an existing immunisation information system or an ad-hoc electronic vaccination registry to record vaccination data. However, some countries are facing challenges with their monitoring systems, such as ensuring completeness and quality of registry data. Ensuring complete, timely and high-quality monitoring of COVID-19 vaccinations at an individual and population level is crucial for ongoing monitoring, evaluation and improvement of national campaigns, and it is key that problems with monitoring systems are rapidly addressed.

Countries have made progress with developing national communication strategies and plans over the past weeks. Communication strategies and plans are vital to the success of vaccination campaigns. Some countries have reported challenges with regards to communication, such as facing hesitancy towards the COVID-19 vaccination in the elderly in LTCF, the spread of fake news and difficulties in establishing a solid line of communication with various target groups, which may lead to a lack of positive community reinforcements. It is vital that communication plans are developed as part of the vaccination deployment plan. From country experience, the regular monitoring of vaccination uptake and willingness to be vaccinated at population level may be a good practice that can help the development of messages and responses for different target audiences. Communication messages should be aligned to avoid confusion and being prepared to provide immediate and effective communication responses can help to contain the spread of misinformation and disinformation.

ECDC continues to undertake activities to support Member States in the implementation of vaccination strategies and deployment of COVID-19 vaccines across the EU/EEA. ECDC and EMA are developing a structured post-marketing monitoring framework to estimate vaccination impact, effectiveness and promptly detect and analyse safety signals in line with the respective mandates of ECDC and EMA. ECDC also continues to support countries in developing or improving immunisation information systems in the EU/EEA and is working closely with the European Reference Networks and Digital Health in the European Commission in order to support countries with their systems. In December and in early January, ECDC carried out exercises to stress-test EU/EEA countries' COVID-19 vaccination strategies and deployment plans. ECDC supported countries in assessing their preparedness for the deployment of vaccines, identifying gaps and follow up actions. The results from these stress tests will be published shortly. ECDC is implementing, jointly with WHO/Europe, a monitoring system to collect information on vaccine deployment through TESSy, and has developed a COVID-19 vaccine tracker that provides an overview of the COVID-19 vaccines rollout and ongoing monitoring of vaccination uptake across the EU/EEA that is available on the ECDC website.

Limitations of the information collected in this report

The information presented in this report is not exhaustive. There were different response rates from countries to the vaccine questions collected via the ISAA report from week to week. As countries continue with the rollout of their national vaccination campaigns there will continue to be adaptations to strategies and plans. This is a rapidly moving process and this report provides a snapshot of the progress.

Conclusions

As EU/EEA countries progress with the rollout of COVID-19 vaccines, vaccination strategies will need to be flexible and adaptable over time to respond to changing epidemiological patterns, new evidence on disease pathogenesis and risk groups, as well as new knowledge about safety, immunogenicity and protection from the available vaccines. Countries will also need to ensure the responsiveness and resiliency of health systems in the vaccine deployment process and address, in a timely manner, limited vaccine delivery, human resources, supply chain logistics and storage, which may affect the implementation of the national campaigns and compromise their overall impact.

Communicating effectively about prioritisation of population groups and the rationale behind the choices, vaccine characteristics in terms of safety and efficacy, and any adaptations that are made to vaccination strategies during the roll out is vital for maintaining trust in the vaccination campaigns.

As more vaccine doses become available, EU/EEA countries should accelerate vaccination rollout programmes in order to protect those most at risk from severe disease and reduce the burden on health systems. Possible options for acceleration of vaccination campaigns may include:

- increasing the number of vaccination centres
- increasing the number of vaccinating staff (e.g. primary care staff, retired healthcare workers, etc.)
- reviewing the prioritisation of risk groups to be vaccinated to ensure that those at highest risk of hospitalisation and death are rapidly protected, depending on vaccine availability
- continuously monitoring vaccination deployment and rapidly addressing challenges and shortcomings
- deploying the vaccine as a priority to severely affected regions [5]
- Communication strategies to address misinformation and disinformation, improve vaccine acceptance and minimise hesitancy.

As countries are progressing in the rollout of COVID-19 vaccines, there are still many unknowns in relation to their characteristics of effectiveness, safety and acceptability, as well as most effective and efficient deployment mechanisms. Non-pharmaceutical interventions should therefore continue to be applied, as recommended by public health authorities, along with the introduction of COVID-19 vaccination.

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Acknowledgements

Ingrid Keller, Laura Jansen and Danila Pietersz from the European Commission Directorate-General for Health and Food Safety coordinated the sending of questions via the ISAA to Member State representatives and provided summary reports of the results. The IPCR Member State representatives for responding to the ISAA report questions and the HSC Members and NITAG collaboration members for providing validation of the data included in the report.

Disclaimer

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

Annex 1. Overview of priority groups of COVID-19 vaccination recommendations in EU/EEA Member States as of 28 January 2021*

Countries	Priority groups identified						
	Elderly (in years)	Elderly in LTCF	Adults with co-morbidities	Healthcare workers	Social care personnel / personnel in LTCF	Other risk groups (i.e. workers of essential public services other than health; social care workers; others)	Comments
Austria	60+	Yes	Yes	Yes	Yes	Yes (emergency room, medical care for COVID-19 patients, emergency services, testing personnel, employees from areas in which aerosol-generating activities relevant to infection are carried out, e.g. smear taking, bronchoscopy, dental work, staff in laboratories with processing of COVID-19 samples etc.; activities in the field of geriatrics, transplant medicine, hemato-oncology, obstetrics and neonatology)	
Belgium	65+	Yes	People aged 45-65 years with comorbiditie s	Yes	Yes	Yes	
Bulgaria	Yes		Yes	Yes		Workers of essential public services other than health	
Croatia	65+	Yes	Yes	Yes	Yes	Employees in kindergartens, primary and secondary schools, colleges	
Cyprus	65+		Yes	Yes		Essential workers (e.g. armed forces, police, security forces, Social services, firemen, ambulance services, staff working in elderly people homes)	
Czechia	65+	Yes	Yes	Yes	Yes	Social service workers and clients, homecare providers, outpatient specialists, dentists, pharmacists, critical infrastructure workers - integrated rescue system, energy workers, government, crisis staffs, pedagogical staff and other public health authorities	
Denmark	65+	Yes	Yes	Yes	Yes	Social workers and part of critical infrastructure	
Estonia	70+	Yes	Yes	Yes	Yes	Social care workers and receivers of these services, essential workers, other workers working in healthcare institutions	
Finland	70+	Yes	Yes	Yes	Yes	Social care workers	
France	65+	Yes	Yes	Yes	Yes	Health and social care workers, risk groups for severe COVID-19 disease, disabled persons in residence facilities	
Germany	60+	Yes	Yes	Yes		Yes	First phase: • Elderly in long term care facilities • Elderly >80 years • Healthcare workers with high risk contacts • Healthcare workers with contact to vulnerable groups • Personnel in long-term facilities
Greece	60+	Yes	Yes	Yes		Workers of essential public services other than health; social care workers	
Hungary	60+		Yes	Yes		Critical infrastructures, social care workers	

Countries	Priority groups identified						
	Elderly (in years)	Elderly in LTCF	Adults with co-morbidities	Healthcare workers	Social care personnel / personnel in LTCF	Other risk groups (i.e. workers of essential public services other than health; social care workers; others)	Comments
Iceland	60+	Yes	Yes	Yes	Yes	Healthcare workers in EMT´s and ambulance personnel, on-scene response units from fire brigades, police, Coast Guard. All staff in day care centres, primary schools and secondary schools. All social- and welfare workers in direct contact with wards of those systems. All individuals in a vulnerable position due to social or financial situation	
Ireland	55	Yes	Yes	Yes			
Italy	60+	Yes	Yes	Yes		Social care workers	
Latvia	60+	Yes	Yes	Yes	Yes	Social care workers, people between 18-64 in risk groups, health care personnel with patient contact, operative staff and educational staff	
Liechtenstein							Recommendations not found
Lithuania	Yes	Yes	Yes	Yes	Yes	Educational institutions workers	
Luxembourg	65+	Yes	Yes	Yes	Yes	Vulnerable individuals (according to national definition for COVID-19 vulnerability)	
Malta	First group: 85+, second group: 80-85 third group: 70-80 fourth group +55	Yes	Yes	Yes	Yes	Essential workers: police, armed forces, civil protection, detention workers	On 4 November 2020, the ACIP (NITAG) recommended that residents in long-term facilities should be specified as a priority group, as well as health/social Care workers in the same facilities.
the Netherlands	60+	Yes	Yes	Yes			
Norway	65+	Yes	Yes	Yes			
Poland	65+	Yes	Yes	Yes	Yes	Social care workers, essential workers (e.g. armed forces, police, security forces)	This may be modified as regulator data and more information becomes available.
Portugal	65+	Yes	Yes	Yes	Yes	Social care workers, workers of essential public services (armed forces, security forces, pharmacy staff and critical services)	
Romania	65+	Yes	Yes	Yes	Yes	Social care workers and staff of critical infrastructure	
Slovakia	65+	Yes	Yes	Yes	Yes	Soldiers, police officers, firefighters	
Slovenia	Yes	Yes		Yes		Other risk groups (especially residents in long-term care facilities and elderly)	
Spain	Yes	Yes	Yes	Yes	Yes	People who work or live in closed residencies (prisons, nursing homes, etc.)	First stage: 1. Residents and health and social care personnel in care homes for the elderly and the disabled 2. Front-line health personnel 3. Other health and social health personnel 4. Dependent people with disabilities who require intensive support measures (non-institutionalised highly dependents)
Sweden	70+		Risk groups for severe COVID-19 disease	Yes			

** Information gathered from the ECDC survey, the HSC survey, the ISAA report on 14 December 2020, 5 January 2021, 11 January 2021 and the grey literature*

Annex 2. Number of vaccination phases included in EU/EEA countries distribution plans (n=23)*#

Number of phases to vaccinate prioritised target groups	Countries	Comments
2 phases	Belgium, Luxembourg	Belgium: Phase 1A: started on January 5 and involves nursing homes (residents and staff) and is completed by all health care staff. Phase 1B: begins in March and will concern people aged 65+, people aged 45+ at risk and the so-called "essential" functions socially or economically. Phase 2: for May or June will involve the adult population over 18 years of age. Luxembourg: So far decision on the first two phases. Additional phases will be decided later on. Phase 1: healthcare workers and other personnel in hospitals, healthcare workers outside hospitals, healthcare workers in LTCF, residents in LTCF. Phase 2: People aged 75+ starting with the older ones, other highly vulnerable persons.
3 phases	Croatia, Czechia, Greece, Poland, Portugal, Romania, Spain	Croatia: Phase 1: elderly and staff in long-term care facilities, healthcare workers primarily those working with Covid-19 patients (ICU, testing-sites). Phase 2: elderly age range > 65 years and adults with chronic diseases, age range < 65. Phase 3: others. Greece: Phase 1: 1a: healthcare and social workers, 1b: LTCFs, 1c: rehabilitation medical centers, 1d. Prioritized essential governmental staff. Phase 2: 2a. Individuals of 70+ - firstly, 85+, then 80+, 75+, then 70+, 2b. High risk individuals (of any age), 2c. Essential workers, 2d. 60-69 age group, 2e. 18-59 at high risk age group. Phase 3: General population of 18 years and above. Portugal: Phase 1: a) healthcare professionals in the frontline, b) all residents and workers of LTCF; c) people with 80 or more years and people with 50 or more years with chronic high-risk chronic conditions, d) workers of essential public services. Phase 2: people between 65-79 years and between 50-64 with chronic conditions. Phase 3: others. Romania: Phase 1: healthcare workers and nursing homes. Phase 2: elderly (> 65), at risk people and essential workers. Phase 3: general population.

Number of phases to vaccinate prioritised target groups	Countries	Comments
4 phases	Finland, Luxembourg, Malta, the Netherlands, Sweden	Malta: Phase 1: health Care Workers (public & private), nursing, care home and community workers (public, church & private), nursing and care home residents, 85+ Maltese residents. Phase 2: other frontliners (additional HCW and essential workers), 80-84 years old Maltese residents. Phase 3: 70-79 years old Maltese residents, vulnerable <69, school staff, child care centre staff. Phase 4: 55-69years old Maltese residents, rest of the population. the Netherlands: Phase 1: elderly healthcare staff and people living in elderly care, inpatients in mental health facilities and their staff, people from 60 years of age, nurses delivering home based care. Phase 2: people between 18-60 years old with a medical indication. Phase 3: other healthcare staff. Phase 4: people between 18-60 years old.
5 phases	France, Latvia, Slovenia	
6 phases	Germany	
Other	Denmark (12 phases), Hungary (7 phases), Iceland (10 priority groups), Ireland (15 phases), Norway (9 phases), Slovakia (11 phases)	Iceland: The population is divided into 10 priority groups Slovakia: Phase 1: HCWs, students of medicine, employees of hospital and members of mobile testing and vaccination teams. Phase 2: 85+ Phase 4: 75+ Phase 4: 65+, Phase 5: people with serious disease regardless of age, Phase 6: people with moderate disease regardless of age, Phase 7: teachers 55+, Phase 8: person 55+, Phase 9: teachers, Phase 10: 45+, Phase 11: 18+

[*] information gathered from ISAA report on 25 January 2021; updates received from HSC and NITAG members on the 28 January 2021
[#] information in this table is not comprehensive as few countries provided detailed information on the description of different vaccination phases

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