



## **TECHNICAL** REPORT

# Seasonal influenza vaccination and antiviral use in Europe

Overview of vaccination recommendations and coverage rates in the EU Member States for the 2013–14 and 2014–15 influenza seasons

**ECDC TECHNICAL REPORT**

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This report was commissioned by the European Centre for Disease Prevention and Control (ECDC), coordinated by Suzanne Cotter, Darina O’Flanagan (both Health Protection Surveillance Centre, Ireland), Svetla Tsoлова and Kari Johansen (both ECDC); and produced by Jolita Mereckiene

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*Note*

This report is based on data from a seasonal influenza vaccination survey for the 2013–14 and 2014–15 influenza seasons in EU/EEA countries. The survey was conducted by the Vaccine European New Integrated Collaboration Effort III (VENICE), in collaboration with the European Centre for Disease Prevention and Control (ECDC).

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## Abbreviations

ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EU	European Union
HCWs	Healthcare workers
NAP	National action plan
ILI	Influenza-like illness
VENICE	Vaccine European New Integrated Collaboration Effort
CINECA	Consortium at the University of Bologna, Italy
GP	General practitioners
VCR	Vaccination coverage rates
WHO	World Health Organization

## Summary

In Europe, influenza occurs in regular annual epidemics in the winter season. Annual influenza epidemics are associated with high morbidity and mortality. Severe illness and complications are more common in certain risk groups. These include those with chronic medical conditions (e.g. cardiovascular, respiratory, renal and hepatic diseases, diabetes mellitus, immunosuppression due to disease or treatment, obesity, children and teenagers on long-term aspirin therapy) and individuals 65 years of age and above. The main public health intervention to prevent influenza is vaccination. To protect vulnerable individuals and reduce transmission, vaccination is also recommended for healthcare workers (HCWs).

The aim of this survey was to provide an update on seasonal influenza immunisation policies and obtain vaccination coverage rates in European Union (EU) and European Economic Area (EEA) Member States for the 2013–14 and 2014–15 influenza seasons.

A standardised questionnaire was developed and made available as an online survey. The survey was rolled out in December 2015. Experts in each Member State entered data directly online. Of 31 Member States invited to participate in the survey, 30 responded. Luxembourg did not respond to the survey. The United Kingdom provided data separately for England, Northern Ireland, Scotland and Wales.

Of 30 responding Member States, all recommended seasonal influenza vaccination to older age groups. Nineteen of them had influenza vaccine recommendations for those aged  $\geq 65$  years. Hungary, Germany, Greece, Iceland, the Netherlands and Portugal recommended vaccination for those aged  $\geq 60$  years; Malta and Poland recommended vaccination for those aged  $\geq 55$  years; in Austria and Ireland, vaccine was recommended for those aged  $\geq 50$  years; in Slovakia vaccine was recommended for those aged  $\geq 59$  years. Nine countries recommended vaccination for children/adolescents  $< 18$  years of age: Austria, Estonia, and Poland recommended vaccination for children and adolescents in all age groups; Latvia and Slovenia for children aged  $\geq 6$  months to 2 years; Finland for children  $\geq 6$  months and up to 3 years; Malta for children between 6 months and 5 years, and Slovakia for children aged  $\geq 6$  months to 12 years. In the 2013–14 season, the United Kingdom recommended that children aged 2 to 3 years should be vaccinated, a recommendation which in 2014–15 was extended to 4-year-olds in England, to 2–11-year-olds in Northern Ireland and Scotland, and to 4–11-year-olds in Wales).

Of 30 responding Member States, 29 recommended influenza vaccination for HCWs; 24 of these had recommendations in place to vaccinate all HCWs; four recommended vaccination for only certain HCWs.

In Northern Ireland and Scotland, vaccine was offered to all HCWs, while in England and Wales recommended that HCWs in direct contact with patients should be vaccinated.

All Member States recommended that people with immunosuppression due to diseases or treatment, metabolic disorders, chronic pulmonary, cardiovascular and renal diseases should receive influenza vaccination. Twenty-seven Member States recommended that people with liver disease should get vaccinated, and 28 did the same for HIV/AIDS. Fifteen Member States recommended that people on long-term aspirin use (children  $< 18$  years of age). Nineteen Member States had recommendations in place to vaccinate those with morbid obesity.

Of 30 responding Member States, 27 recommended vaccination of pregnant women. Twenty-five Member States recommended vaccination of all pregnant women, while two Member States recommended vaccine only for those pregnant women with chronic medical conditions. Twenty-one Member States recommended influenza vaccination for pregnant women in any trimester of pregnancy.

In 2014–15, vaccination coverage rates, which were measured through an analysis of administrative data or estimated by survey methods, were known in 25 Member States for older target populations and ranged from 1.0% to 76.3% (median 45.5%). The coverage among healthcare workers was known in 13 Member States and ranged from 5% to 54.9% (median 24%). The coverage for those with chronic medical conditions was provided by seven Member States and ranged from 21% to 71.8% (median 49.8%). The coverage for pregnant women was known in five Member States (0.3% to 56.1%, median 23.6%). Three Member States were able to report vaccination coverage rates for residents of long-term care facilities (96.6% in Ireland, 72.2% in Slovakia, and 77% in Portugal).

The predominant payment mechanism for influenza vaccinations<sup>1</sup>, as reported by Member States, was through national health services (or equivalent) for those population groups for whom seasonal influenza vaccine was recommended (children, adolescents, adults, those with chronic medical conditions, pregnant women, HCWs and members of closed communities).

Eight Member States recommended pre-exposure chemoprophylaxis in influenza outbreak situations for unvaccinated residents of long-term care facilities and unvaccinated healthcare workers (HCWs). Pre-exposure

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<sup>1</sup> By 'vaccination' we mean both cost factors: the vaccine itself and the administration of the vaccine.

chemoprophylaxis was also recommended in seven Member States if the vaccine did not match the circulating influenza strain. Post-exposure chemoprophylaxis was recommended for unvaccinated close contacts of at-risk individuals (six Member States) and HCWs (five Member States). Treatment of inpatients was recommended in 21 Member States for severe, complicated influenza-like illness (ILI) and in 19 Member States for progressive ILI. Outpatient treatment was recommended for those <5 and those ≥65 years of age in five and 14 Member States, respectively. Sixteen Member States had recommendations for individuals with chronic medical conditions, 11 for pregnant women, and 12 for residents in long-term care facilities.

In conclusion, the results of the survey indicate that most of the Member States have clear recommendations which population groups should receive seasonal influenza vaccine, i.e. those with chronic medical conditions, pregnant women, older age groups, and HCWs. However, there was a notable discrepancy between having recommendations and the ability to monitor and report vaccination coverage among those with chronic medical conditions and pregnant women: less than a quarter of EU/EEA Member States are able to do so. Just under half of the Member States were able to report on vaccination coverage for HCWs.

Although there has been widespread consensus for many years that the older age groups should be vaccinated, the EU target of 75% was reached in only one Member State in the 2013–2014 season, and in the 2014–15 influenza season not a single Member State reached the target. As the ability to monitor vaccination coverage is a key component of any vaccination programme, all Member States may need to reconsider their approach in order to collect more comprehensive and accurate information on vaccination coverage for all targeted population groups. Member States that do not monitor vaccination coverage among older age groups are encouraged to implement age-group-specific coverage/monitoring systems in accordance with national recommendations to enable them to track their progress or identify obstacles to achieving national and EU targets.

Most countries recommend antiviral use for treatment, however recommendations on antiviral use for prophylaxis of influenza are not common among Member States.



# Introduction

Influenza is a contagious viral respiratory infection, which typically occurs as an epidemic during the winter months in the northern hemisphere. Although the illness caused by influenza is usually self-limiting, it can have considerable impact on an individual's daily life. At a population level, large numbers of cases with mild to moderate illness increase demands on health services and decrease productivity in the workforce, with associated economic cost and social disruption [1-3]. The number of people affected varies from year to year among countries, making it hard to predict the annual number of deaths or economic impact. ECDC estimates that on average nearly 40 000 people die prematurely each year from influenza in European Union/European Economic Area (EU/EEA) countries [4].

Vaccination remains the most effective public health intervention to mitigate and prevent seasonal influenza [5]. The European policy for influenza vaccination is protection of people at higher risk, either directly through vaccination, or indirectly by vaccinating subgroups (e.g. healthcare workers) that are likely to infect those at higher risk for influenza.

The primary indicators of success in implementation of vaccination programmes are high vaccination coverage rates (VCR), i.e. the proportion of targeted populations who have been vaccinated. In December 2009, the European Council unanimously recommended that influenza vaccination coverage in all at-risk groups should reach 75% in all EU countries for the 2014–15 influenza season [6]. Risk groups were defined in accordance with guidance from ECDC and the World Health Organization: 'older' individuals (often defined as aged  $\geq 65$  years) and people of all ages  $\geq 6$  months of age with chronic medical conditions [7;8]. The WHO Strategic Advisory Group of Experts on Immunisation (SAGE) also recommends influenza vaccination for pregnant women (who have an increased risk of severe disease and death from influenza), children  $< 5$  years of age, and particularly children  $< 2$  years of age, who have a high burden of influenza [9].

The EU recommendation (Council Recommendation hereinafter) encouraged Member States to adopt and implement national, regional or local action plans or policies to improve seasonal influenza VCR (including for HCWs) and to measure coverage in all risk groups. Countries were also encouraged to report on a voluntary basis to the European Commission on the implementation of the recommendation. ECDC-supported VENICE surveys have been identified as being an effective way of doing this. These surveys offer an established mechanism to monitor implementation, with several surveys already conducted before and after the Council Recommendation was issued [6].

## Aim and objectives

The aim of the survey was to update data on seasonal influenza immunisation policies (collected in previous VENICE surveys) and obtain EU/EEA vaccination coverage rates for the 2013–14 and 2014–15 influenza seasons in order to see whether the EU target of 75% was met in all at-risk or targeted groups.

## Specific objectives

- Identify specific recommendations for the 2014–15 seasonal influenza vaccination for different targeted groups, based on age, medical risk, and profession.
- Obtain the 2013–14 and 2014–15 influenza vaccination coverage rates for the above groups.
- Obtain information on national payment mechanisms used for seasonal influenza vaccination during the 2014–15 season.

## Methodology

### Study design

The survey was carried out through a web-based platform with protected access restricted to appointed experts from all EU/EEA Member States. This survey was a collaborative study conducted by ECDC, the Vaccine European New Integrated Collaboration Effort (VENICE) Project and the EU/EEA Member States. Currently, 28 EU and three EEA (Iceland, Norway, and Liechtenstein) Member States participate in VENICE.

### Data collection

A standardised questionnaire, using predominantly close-ended questions, was completed in December 2015. The questionnaire was grouped into thematic sections to make it easier to complete. Each section could be completed separately. Information was sought on population groups recommended for influenza vaccination (age, occupation, chronic medical conditions or social situation) and the method used to monitor vaccination coverage. Information was also sought on recent vaccination coverage in specific population groups, payment mechanisms for vaccine

and administration, and vaccination settings. Information on antiviral agents used and recommended by Member States during the season was also collected. In this report, we summarise collected data on seasonal influenza vaccine recommendations, reported VCR, payment mechanisms, and use of antivirals.

## Pilot testing

In order to assess if questions were understandable, consistent throughout all sections, and not considered too sensitive to be shared, the questionnaire was pilot-tested in November 2015 by leading VENICE project partners. After the pilot testing, the questionnaire was reviewed and amended, taking on board comments from the partners.

## Data handling

The finalised electronic questionnaire was uploaded to the VENICE website in late November 2015 and open for input from all participating countries (<http://venice.cineca.org>). The questionnaire was completed by appointed experts from all participating Member States. Non-responding Member States were followed up by individual contact. The data were analysed in January 2016, and a final report was completed in April 2016.

## Data analysis

A descriptive analysis was carried out, summarising data by calculating frequencies or proportions of responses by Member States and population groups targeted for seasonal influenza vaccination. VCRs were calculated as proportions – the number of vaccinated individuals (numerator) divided by the number of population groups targeted for vaccination (denominator) – for each participating Member State.

The collected VCRs for the 2013–14 and 2014–15 influenza seasons were compared. This report presents data on vaccination recommendations, payment mechanisms, and use of antivirals for influenza season 2014–15. No full-scale survey was conducted in 2013–14 (only vaccination coverage rates were collected); consequently, data on recommendations and antiviral use were compared with the data collected for season 2012–13.

The analysis of Member State information relating to payment mechanisms for different targeted population groups was difficult because a majority of countries reported multiple options (vaccine or administration payment mechanisms varied substantially, even within countries). The data presented in this report reflect this diversity of payment options.

Data for the United Kingdom were provided separately for England, Northern Ireland, Scotland and Wales. The UK was considered as one Member State when responses were the same for a given question (e.g. on policies or mechanisms across the UK, such as recommendations and payment mechanisms); if responses were different on a given question, a footnote indicates and explains the differences. Data on VCRs are presented and interpreted separately for each country in the UK.

## Data validation

A draft report containing preliminary data was circulated among the national experts who had completed the questionnaire. Experts were asked to validate their data and make changes as necessary.

# Results

## Response rate

Of 31 EU/EEA Member States invited to participate, 30 responded to the survey. Luxembourg did not provide data.

## Seasonal influenza vaccination recommendations

### Influenza vaccination policy

All 30 Member States indicated that they had implemented national seasonal influenza vaccination recommendations (e.g. recommendations and guidelines for age groups, risk groups and target groups).

The Council Recommendation of the European Union encourages Member States to adopt and implement national, regional or local action plans or policies, as appropriate. At the time of the survey, three Member States indicated that a national action plan (NAP) to improve vaccination coverage for seasonal influenza vaccination, as recommended by the Council Recommendation, had been adopted; two Member States reported that they updated their plans in accordance with the Council Recommendation; 20 Member States reported that although a NAP was not formally developed, they did have vaccination policies in place. In addition, four Member States reported that an NAP was under development. In the United Kingdom–Wales, an NAP was adopted; in the United Kingdom–England and the United Kingdom–Scotland, plans were updated in accordance with the Council Recommendation. In the United Kingdom–Northern Ireland, where no vaccination plan is available, a corresponding policy is in place (Annex 1: Table 2).

### Age groups recommended for influenza vaccination

During the 2014–15 influenza season, nine of the 30 responding Member States recommended seasonal influenza vaccination to healthy children or adolescents (Austria, Estonia, Finland, Latvia, Malta, Poland, Slovakia, Slovenia and the United Kingdom); all Member States issued recommendations to vaccinate older age groups. However, the exact age at which children, adolescents and older individuals were recommended influenza vaccine differed between Member States (Table 1; Annex 2: Maps 3 and 4). For the 2013–14 season, Portugal lowered its age recommendation for influenza vaccination from  $\geq 65$  years to  $\geq 60$  years of age, while the vaccine is only free of charge for those 65 years or older. The same changes in age recommendations were made in Hungary in 2014–15, where vaccination is free of charge for those  $\geq 60$  years of age.

**Table 1. Member States recommending seasonal influenza vaccination for children, adolescents and adults, 2014–15 influenza season**

Country	Age groups: children								Age groups: adults (years)					
	$\geq 6$ –24* months	$\geq 6$ –36 months	$\geq 6$ –59 months	$\geq 2$ –4 years	$\geq 2$ –11 years	11 years	$\geq 6$ months– 12 years	$\geq 6$ months– <18 years	$\geq 18$ – 64	$\geq 50$	$\geq 55$	$\geq 59$	$\geq 60$	$\geq 65$
Austria <sup>a,c</sup>								R	R	R				R
Belgium <sup>b</sup>										R				R
Bulgaria														R
Croatia														R
Cyprus														R
Czech Republic														R
Denmark														R
Estonia <sup>c</sup>									R	R				R
Finland		R												R
France														R
Germany														R
Greece														R
Hungary														R
Iceland													R	
Ireland <sup>d</sup>										R				R
Italy														R
Latvia	R													R
Liechtenstein														R
Lithuania														R
Malta			R								R			
Netherlands														R
Norway														R
Poland <sup>c</sup>									R	R	R			

Country	Age groups: children							Age groups: adults (years)						
	≥6 –24*	≥6 – 36 months	≥6 – 59 months	≥2–4 years	≥2–11 years	11 years	≥6 months–12 years	≥6 months–<18 years	≥18–64	≥50	≥55	≥59	≥60	≥65
Portugal <sup>e</sup>													R	R
Romania														R
Slovakia							R					R		
Slovenia	R													R
Spain <sup>f</sup>														R
Sweden														R
United Kingdom–England <sup>g</sup>				R										R
United Kingdom–Northern Ireland <sup>h</sup>					R									R
United Kingdom–Scotland <sup>i</sup>					R									R
United Kingdom–Wales <sup>j</sup>				R		R								R

Source: National seasonal influenza vaccination survey, December 2015

\* Up to and including children aged 24 months

<sup>a</sup> Vaccination is recommended for people ≥50 years of age, particularly for people ≥65 years of age.

<sup>b</sup> The guidelines recommend vaccination for those ≥65 years of age. This age group belongs to the first priority group for receiving influenza vaccine; the guidelines also mention explicitly that the vaccine is also useful for healthy persons aged 50 and older.

<sup>c</sup> In Austria, Estonia and Poland, vaccination against seasonal influenza is recommended for all population groups six months or older.

<sup>d</sup> The National Immunization Technical Advisory Group (NITAG) recommends vaccination for all people ≥50 years of age, but the national influenza programme specifies ≥65 years.

<sup>e</sup> Vaccine recommended for those ≥60 years of age; vaccine is free of charge for those 65 years or above.

<sup>f</sup> The recommendation at the national level is for those ≥65 years of age; however 10 out of 19 regions recommend vaccination for all people 60 years and older.

<sup>g</sup> In 2013–14, vaccination was recommended for all two- and three-year-old children; in 2014–15, four-year-olds were added to this group.

<sup>h</sup> In 2013–14, vaccination was recommended for all two- and three-year-old children and all children in grade 6 (10 years of age); in 2014–15, vaccination was recommended for all children aged 2 to 11 years.

<sup>i</sup> Recommended for all children aged 2 to 11 years.

<sup>j</sup> Since the 2014–15 influenza season, vaccination is recommended for all children aged two to four years. Vaccination is also recommended for all children in grade 7 (11 years of age).

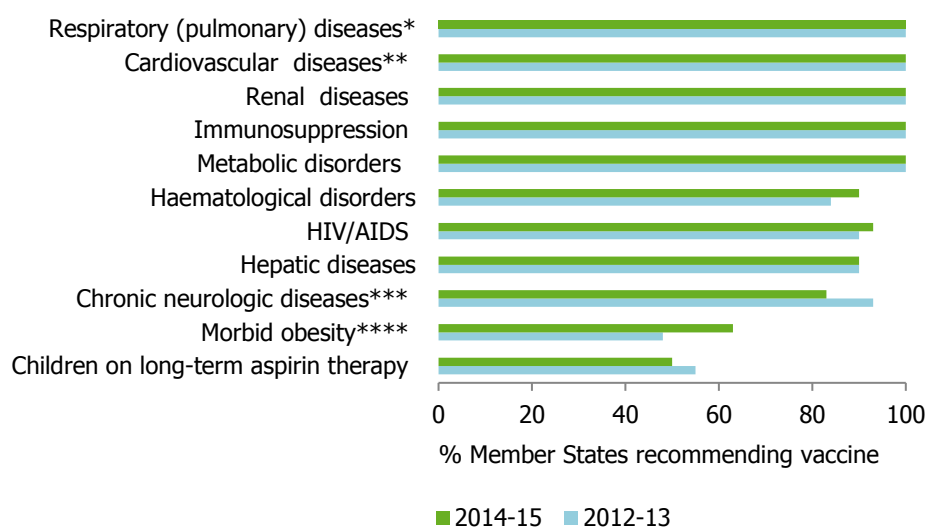
R = recommended. 'Recommended' is defined as the existence of a written recommendation in an official policy document stating that a particular population group should receive seasonal influenza vaccine.

## Chronic medical conditions

During the 2014–15 influenza season, all 30 Member States participating in the survey recommended seasonal influenza vaccination for patients with treatment-induced and/or disease-induced immunosuppression, metabolic disorders, and chronic pulmonary, cardiovascular and renal diseases. Twenty-seven Member States recommended vaccination for people with hepatic disease; 28 countries recommended vaccination for people living with HIV/AIDS. Vaccination was also recommended in 19 countries for those with morbid obesity. Compared with 2012–13, the number of countries recommending vaccination for those with morbid obesity, haematological disorders and HIV/AIDS grew in 2014–15 (Figure 1; Annex 3: Table 3).

Member States reported some changes in recommendations for clinical risk groups. In Ireland vaccine was recommended for individuals with Down syndrome in June 2014. In November 2014, the Latvian national health service began funding vaccinations for children up to the age of 18 years who are in a clinical risk group. In Norway, vaccination was recommended for other chronic and/or severe diseases where influenza poses a serious health threat, after individual assessment by a doctor. In Finland, recommendations are no longer tied to certain clinical conditions and recommendations are left to local HCWs, mostly because strict definitions seem to be an obstacle to raising influenza vaccination coverage.

**Figure 1. Proportion of Member States recommending seasonal influenza vaccine by chronic medical condition, 2012–13 and 2014–15 influenza seasons**



Source: National seasonal influenza vaccination survey, December 2015

\* Respiratory (pulmonary) diseases, e.g. chronic obstructive pulmonary disease, cystic fibrosis, asthma

\*\* Cardiovascular diseases, e.g. congenital heart disease, congestive heart failure and coronary artery disease, except hypertension

\*\*\* Chronic neurologic diseases or neuromuscular conditions, including disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy (seizure disorders), stroke, intellectual disability (mental retardation), moderate to severe developmental delay, muscular dystrophy, or spinal cord injury

\*\*\*\* Morbid obesity is defined as having a body mass index of  $\geq 40\text{kg/m}^2$

## Vaccination and pregnancy

In the 2014–15 influenza season, 27 of 30 responding Member States indicated that influenza vaccination was recommended for pregnant women. Twenty-five countries recommended vaccination for all pregnant women; two countries (Croatia and the Netherlands) recommended vaccination only for pregnant women with chronic medical conditions, while Bulgaria, Malta and Slovakia do not recommend that pregnant women should be vaccinated. Although Malta does not officially recommend influenza vaccination for pregnant women, it encourages pregnant women to get vaccinated, but without offering to cover the costs. Slovakia does not have an official written recommendation backed by legislation, but advice to get vaccinated is unofficially given by immunisation experts.

Twenty-one Member States recommended vaccination at any stage of pregnancy (the Czech Republic, Croatia, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Malta, the Netherlands, Poland, Romania, Slovenia, Spain, Portugal, the United Kingdom) and seven Member States (Austria, Belgium, Cyprus, Germany, Italy, Norway, Sweden) recommended vaccination only for the second and third trimesters. In Denmark, healthy pregnant women are recommended influenza vaccination in the second and third trimesters.

In Germany and Norway, vaccination was recommended for all healthy pregnant women in the second and third trimesters of pregnancy; women with chronic medical conditions were recommended vaccination during the first trimester of pregnancy.

Ten Member States indicated that women who did not receive seasonal influenza vaccination during pregnancy should still be immunised in the immediate postpartum period (within six weeks after delivery). Four countries (Austria, Estonia, Liechtenstein and Greece) recommend vaccination for all postpartum women, while Croatia, Denmark, Finland, France, Ireland, and the Netherlands only recommended vaccination for those postpartum women with a chronic medical condition. (In the Netherlands, this falls into the category of 'chronic medical condition'.) In Poland, vaccination advice for pregnant women and woman who plan to get pregnant is part of the national vaccination schedule. Recommendations also include women in the postpartum period.

Updated vaccine recommendations were reported by Greece and Portugal. In Greece, vaccination was recommended during the postpartum period and for breastfeeding women. In Portugal, all pregnant women were recommended vaccination; in previous seasons, vaccination was recommended only for those in the second and third pregnancy trimesters.

### Map 1. Member States recommending seasonal influenza vaccine for pregnant women, 2014–15 influenza season



Source: National seasonal influenza vaccination survey, December 2015

**Blue:** Recommended for all

**Yellow:** Recommended for those with medical conditions

**Grey:** No recommendation

Malta: no recommendation

Liechtenstein: recommended for all

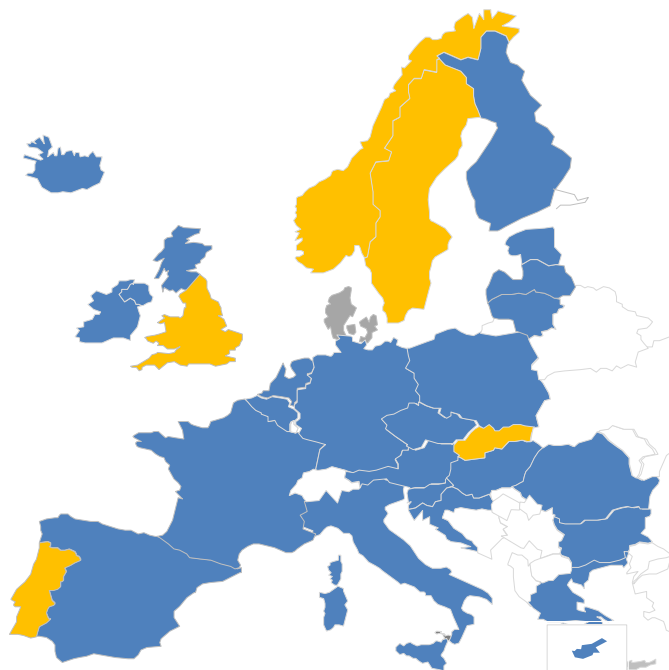
## Occupational groups

### Healthcare workers

In the 2014–15 influenza season, 29 of 30 responding Member States recommend vaccination for healthcare workers (HCWs). Twenty-four of them reported that influenza immunisation was recommended for all HCWs; four Member States recommended vaccination of some HCWs (e.g. outpatient, inpatient, long-term care). In the United Kingdom–Northern Ireland and the United Kingdom–Scotland, vaccination was recommended for all HCWs; in the United Kingdom–England and the United Kingdom–Wales, vaccination was recommended only for frontline HCWs or those HCWs who have direct contact with patients (Map 2). Although there is no national recommendation to vaccinate HCWs in Denmark, most regions and municipalities offer HCWs free vaccinations. In Sweden, vaccination was only recommended for staff caring for severely immunocompromised persons. In Slovakia, vaccination was recommended for HCWs in close contact with patients or foci of infection.

In all responding Member States, the vaccination of HCWs is voluntary, which, in this document, is defined as individual free will (choice) when deciding on seasonal influenza vaccination; there is also no penalty for not getting the vaccine.

## Map 2. Member States recommending seasonal influenza vaccine for healthcare workers, 2014–15 influenza season



Source: National seasonal influenza vaccination survey, December 2015

**Blue:** Recommended for all

**Yellow:** Recommended for some\* healthcare workers

**Grey:** No recommendation

Malta, Liechtenstein: recommended for all

\* 'Some' refers to e.g. staff at outpatient facilities, staff at inpatient facilities, staff at long-term-care facilities, frontline HCWs, and HCWs who have direct contact with patients.

## Other occupations

In the 2014–15 influenza season, 27 of the 30 responding Member States recommended seasonal influenza vaccination for at least one other specified occupational group. Vaccination was not recommended for any occupational groups (except HCWs) in the Czech Republic, Denmark, Latvia, Lithuania, Romania, Portugal, and Sweden.

Influenza vaccination was recommended for military service personnel and poultry industry workers (12 Member States); staff working in laboratories, e.g. in the non-medical academic or environmental sector (13 Member States); police and firefighters (9 Member States); and veterinary service workers (8 Member States). Four Member States recommended the vaccination of teachers and other educational staff (Figure 2; Annex 3: Table 4).

A change in vaccination recommendations was reported from Liechtenstein, where the vaccination recommendation for workers in the poultry and pig industry was dropped.

**Figure 2. Proportion of Member States recommending seasonal influenza vaccination by occupational group, 2012–13 and 2014–15 influenza seasons**



Source: National seasonal influenza vaccination survey, December 2015

\* Laboratory workers: staff working in laboratories in the non-medical academic or environmental sectors

\*\* Wildlife environmentalists: workers who work with birds, e.g. bird ringing or bird banding

## Population groups in closed communities

In the 2014–15 influenza season, 27 of 30 participating Member States (all but Denmark, Latvia and Sweden) recommended vaccination for residents of long-term care facilities. Austria, Estonia, Malta, and Poland recommended the vaccination of prisoners. Vaccination for children in day-care centres was recommended in Austria, Bulgaria, Estonia, Greece, Malta and Poland. In comparison to the 2012–13 season, observed changes were small: in 2012–13, 26 of 30 responding countries recommended that residents of long-term care facilities should be vaccinated.

## Household contacts or caretakers

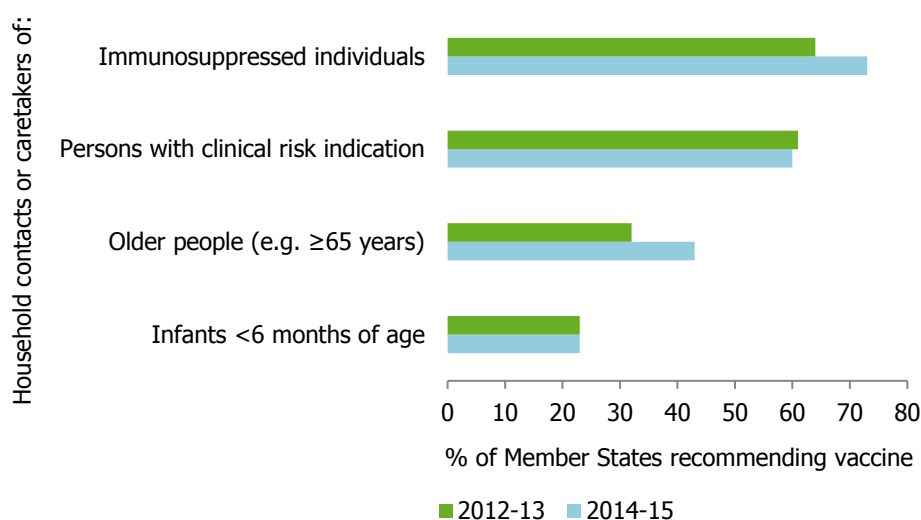
In the 2014–15 influenza season, household contacts of infants under six months of age were recommended influenza vaccination in seven Member States (Austria, Belgium, Estonia, Finland, Greece, Liechtenstein, Poland), while contacts of immunosuppressed individuals were recommended vaccine in 22 Member States. Vaccination was recommended for contacts of those with chronic medical conditions in 19 Member States (in the United Kingdom, only Northern Ireland and Wales recommended vaccination for this risk group). Vaccination was recommended for household contacts of older population groups in 12 Member States (in the United Kingdom, only Northern Ireland and Wales recommended vaccination for older population groups) (Figure 3).

Household contacts or caretakers of infants under six months of age with chronic medical conditions were recommended influenza vaccine in France and Portugal.

In Portugal, recommendations were extended for contacts of people from risk groups who cannot be vaccinated or are immunosuppressed; previously there was no such recommendation.



**Figure 3. Proportion of Member States recommending seasonal influenza vaccine for household contacts or caretakers of those at risk for influenza, 2012–13 and 2014–15 influenza seasons**



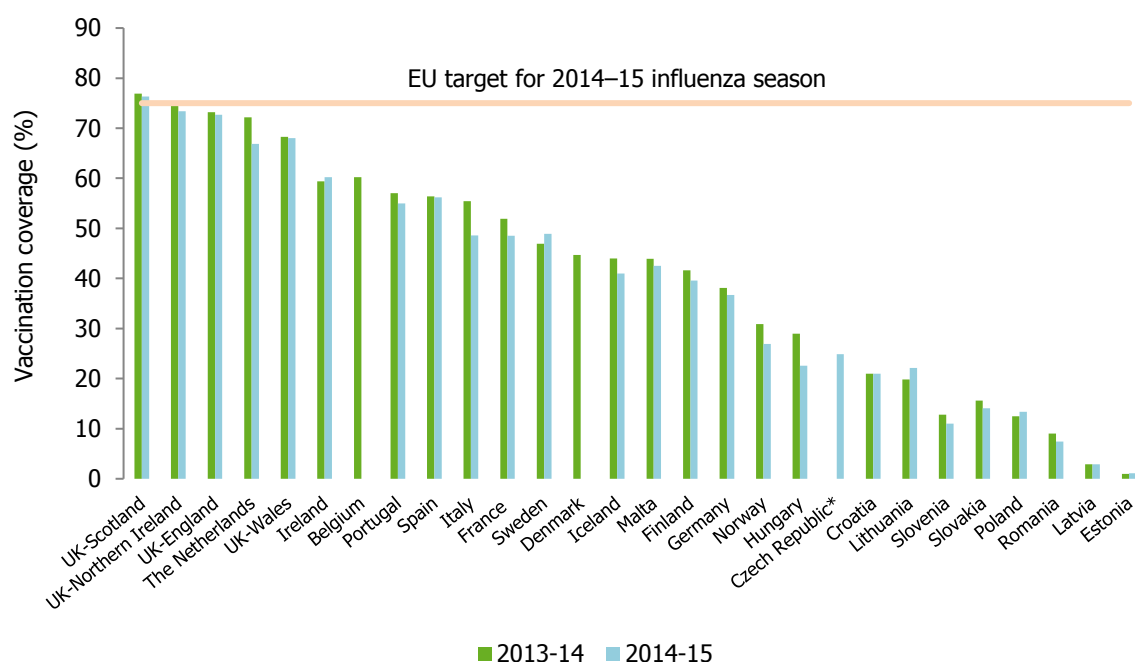
Source: National seasonal influenza vaccination survey, December 2015

## Vaccination coverage rates

### Older age groups

Influenza vaccination coverage rates (VCRs) among ‘older age groups’ (as defined in accordance with Member State recommendations, e.g. ≥55, ≥59, ≥60 or ≥65 years of age) for influenza seasons 2013–14 and/or 2014–15 were reported by 25 Member States (Figure 4, Annex 4: Table 5). VCRs varied from 1.1% to 76.3% in 2014–15; the median VCR for the same season was 45.5%. The highest VCRs were reported by the United Kingdom, which achieved (United Kingdom–Scotland) or almost achieved (United Kingdom–England, United Kingdom–Northern Ireland) the EU target of 75%. Belgium and the Czech Republic, for the first time, provided VCRs for people 65 years of age and older who also have a chronic medical condition. Although vaccination is recommended for older age groups in all surveyed Member States, five Member States were not able to provide VCRs for older age groups (Austria, Bulgaria, Cyprus, Greece, and Liechtenstein).

**Figure 4. Seasonal influenza vaccination coverage rates in older age groups, 25 EU/EEA Member States, 2013–14 and 2014–15 influenza seasons**



Source: National seasonal influenza vaccination survey, December 2015

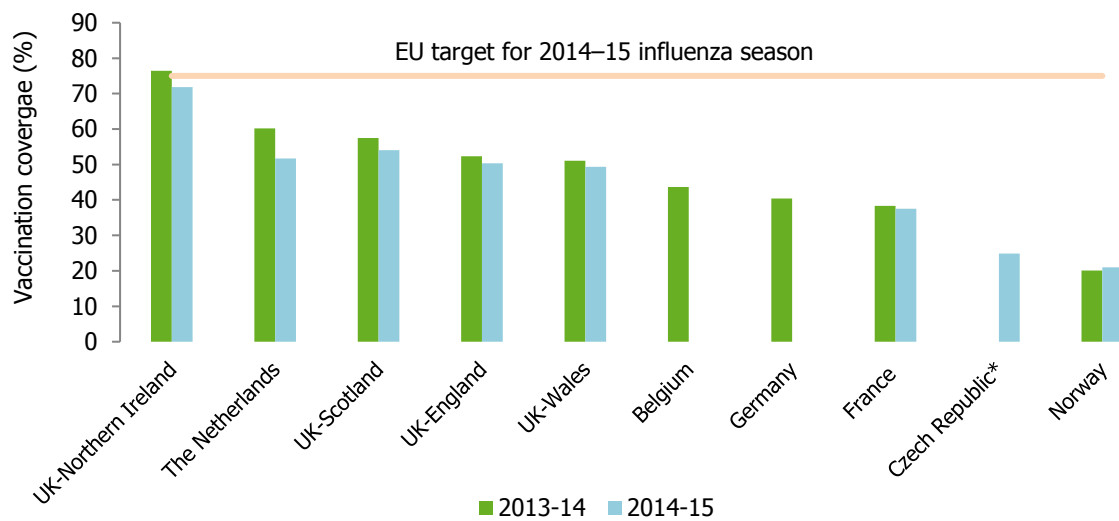
\* ≥65 years of age, with chronic medical condition

### Individuals with chronic medical conditions

Influenza VCRs among individuals with chronic medical conditions for influenza seasons 2013–14 and/or 2014–15 were reported by seven Member States and ranged from 21% to 71.8% (2014–15); the median VCR for the same season was 49.8% (Figure 5, Annex 4: Table 5). The Czech Republic reported a VCR of 24.9% for people aged ≥65 years who also have a chronic medical condition. This VCR (older age plus chronic condition) was reported for the first time by both Belgium and the Czech Republic.

The highest VCRs for people which chronic medical conditions were reported by the United Kingdom–Northern Ireland. Northern Ireland reached the EU target of 75% in 2013–14, but missed it, by a low margin, in 2014–15. The remaining 23 Member States were not able to report VCRs for individuals with chronic medical conditions.

**Figure 5. Seasonal influenza vaccination coverage rates among individuals with chronic medical conditions, seven EU/EEA Member States, 2013–14 and 2014–15 influenza seasons**



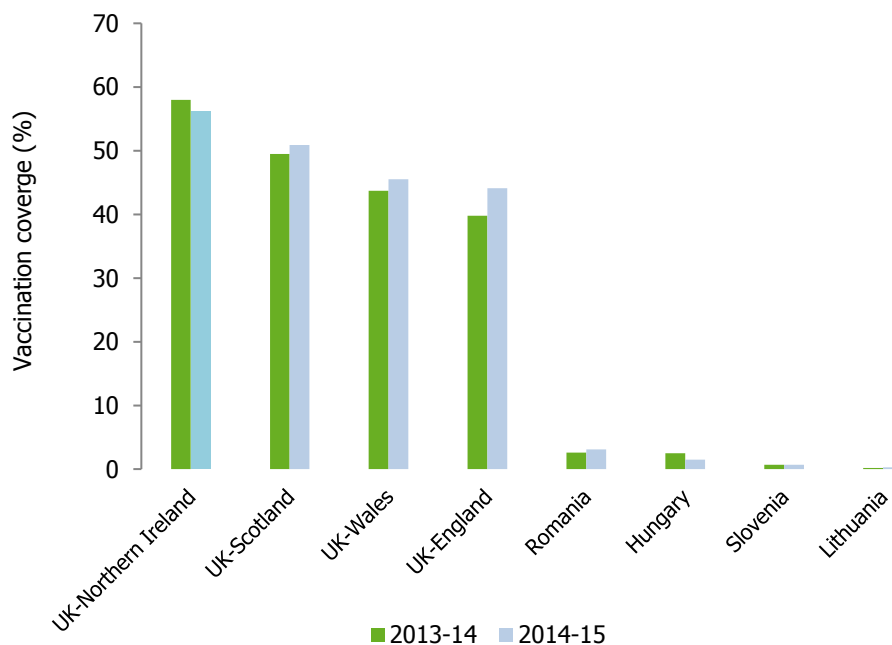
Source: National seasonal influenza vaccination survey, December 2015

\* ≥65 years of age, with chronic medical condition

### Pregnant women

Influenza VCRs for pregnant women for season 2014–15 were reported by five Member States (Figure 6, Annex 4: Table 5) and ranged from 0.3% to 56.1%; the median VCR was 23.6%. The remaining 22 of 27 Member States where vaccine is recommended to this specific population group reported that vaccination coverage in this group was not monitored. The highest VCRs were in the United Kingdom and varied from 44.1% in England to 56.1% in Northern Ireland.

**Figure 6. Seasonal influenza vaccination coverage rates in pregnant women, five EU/EEA Member States, 2013–14 and 2014–15 influenza seasons**



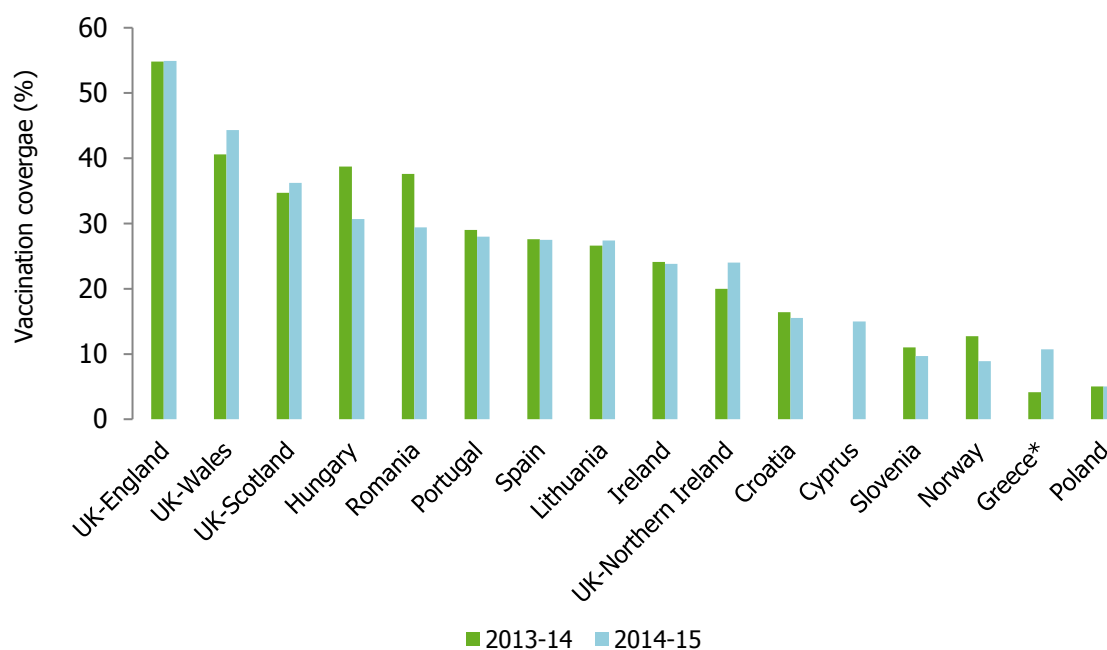
Source: National seasonal influenza vaccination survey, December 2015

### Healthcare workers

Influenza VCRs for the 2013–14 and/or 2014–15 seasons were provided by 13 Member States (Figure 7, Annex 4: Table 5), ranging from 5% to 54.9%. The median VCR in 2014–15 was 24%. The highest VCRs were reported by

the United Kingdom (except Northern Ireland), Hungary and Romania. In the 2014–15 influenza season, Cyprus, for the first time, reported VCR data on HCWs. In addition, two Member States (Ireland and Portugal) reported VCRs among HCWs working in long-term healthcare settings (25.7% and 22%, respectively, in 2014–15).

**Figure 7. Seasonal influenza vaccination coverage rates among healthcare workers, 13 EU/EEA Member States, 2013–14 and 2014–15 influenza seasons**



Source: National seasonal influenza vaccination survey, December 2015

\* Inpatient healthcare settings

## Residents of long-term care facilities

Influenza VCRs for residents of long-term care facilities for the 2014–15 influenza season were provided by three Member States: Ireland, Portugal and Slovakia. The reported VCRs were 96.6%, 77% and 72.2%, respectively (Annex 4: Table 5).

## Payment mechanisms for vaccines and vaccine administration

Member States reported that the predominant payment mechanism for influenza vaccination was through the national health services or a combination of several mechanisms for those population groups for whom seasonal influenza vaccine was recommended (children and adolescents, adults, those with chronic medical conditions, pregnant women, HCWs, and members of closed communities). Approximately 10% of the Member States had national insurance schemes which funded vaccination programmes for targeted population groups. In addition, 20% of the Member States reported that vaccinations had to be paid out-of-pocket. For all occupational groups, including HCWs, the predominant payment mechanism for vaccination was through the employer and a combination of several payment mechanisms. In two Member States, vaccination was provided by regional health services (Figures 8 and 9).

### Adults (older population)

In 13 of the 30 Member States that recommend seasonal influenza vaccination for older people (aged >50, >55, >59, ≥60 or ≥65 years, depending on national recommendations), vaccine costs were covered by the national health services; in four Member States, the national insurance schemes covered the costs. Vaccine administration was covered by the national health services (10 Member States) or the national insurance schemes (three Member States). In three Member States, vaccine costs paid by the vaccinee were not reimbursed, and six Member States reported that vaccinees also needed to pay out-of-pocket for vaccine administration. Eight countries used a combination of several payment mechanisms (Figures 8 and 9).

Overall, 22 Member States reported having a single payment mechanisms in place, while in eight Member States several payment mechanisms were available (e.g. the national health services, out-of-pocket, and employer).

## Children and adolescents

Of nine Member States that recommended vaccination to children and adolescents, four paid for the vaccine and three for the vaccine administration (through the national health services). In one country, vaccine and vaccine administration were both covered by the national insurance scheme. Two Member States also reported that the vaccinee had to pay for the vaccine out-of-pocket, while a further two combined several payment mechanisms (Figures 8 and 9).

## Chronic medical conditions

Twenty-one of 30 Member States that recommend vaccination of people with chronic medical conditions, reported a single payment mechanism, while the remaining nine Member States used a combination of several payment mechanisms.

Vaccine for chronic medical conditions was funded by the national health services (14 Member States) and the national insurance (three Member States); in three Member States vaccinees had to pay for the vaccine. Vaccine administration was funded by the national health services (nine Member States) and the national insurance schemes (three Member States); six Member States reported that vaccinees had to pay for vaccine administration (Figures 8 and 9).

## Pregnant women

Overall, 21 countries reported having a single payment mechanism; nine Member States had several payment mechanisms in place for pregnant women.

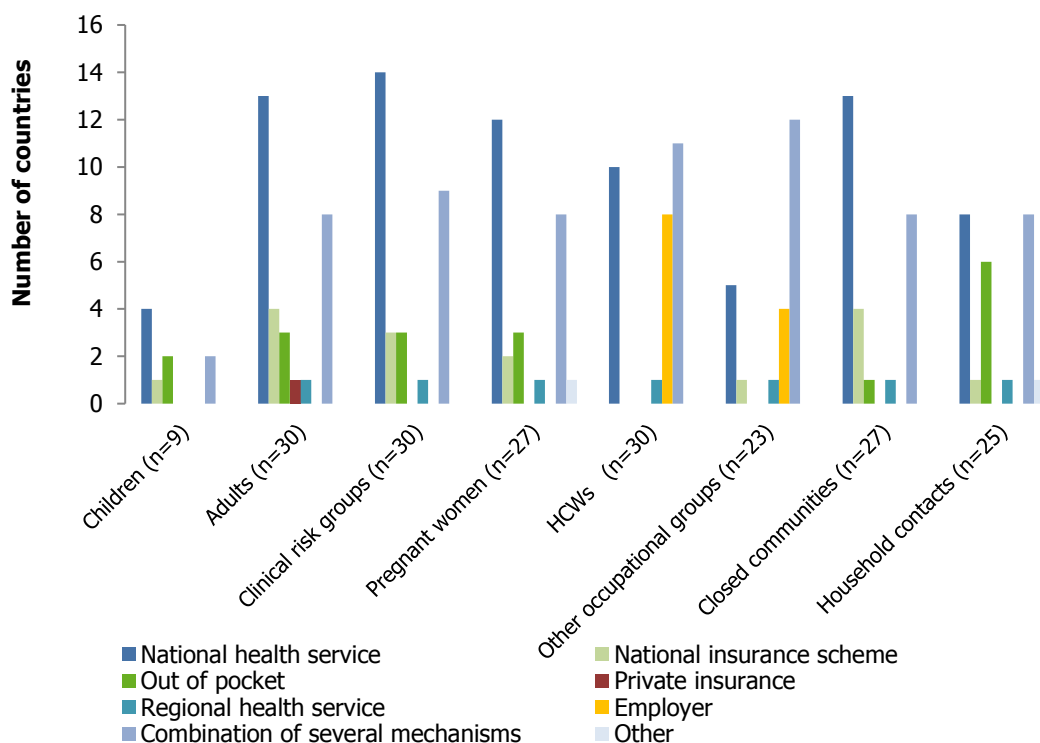
The national health services paid for vaccines for pregnant women in 12 Member States. Administration of the vaccine for this target group was covered by the national health services in 8 Member States. In three Member States, vaccinees had to pay for the vaccine themselves. In six Member States, the vaccinee was also required to pay for vaccine administration (Figures 8 and 9).

## Healthcare workers

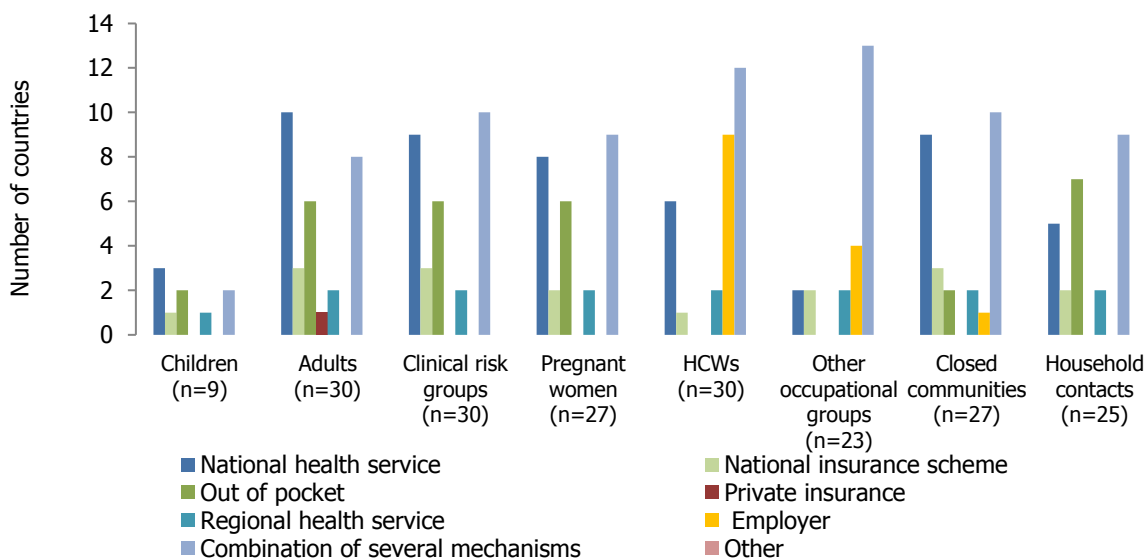
For HCWs, 19 Member States reported having a single payment mechanism in place; 11 Member States combined several payment mechanisms. Although vaccination for HCWs is not nationally recommended in Denmark, vaccination is available free of charge for all HCWs and paid for by the employer.

With regard to HCWs, the national health services paid for the vaccine in 10 countries. Six countries paid for the administration. Employers paid for the vaccine in eight Member States and for its administration in nine (Figures 8 and 9).

**Figure 8. Payment mechanisms for vaccine in population groups recommended for seasonal influenza vaccination, 2014–15 influenza season**



**Figure 9. Payment mechanisms for vaccine administration for population groups recommended for seasonal influenza vaccine, 2014–15 influenza season**



Source: National seasonal influenza vaccination survey, December 2015.

National health insurance: a scheme in which a premium is paid into an insurance fund, which entitles payers to a range of health services. If no premiums are received, services may be reduced or cancelled.

National health service: a publicly funded healthcare system

Out-of-pocket: costs paid by the vaccinee’s own money, not reimbursable

Other payment mechanism: paid for if administered in pharmacies or other authorised venues

## Use of antiviral agents for the treatment and prophylaxis of influenza

Of the 30 responding Member States, 17 reported that amantadine was licensed in their country. Six Member States reported the licensed use of rimantadine. Both antivirals are also licenced for use in the United Kingdom–Wales. All Member States (with the exception of Belgium and Cyprus for zanamivir) reported that antiviral agents such as oseltamivir and zanamivir were licensed for use.

Twenty-one of 30 Member States reported that only neuraminidase inhibitors were recommended for use in their countries (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Iceland, Ireland, Italy, Malta, the Netherlands, Norway, Slovenia, Spain, Poland, Portugal, United Kingdom); in the remaining nine Member States, both adamantanes and neuraminidase inhibitors were recommended (Croatia, Finland, Greece, Latvia, Liechtenstein, Lithuania, Romania, Slovakia, Sweden).

Seventeen Member States (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Spain, Sweden, Portugal, the United Kingdom [England, Scotland, Wales]) reported having an antiviral resistance surveillance system in place. Laboratory-confirmed cases of antiviral resistance are notified to public health authorities in Denmark, Finland, France, Germany, the Netherlands, Norway, Sweden, Portugal, and the United Kingdom [England, Scotland, Wales]; in the remaining countries, it is reported to national medicine agencies and/or public health authorities.

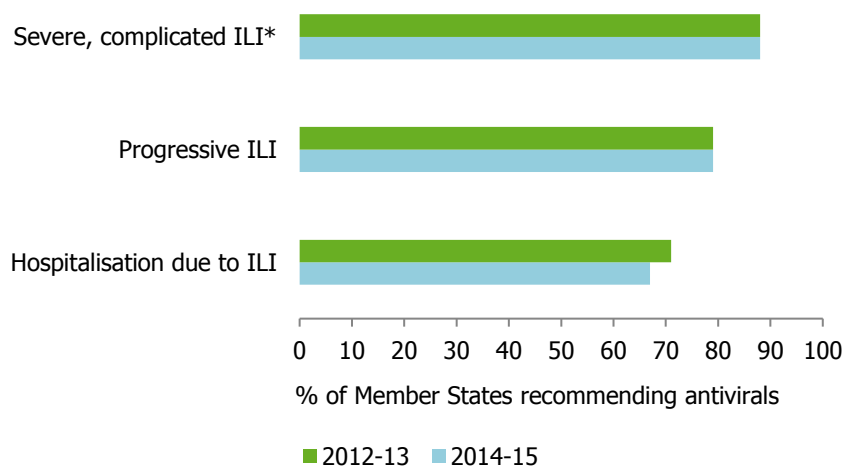
All 30 Member States reported that antiviral agents can only be purchased in pharmacies if prescribed by a doctor.

Recommendations and/or guidelines (policy documents) on antiviral use were available in 24 Member States; nine Member States did not have such recommendations: Belgium, Croatia, Iceland, Italy, Latvia, Lithuania, Poland, Spain and Slovakia. In Spain, some guidance with a healthcare focus is available, but there is no national policy document with a clear public health perspective.

### Treatment

Twenty-one Member States recommended antiviral agents for inpatients who require treatment for severe complicated influenza-like illness (ILI). A total of 19 Member States recommended antivirals for patients with progressive ILI. Antiviral agents were also recommended for the treatment of outpatients who are at a higher risk of influenza complications as a result of age and/or underlying medical conditions: children <5 years of age (five Member States); adults aged ≥65 years (14 Member States), individuals belonging to risk groups (16 Member States), pregnant women (11 Member States), and residents of nursing homes and other long-term-care facilities (12 Member States). No major changes were observed with regard to the use of antiviral agents when compared to the 2012–13 influenza season (Figures 10 and 11; Annex 5: Table 6).

**Figure 10. Proportion of Member States recommending antiviral agents for the treatment of inpatients with suspected or laboratory-confirmed influenza, 2014–15 influenza season, EU/EEA**



Source: National seasonal influenza vaccination survey, December 2015

\* ILI = influenza-like illness

**Figure 11. Proportion of Member States recommending antiviral agents for the treatment of outpatients with suspected or laboratory-confirmed influenza, 2014–15 influenza season, EU/EEA**

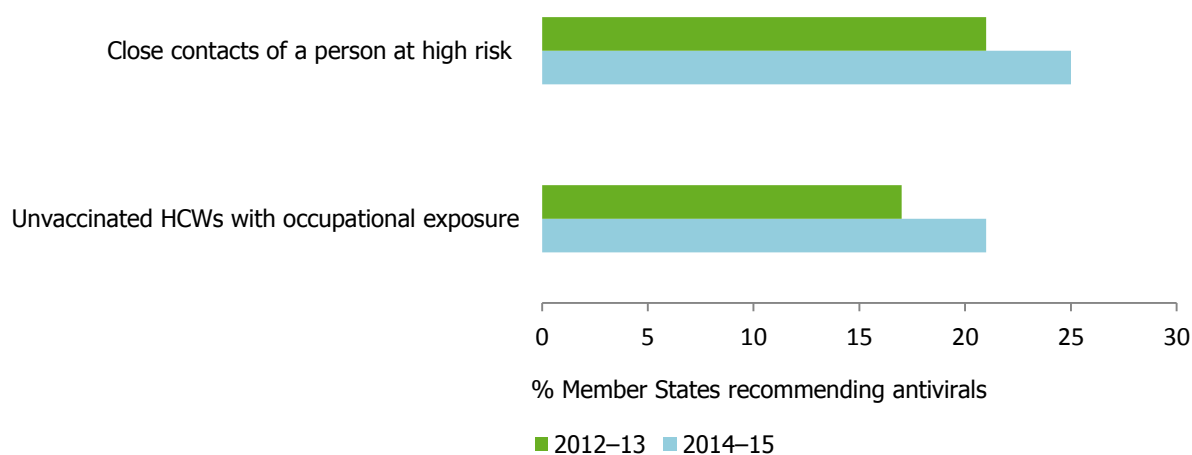


Source: National seasonal influenza vaccination survey, December 2015

### Post-exposure prophylaxis

For unvaccinated family members or other unvaccinated close contacts of persons at a higher risk for influenza complications, antiviral agents are recommended in six Member States. For unvaccinated HCWs with occupational exposure, antiviral agents are recommended in five Member States (Figure 12, Annex: Table 6).

**Figure 12. Proportion of Member States recommending antiviral agents for post-exposure prophylaxis following exposure to suspected or laboratory-confirmed influenza, 2014–15 influenza season, 24 Member States, EU/EEA**



Source: National seasonal influenza vaccination survey, December 2015

### Control of influenza outbreaks

Antiviral agents are recommended in eight of 24 Member States for residents of long-term-care facilities or immunocompromised people in care facilities. For unvaccinated healthcare staff who provide care to persons at high risk of complications in long-term care facilities or care for immunocompromised patients, antiviral agents are recommended in seven of 24 Member States. One Member State recommends antivirals for all healthcare staff, regardless of vaccine effectiveness or influenza vaccination status (Figure 13, Annex 5: Table 6).



**Figure 13. Proportion of Member States recommending antiviral agents for pre-exposure prophylaxis following exposure to suspected or laboratory-confirmed influenza during outbreaks, 2014–15 influenza season, EU/EEA**



Source: National seasonal influenza vaccination survey, December 2015

## Limitations

There are some limitations to this survey.

Comparison of vaccination coverage data is difficult because European Member States use different methods of estimating coverage. Even within a given Member State, comparisons between years may be difficult if methods or response rates differ from year to year.

How Member States enumerate the denominator data (numbers of those eligible for vaccination) is often difficult to determine, especially when it comes to less specific groups, such as people with chronic medical conditions or HCWs.

Most EU/EEA Member States report difficulties in estimating denominator data relating to the numbers of individuals with chronic medical conditions. This reflects a lack of information systems (disease registers) or other standardised methodologies for collecting these data in most Member States.

Verifying the number of vaccinated people (numerator data) also has limitations because countries may use either data from administrative records, immunisation registries or surveys, which have their own limitations.

VCRs were collected as proportions (the number of vaccinated individuals (numerator) divided by the number of individuals in each population group targeted for vaccination (denominator)), calculated in each participating Member State. Due to the fact that actual numerator and denominator data (numbers) were not recorded it is not possible to use statistical tests to compare different seasons between Member States or other countries.

Some countries reported using population surveys to estimate the number of individuals at risk. Again, comparing the number of individuals at risk between countries has been proved to be difficult because of the wide range of methodologies, e.g. household surveys, mail, face-to-face interviews, telephone interviews.

The reasons for low or high vaccination coverage in EU/EEA countries were beyond the scope of this survey.

## Conclusions

The VENICE network surveys are supported by ECDC and participating Member States. The standardised data collected through these surveys ensures the ongoing monitoring of progress towards the implementation of internationally accepted recommendations and goals with regard to seasonal influenza vaccination in the EU/EEA Member States.

### Official policy and recommendations for seasonal influenza vaccination

- The results of the survey show that although not all Member States have a formal national action plan to improve vaccination coverage for seasonal influenza, most countries have policies in place that comply with the Council Recommendation.
- Recommendations for seasonal influenza vaccination for targeted or at-risk groups are standard in most countries. Targeted or at-risk groups typically include the older population, pregnant women, healthcare workers, people with chronic medical conditions, and residents of long-term care facilities. Recommendations in most countries broadly comply with the Council Recommendation and WHO recommendations. One third of the countries are also targeting children.
- There were no major changes in the number of Member States that recommended certain older age groups for influenza vaccine when compared to the previous influenza season. In Portugal, recommendations changed for the 2013–14 influenza season, when vaccine was recommended for those  $\geq 60$  years of age instead of those  $\geq 65$  years of age (vaccine is only free of charge for those 65 years and above). In Hungary, vaccine was recommended for those  $\geq 60$  years of age instead of those  $\geq 65$  years of age in 2014–15.
- There were changes in recommendations for healthy children in comparison to previous influenza seasons. In the United Kingdom, for example, seasonal vaccine is now recommended for healthy children. Vaccination was recommended for 2–3-year-old children in the 2013–14 influenza season; recommendations were extended to 2–4-year-olds in England, 2–11-year-olds in Northern Ireland and Scotland, and 7-year-olds in Wales for the 2014–15 influenza season.
- No changes in recommendations were seen in the categories for underlying conditions or targeted populations (clinical risk groups, pregnant women, HCWs). In Finland and Norway, the decision whether to get vaccinated rests entirely with the HCWs.
- With the exception of HCWs, the vaccination of occupational groups is not common in EU/EEA Member States: only around one third of the responding countries recommend influenza vaccine for occupational groups.

### Vaccination coverage rates during the 2013–14 and 2014–15 influenza seasons

- VCRs vary widely across groups recommended for vaccination in EU/EEA Member States.
- Although all surveyed countries recommend vaccination for older people and 25 Member States reported vaccination coverage for this group, most countries did not meet the targeted coverage of 75%. Only the United Kingdom–Northern Ireland and the United Kingdom–Scotland did so. The 75% target was almost achieved by the Netherlands, the United Kingdom–England and the United Kingdom–Wales. The Czech Republic, for the first time, provided a combined VCR for older people and people with chronic medical conditions. 2014–15 also marks the first influenza season for which Belgium provided VCRs. Five Member States were not able to provide VCRs for older population groups. In almost all countries VCRs are declining.
- Although seasonal influenza vaccine is recommended in all EU/EEA Member States for those with chronic medical conditions (e.g. pulmonary diseases, cardiovascular diseases, renal diseases, metabolic disorders and immunosuppression due to disease or treatment), VCRs for this population group were only available for approximately one-fourth of the Member States ( $n=7$ ). VCRs in this group were considerably lower than among the older population groups in most Member States. VCRs did not meet the EU target, except for the United Kingdom–Northern Ireland, where coverage among the elderly was high.
- VCRs among HCWs were only available from 13 of the 29 Member States that recommend vaccine for this population group. Cyprus, which could not provide VCRs earlier, was able to provide HCWs vaccination coverage rates for the 2014–15 season. VCRs for HCWs varied greatly in 2014–15, e.g. between the United Kingdom–England (55%) and the United Kingdom–Scotland (35%). In Hungary and Romania, VCRs for 2014–15 were lower than in previous seasons. In the remaining Member States, VCRs were low, and even

lower for HCWs than for other targeted population groups. Vaccination coverage data for staff working in long-term care facilities were available from two Member States (Ireland, Portugal) and were as low as among other HCWs.

- The three Member States that provided VCRs for residents of long-term care facilities reported high coverage rates.
- Although vaccination was recommended for pregnant women in 27 of the participating Member States, only five of these Member States reported vaccination coverage for this group; VCRs varied widely between these Member States.
- The results of this survey have shown that achieving high VCR for those who are at risk of developing severe complications due to influenza infection remains a serious public health challenge.

## Use of antiviral agents for treatment and prophylaxis during the 2014–15 influenza season

- Most EU/EEA Member States recommend antivirals for influenza treatment but only a few countries recommend pre- or post-exposure prophylaxis.

## The way forward

- Annual EU/EEA surveys on seasonal influenza vaccination policies and coverage are useful to monitor trends in vaccination policies across the region, provided that surveys use consistent methods, e.g. the same questions, to ensure comparability. Additionally, conducting the survey also serves as an incentive for the Member States to evaluate and improve their vaccination programmes.
- Countries that do not yet have a seasonal influenza vaccination action plan to achieve higher seasonal influenza VCRs (as per Council Recommendation) are encouraged to develop and adopt such a plan, document or policy.
- In order to assess the performance of national influenza vaccination programmes, countries should consider expanding their influenza vaccination coverage monitoring systems to those target groups for whom vaccination is most commonly recommended (older people, people with chronic medical conditions, pregnant women, and HCWs). Data on coverage, collected on an annual basis at the end of each influenza season, could be used to identify gaps and challenges in national vaccination programmes.
- This survey demonstrates that VCRs need to be improved in all targeted groups: older people, people with chronic medical conditions, pregnant women, and healthcare workers.
- Public health authorities should encourage healthcare workers to recommend seasonal influenza vaccination to people in the target groups. Communication campaigns on influenza and influenza vaccines, directed specifically at these population groups, could increase coverage.
- Adequate and sustainable funding is an important factor to achieve higher vaccination coverage rates.
- More work is needed to explore how recommendations (at all levels) can be effectively translated into higher VCRs. Research should try to identify the reasons why some countries achieve a 75% vaccination coverage rate and others do not.
- Comparison of VCRs at the European level could be obtained by annual population-based surveys, which use the same or very similar methods.
- Keeping track of vaccination recommendations and monitoring the use of antivirals should be considered to become an integral part of influenza surveillance in Europe.

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## Annex 1. Availability of national action plans

**Table 2. Availability of national action plan to improve vaccination coverage for seasonal influenza in the EU/EEA, 2014–15 influenza season**

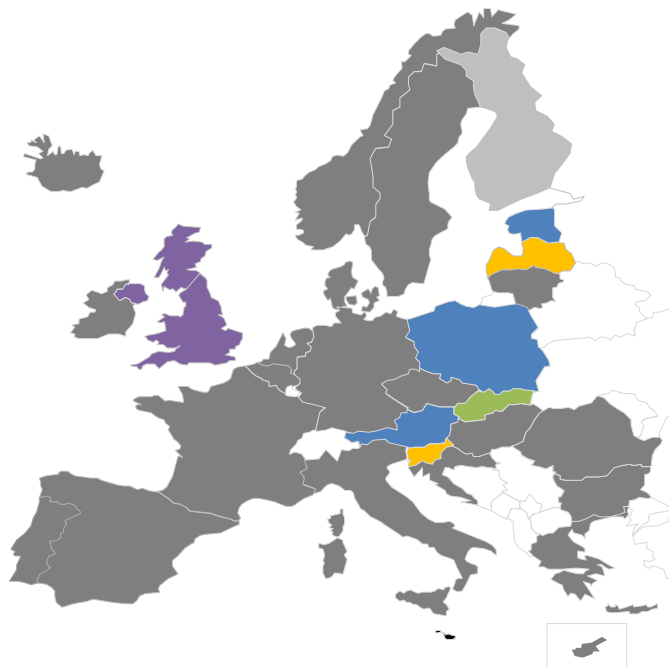
	Member States	Total
Yes, plan was adopted	Czech Republic, Ireland, the Netherlands*, United Kingdom–Wales	4
Yes, plan was developed previously and updated according Council Recommendation	Iceland, Poland, United Kingdom–England, United Kingdom–Scotland	4
A plan was not developed, but a respective policy is in place	Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Liechtenstein, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Sweden, United Kingdom–Northern Ireland	21
Plan is under development	Bulgaria, Cyprus, Lithuania, Spain	4

Source: National seasonal influenza vaccination survey, December 2015

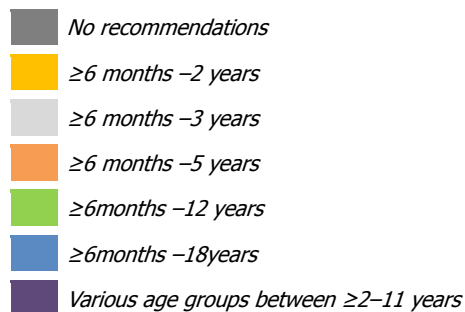
\* The national action plan prepared by the Netherlands was not primarily intended to improve vaccination coverage.

## Annex 2. Recommendations for children, adolescents and adults

**Map 3. Member States recommending seasonal influenza vaccine for children and adolescents, 2014–15 influenza season**



Source: National seasonal influenza vaccination survey December 2015

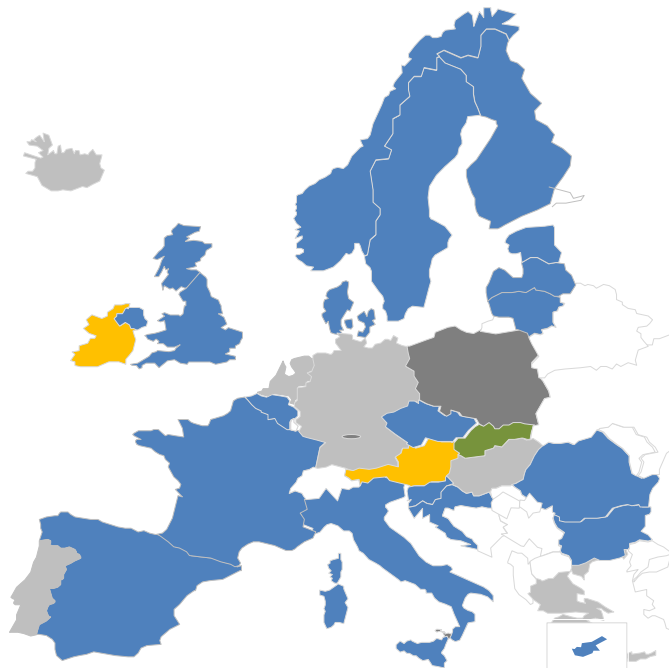


In Malta, vaccination is recommended for children  $\geq 6$  months to  $< 5$  years.

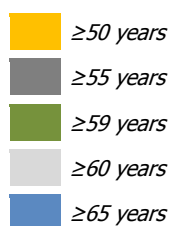
Liechtenstein has no recommendations to vaccinate healthy children or adolescents.

UK recommendations for vaccination age: England  $\geq 2$ –4 years; Northern Ireland and Scotland 2–11 years; Wales 2–4 and 7–11 years

**Map 4. Member States recommending seasonal influenza vaccine for older age groups, 2014–15 influenza season**



Source: National seasonal influenza vaccination survey December 2015



In Ireland, the National Immunization Technical Advisory Group (NITAG) recommends vaccine for people ≥50 years of age but the programme focuses only on people ≥65 years.

The Belgian guidelines recommend vaccine for people ≥65 years of age. This age group belongs to the first priority group for receiving the influenza vaccine; the guidelines also mention explicitly that the vaccine is also useful for healthy persons aged 50 and older.

In Portugal, vaccination is recommended for people ≥60 years of age; the vaccine is only free of charge for people ≥65 years.

The recommendation in Spain is for people ≥65 years of age; however 10 out of 19 regions recommend vaccination for those ≥60 years of age.

In Austria, Estonia and Poland, vaccination against seasonal influenza is recommended for all population groups six months or older.

In Liechtenstein, vaccination is recommended for people ≥65 years.

In Malta, vaccination is recommended for people ≥55 years.

## Annex 3. Recommendations for specific groups

**Table 3. Influenza vaccine recommendations for people with chronic medical conditions, EU/EEA Member States, 2014–15 influenza season**

Country	Chronic pulmonary <sup>a</sup>	Chronic neurologic <sup>b</sup>	Cardiovascular <sup>c</sup>	Renal	Hepatic	Haematological <sup>d</sup>	Metabolic <sup>e</sup>	Immuno-suppression <sup>f</sup>	HIV/AIDS	Long-term aspirin use	Morbid obesity <sup>g</sup>
Austria	R	R	R	R	R	R	R	R	R	R	R
Belgium	R	R	R	R	R	R	R	R	R	R	R
Bulgaria	R	R	NR	R	R	R	R	R	R	R	NR
Croatia	R	R	R	R	R	R	R	R	R	R	R
Cyprus	R	R	R	R	R	R	R	R	R	R	R
Czech Republic	R	R	R	R	R	R	NR	R	R	R	NR
Denmark	R	R	R	R	R	R	R	R	R	R	NR
Estonia	R	R	R	R	R	R	R	R	R	R	R
Finland	R	R	R	R	R	R	R	R	R	R	R
France	R	R	R	R	R	R	R	R	R	R	NR
Germany	R	R	R	R	R	R	R	R	R	R	NR
Greece	R	R	R	R	R	NR	R	R	R	R	R
Hungary	R	R	R	R	R	R	R	R	R	NR	R
Iceland	R	R	R	R	R	R	R	R	R	R	R
Ireland	R	R	R	R	R	R	R	R	R	R	R
Italy	R	R	R	R	R	R	R	R	R	R	R
Latvia	R	R	NR	R	R	NR	NR	R	R	R	R
Liechtenstein	R	R	R	R	R	R	R	R	R	R	NR
Lithuania	R	R	NR	R	R	R	R	R	R	R	NR
Malta	R	R	R	R	R	R	R	R	R	R	NR
Netherlands	R	R	NR	R	R	NR	NR	R	R	R	NR
Norway	R	R	R	R	R	R	R	R	R	R	NR
Poland	R	R	R	R	R	R	R	R	R	R	R
Portugal	R	R	R	R	R	R	R	R	R	R	R
Romania	R	R	R	R	R	R	R	R	R	R	NR
Slovakia	R	R	NR	R	R	R	R	R	R	NR	NR
Slovenia	R	R	R	R	R	R	R	R	R	R	NR
Spain	R	R	R	R	R	R	R	R	R	R	R
Sweden	R	R	R	R	R	R	R	R	R	R	NR
United Kingdom–England	R	R	R	R	R	R	R	R	R	R	NR
United Kingdom–Northern Ireland	R	R	R	R	R	R	NR	R	R	R	NR
United Kingdom–Scotland	R	R	R	R	R	R	R	R	R	R	NR
United Kingdom–Wales	R	R	R	R	R	R	R	R	R	R	NR

Source: National seasonal influenza vaccination survey, December 2015

<sup>R</sup> Recommended, i.e. a specific recommendation in an official policy document.

<sup>NR</sup> No recommendation, i.e. the lack of a specific recommendation in an official policy document.

<sup>a</sup> Respiratory (pulmonary) diseases, e.g. chronic obstructive pulmonary disease, cystic fibrosis, asthma

<sup>b</sup> Chronic neurologic diseases or neuromuscular conditions, e.g. disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy (seizure disorders), stroke, intellectual disability (mental retardation), moderate to severe developmental delay, muscular dystrophy, or spinal cord injury.

<sup>c</sup> Cardiovascular diseases e.g. such as congenital heart disease, congestive heart failure and coronary artery disease, except hypertension.

<sup>d</sup> Haematological disorders (such as sickle cell disease).

<sup>e</sup> Metabolic disorders (such as inherited metabolic disorders and mitochondrial disorders, including diabetes mellitus).

<sup>f</sup> Immunosuppression due to disease or treatment (including asplenia/splenic dysfunction, organ transplant, but other than HIV/AIDS).

<sup>g</sup> Morbid obesity is defined as having a body mass index (BMI) of over >40kg/m<sup>2</sup>. In Belgium and Portugal, vaccination is recommended for people with a BMI of over 30kg/m<sup>2</sup>.



**Table 4. Influenza vaccine recommendations for various occupational sectors, EU/EEA Member States, 2014–15 influenza season**

Occupational sector	Recommended <sup>a</sup>
Police, fire fighters	Austria, Bulgaria, Estonia, Germany, Iceland, Italy, Malta, Poland, Spain
Military personnel	Austria, Bulgaria, Estonia, Finland, Germany, Greece, Italy, Malta, Poland, Slovakia, Slovenia, Spain
Border/immigration control, customs	Austria, Estonia, Iceland, Italy, Malta, Poland
Veterinary sector	Austria, Cyprus, Estonia, Iceland, Ireland <sup>b</sup> , Italy, Malta, Slovenia
Public transportation (e.g. ground, rail, air, marine)	Austria, Bulgaria <sup>c</sup> , Estonia, France <sup>d</sup> , Poland
Educational staff, e.g. primary/secondary schools, preschool centres, nursery schools, crèches/child care	Austria, Estonia, Liechtenstein <sup>e</sup> , Poland <sup>f</sup>
Community services (energy, electricity, water)	Austria, Estonia, Poland
Postal service	Austria, Estonia, Poland
Poultry industry workers	Austria, Belgium, Cyprus, Estonia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Malta, Slovenia
Pig industry workers	Austria, Belgium, Cyprus, Estonia, Iceland, Ireland, Italy
Families raising pigs or poultry	Austria, Estonia, Iceland, Ireland, Norway, Slovenia
Social workers, social care workers	Austria, Bulgaria, Estonia, Finland, Hungary, Malta, Poland, Spain, United Kingdom–England, United Kingdom–Northern Ireland, United Kingdom–Scotland, United Kingdom–Wales
Laboratory staff working in laboratories in the non-medical academic or environmental sectors	Austria, Croatia, Estonia, Finland, Germany, Greece, Iceland, Italy, Liechtenstein, Malta, the Netherlands, Slovakia, Slovenia
Wildlife environmentalists (workers who work with birds, e.g. bird ringing or bird banding)	Austria, Estonia, Germany, Ireland, Slovakia
Other	Austria <sup>g</sup> , Ireland <sup>h</sup> , Liechtenstein <sup>i</sup> , Norway <sup>j</sup> , United Kingdom–Wales <sup>k</sup>
Miscellaneous sectors	Czech Republic, Denmark, Latvia, Lithuania, Romania, Portugal, Sweden

Source: National seasonal influenza vaccination survey, December 2015.

<sup>a</sup> Recommended, i.e. a specific recommendation in an official policy document

<sup>b</sup> Recommended for veterinary workers who have regular contact with pigs, poultry or water fowl

<sup>c</sup> Recommended for some personnel groups

<sup>d</sup> Crew members of airlines and cruises lines, tour guides

<sup>e</sup> Staff at nursery schools and crèches/child care

<sup>f</sup> All teachers and administrative workers

<sup>g</sup> Especially recommended for all individuals with frequent exposure to crowds; also people in contact with children, the elderly or at-risk groups; occupational groups are not explicitly mentioned

<sup>h</sup> Abattoir and zoo workers, agricultural workers

<sup>i</sup> People who want to minimise their risk of contracting influenza

<sup>j</sup> Others in regular contact with live pigs (veterinary, pig farmers)

<sup>k</sup> Members of volunteer organisations that provide emergency first aid services

## Annex 4. Vaccination coverage rates and method of monitoring by countries

**Table 5. Seasonal influenza vaccination coverage rates for targeted population groups by method of monitoring, EU/EEA Member States, 2013–14 and 2014–15 influenza seasons**

Member States	Measured/estimated vaccination coverage rates (%)					
	2013–14 influenza season			2014–15 influenza season		
	Administrative method <sup>2</sup>	Survey method	Immunisation registry	Administrative method	Survey method	Immunisation registry
<b>Entire population</b>						
Poland	3.7	-	-	3.7	-	-
Slovenia	3.9	-	-	3.3	-	-
Slovakia	4.8	-	-	4.6	-	-
Lithuania	7.4	-	-	7.5	-	-
Latvia	0.85	-	-	0.67	-	-
Norway	9.6	9.3 (15–79 years)	-	8.4	9.2 (15–79 years)	-
Netherlands	19.1	-	-	19.6	-	-
<b>All children and adolescents</b>						
<b>≥6 months–12 months</b>						
Finland <sup>a</sup>	-	-	18.8	-	-	20.9
<b>≥12 months–35 months</b>						
	-	-	15.5	-	-	14.4
<b>≥6 months–24 months</b>						
Latvia	0.2	-	-	-	-	-
<b>≥6 months–36 months</b>						
Finland <sup>a</sup>	-	-	15.3	-	-	16.5
<b>≥6 months–48 months</b>						
Slovenia	0.3	-	-	0.1	-	-
Poland	1	-	-	0.85	-	-
<b>≥25–36 months (2-year-olds)</b>						
United Kingdom–England	42.6	-	-	38.5	-	-
<b>≥37–49 months (3-year-olds)</b>						
United Kingdom–England	39.5	-	-	41.3	-	-
<b>≥25–49 months (2–3-year-olds)</b>			<b>≥25–60 months (2–4-year-olds)</b>			
United Kingdom–Northern Ireland	55.5	-	-	54.4	-	-
United Kingdom–Scotland	50.7	-	-	56.4	-	-
United Kingdom–Wales	37.8	-	-	36.6	-	-
<b>5–11-year-olds</b>						
United Kingdom–Northern Ireland	80.5 (9–10 year-olds; primary school, year 6 only)	-	-	79.7 (5–11 year-olds)	-	-
United Kingdom–Wales	68.7	-	-	74.3 (11 year-olds; year 7)	-	-
United Kingdom–Scotland	67.2	-	-	71.8	-	-
<b>≥5–14-year-olds</b>						
Poland	1.7	-	-	1.6	-	-
<b>≥5–18 years</b>						
Slovenia	0.4	-	-	0.3	-	-
<b>2–3-year-olds and 9–10-year-olds combined</b>						
United Kingdom–Northern Ireland	63.1 (2–3-year-olds and	-	-	73.3 (all 2–11-year-olds)	-	-

<sup>2</sup> Administrative method: reported routine immunisation data, i.e. registry system of doses administered

Member States	Measured/estimated vaccination coverage rates (%)					
	2013–14 influenza season			2014–15 influenza season		
	Administrative method <sup>2</sup>	Survey method	Immunisation registry	Administrative method	Survey method	Immunisation registry
	9–10-year-olds combined)					
≥6 months–15 years						
Slovakia	1.3	-	-	1.2	-	-
≥6 months–18 years						
Latvia	0.3	-	-	0.2	-	-
Slovenia	0.4	-	-	0.2	-	-
<b>All adults</b>						
≥50 years of age						
Belgium	-	40.8	-	-	-	-
≥55 years of age						
Malta	43.9	-	-	42.5	-	-
≥59 years of age						
Slovakia	15.6	-	-	14.1	-	-
≥60 years						
Belgium	-	51.9	-	-	-	-
Germany	38.1	49.4	-	36.7	-	-
Iceland	44	-	-	41	-	-
The Netherlands	65.7	-	-	60.1	-	-
Hungary	-	-	-	22.6	-	-
≥65 years						
Belgium	-	60.2	-	-	-	-
Croatia	21	-	-	21	-	-
Denmark	-	-	44.7	-	-	-
Estonia	1	-	-	1.1	-	-
Finland	-	-	41.6	-	-	39.6
France	51.9	-	-	48.5	-	-
Hungary	29	-	-	-	-	-
Ireland	59.4	-	-	60.2	-	-
Italy	55.4	-	-	48.6	-	-
Latvia	2.9	-	-	2.9	-	-
Lithuania	19.8	-	-	22.1	-	-
Netherlands	72.2	-	-	66.9	-	-
Norway	-	30.9 (≥65–79 years)	-	-	26.9 (≥65–79 years)	-
Poland	12.5	-	-	13.4	-	-
Portugal	57 (administrative and survey methods combined)	-	-	55 (administrative and survey methods combined)	-	-
Romania	9	-	-	7.4	-	-
Slovenia	12.8	-	-	11	-	-
Spain	56.4	-	-	56.2	-	-
Sweden	-	45.8	46.9 <sup>b</sup>	-	49.7	48.9 <sup>b</sup>
United Kingdom–England	73.2	-	-	72.7	-	-
United Kingdom–Northern Ireland	75.4	-	-	73.4	-	-
United Kingdom–Scotland	76.9	-	-	76.3	-	-
United Kingdom–Wales	68.3	-	-	68	-	-
≥18 years of age						
Belgium	-	25.4 (10.8% without chronic diseases )	-	-	-	-
Czech Republic	5	-	-	4.9	-	-
Germany	-	26.6 (17.4 % without chronic diseases)	-	-	-	-
Greece	-	16	-	-	22.2	-

Member States	Measured/estimated vaccination coverage rates (%)					
	2013–14 influenza season			2014–15 influenza season		
	Administrative method <sup>2</sup>	Survey method	Immunisation registry	Administrative method	Survey method	Immunisation registry
Sweden	-	-	13.3 <sup>b</sup>	-	-	13.7 <sup>b</sup>
≥18-64 years						
Sweden	-	-	2.7 <sup>b</sup>	-	-	3.6 <sup>b</sup>
15-64 years						
Poland	2.5	-	-	2.4	-	-
Norway	-	5.5	-	-	5.8	-
16–58 years						
Slovakia	2	-	-	2.1	-	-
Chronic medical conditions and ≥ 65 years combined						
Czech Republic	-	-	-	24.9 (≥18years)	-	-
<b>Chronic medical conditions</b>						
≥6 months-64 years of age						
Belgium <sup>c</sup>	-	25.8	-	-	-	-
France	38.3	-	-	37.5	-	-
Germany	-	22.6	-	-	-	-
United Kingdom–England	52.3	-	-	50.3	-	-
United Kingdom–Northern Ireland	76.4	-	-	71.8	-	-
United Kingdom–Scotland	57.5	-	-	54	-	-
United Kingdom–Wales	51.1	-	-	49.3	-	-
Other age groups						
Belgium	-	43.7 (≥18years)	-	-	-	-
Germany	-	40.4 (≥18years)	-	-	-	-
Netherlands	46.1 (6 months–59 years)	-	-	30.6 (6 months–59 years)	-	-
Netherlands	60 (60–64 years)	-	-	54.8 (60–64 years)	-	-
Netherlands	74.7 (≥60)	-	-	69.9 (≥60)	-	-
Netherlands	79.8 (≥65)	-	-	73.6 (≥65)	-	-
Norway	-	20.1 (≥15–79 years)	-	-	21 (≥15–79 years)	-
Norway	-	35.5 (≥65–79years)	-	-	37.4 (≥65–79 years)	-
Norway	-	9.5 (≥15–64 years)	-	-	13.5 (≥15–64 years)	-
<b>Pregnant women</b>						
Hungary	2.5	-	-	1.5	-	-
Lithuania	0.16	-	-	0.27	-	-
Romania	2.6	-	-	3.1	-	-
Slovenia	0.7	-	-	0.7	-	-
United Kingdom–England	39.8	-	-	44.1	-	-
United Kingdom–Northern Ireland	58	-	-	56.1	-	-
United Kingdom–Scotland	49.5	-	-	50.9	-	-
United Kingdom–Wales <sup>d</sup>	43.7	70.5	-	45.5	72.4	-
Healthy pregnant women						
United Kingdom–England	38.2	-	-	42.5	-	-
United Kingdom - Scotland	47.9	-	-	49.5	-	-
United Kingdom–Wales	42.2	-	-	43.7	-	-
Pregnant women with clinical risk						
United Kingdom–England	59	-	-	61.5	-	-
United Kingdom–Scotland	65	-	-	65	-	-
United Kingdom–Wales	60.2	-	-	62.1	-	-

Member States	Measured/estimated vaccination coverage rates (%)					
	2013–14 influenza season			2014–15 influenza season		
	Administrative method <sup>2</sup>	Survey method	Immunisation registry	Administrative method	Survey method	Immunisation registry
<b>All healthcare workers</b>						
Cyprus <sup>e</sup>	-	-	15	-	-	-
Croatia	16.4	-	-	15.5	-	-
Hungary	38.7	-	-	30.7	-	-
Ireland	24.1 <sup>f</sup>	-	-	23.8 <sup>f</sup>	-	-
Poland	5	-	-	5	-	-
Portugal	29	-	-	28	-	-
Lithuania	26.6	-	-	27.4	-	-
Norway	-	12.7	-	-	8.9	-
Romania	37.6	-	-	29.4	-	-
Spain	27.6	-	-	27.5	-	-
Slovenia	11	-	-	9.7	-	-
United Kingdom–England	54.8	-	-	54.9	-	-
United Kingdom–Northern Ireland	20	-	-	24	-	-
United Kingdom–Scotland	34.7	-	-	36.2	-	-
United Kingdom–Wales	40.6	-	-	44.3	-	-
<b>Outpatient healthcare settings</b>						
Portugal	49	-	-	45	-	-
United Kingdom–Wales	-	-	-	-	65	-
<b>Inpatient healthcare settings</b>						
Greece	4.13	-	-	10.72	-	-
Ireland	25.6 <sup>g</sup>	-	-	27.3 <sup>g</sup>	-	-
Portugal	24	-	-	24	-	-
United Kingdom–Wales	40.6	-	-	44.3	-	-
<b>HCWs in long-term healthcare facilities</b>						
Ireland	23.3	-	-	25.7	-	-
Portugal	24	-	-	22	-	-
<b>Residents of long-term care facilities</b>						
Ireland	84.3	-	-	96.6	-	-
Portugal	70	-	-	77	-	-
Slovakia	68.9	-	-	72.2	-	-

Source: National seasonal influenza vaccination survey, December 2015

<sup>a</sup> Vaccinated with at least one dose

<sup>b</sup> 2013–14 data are based on regional vaccine registers in 10 of 21 counties covering circa 60% of the Swedish population. 2014–15 data are based on regional vaccine registers in 11 of 21 counties covering circa 65% of the Swedish population.

<sup>c</sup> Data on vaccination coverage are provided through the national Health Interview Survey (HIS), which is organised every four to five years. The last HIS was held in 2013.

<sup>d</sup> Collecting data by using read codes (the standard clinical terminology system used in General Practice) is considered to be problematic; data collected through surveys (conducted at the point of giving birth) offers a better estimate.

<sup>e</sup> Coverage data for of healthcare workers were only available from public sector hospitals.

<sup>f</sup> Vaccination uptake among HCWs (including long-term care and hospital HCWs) was 24.1% (2013–2014) and 23.8% (2014–2015); data based on reports from occupational health management, hospitals, or long-term care facilities; data reflect vaccinations for eligible staff and the number of vaccinated staff members for each season. Not all hospitals or long-term care facilities reported data for these seasons; hospital participation was high (80.7% in 2013–2014 and 79.7% in 2014–2015), but data may not represent all vaccinated individuals, particularly if HCWs were vaccinated outside the facility.

<sup>g</sup> Uptake data reported for HCWs in acute or long-term care facilities are limited to those facilities that reported consistently for at least four seasons.

## Annex 5. Use of antiviral agents for the treatment and prophylaxis of influenza

**Table 6. Recommendations for treatment and prophylaxis following exposure to suspected or laboratory-confirmed influenza, 2014–15 influenza season, EU/EEA countries**

Population group	Countries recommending treatment/prophylaxis <sup>a</sup>
<b>Treatment</b>	
<b>For inpatients who meet the following criteria:</b>	
• Severe, complicated influenza-like illness	Austria, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Liechtenstein, Malta, the Netherlands, Norway, Romania, Slovenia, Sweden, Portugal, United Kingdom England, United Kingdom–Scotland, United Kingdom–Wales
• Progressive influenza-like illness	Austria, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Liechtenstein, Malta, the Netherlands, Norway, Slovenia, Portugal, United Kingdom–England, United Kingdom–Scotland, United Kingdom–Wales
• People who require hospitalisation due to influenza-like illness	Austria, Bulgaria, Denmark, Estonia, Germany, Greece, Finland, France <sup>b</sup> , Ireland, Liechtenstein, the Netherlands, Norway, Slovenia, Sweden, Portugal, United Kingdom–England, United Kingdom–Scotland, United Kingdom–Wales
<b>For outpatients at higher risk of influenza complications because of their age or underlying medical conditions</b>	
• Children <5 years	Austria, Bulgaria, Finland, Greece, United Kingdom Scotland, United Kingdom–Wales
• Adults aged ≥65 years	Austria, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Norway, Sweden, Portugal, United Kingdom England, United Kingdom–Northern Ireland, United Kingdom–Scotland, United Kingdom–Wales
• Individuals belonging to risk groups (see footnote <sup>c</sup> )	Austria, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Liechtenstein, the Netherlands, Norway, Sweden, Portugal, United Kingdom England, United Kingdom–Northern Ireland, United Kingdom–Scotland, United Kingdom–Wales
• Pregnant women	Austria, Denmark, Finland, France, Germany, Greece, Ireland, Norway, Sweden, Portugal, United Kingdom–England, United Kingdom–Northern Ireland, United Kingdom–Scotland, United Kingdom–Wales
• Residents of nursing homes and other long-term care facilities	Bulgaria, Cyprus, Estonia, Germany, Finland, France, Greece, the Netherlands, Norway, Slovenia, Portugal, United Kingdom–England, United Kingdom–Northern Ireland, United Kingdom–Scotland, United Kingdom–Wales
<b>Prophylaxis</b>	
<b>Post-exposure prophylaxis</b>	
For family or other close contacts of persons who are at higher risk for influenza complications	Cyprus, Finland, Greece, Ireland, Portugal, United Kingdom–England, United Kingdom–Northern Ireland, United Kingdom–Scotland, United Kingdom–Wales
For unvaccinated HCWs with occupational exposure	Greece, Finland, Ireland, Liechtenstein, United Kingdom–England, United Kingdom–Scotland, United Kingdom–Wales
Other <sup>d</sup>	Sweden
<b>Pre-exposure prophylaxis in case of outbreak</b>	
For individuals in long-term care facilities/care for immunocompromised	Cyprus, Finland, France, Greece, Ireland, Malta, the Netherlands, Slovenia
For unvaccinated healthcare staff who provide care to persons at high risk of complications in long-term care facilities/care for immunocompromised patients	Cyprus, Greece, Finland, Ireland, Malta, the Netherlands, Slovenia
For all healthcare staff regardless of whether they received influenza vaccination	Ireland
Prisoners	-
Staff at educational institutions	-
Other <sup>e</sup>	Sweden

Source: National seasonal influenza vaccination survey, December 2015 (n=24)

<sup>a</sup> Recommended, i.e. a specific recommendation in an official policy document

<sup>b</sup> Hospitalised for another reason but with ILI symptoms

<sup>c</sup> Chronic pulmonary (including asthma) diseases, cardiovascular diseases (except hypertension alone), renal diseases, hepatic diseases, haematological diseases (including sickle cell disease), metabolic disorders (including diabetes mellitus), neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability [mental retardation], moderate to severe developmental delay, muscular dystrophy, or spinal cord injury), immunosuppression (e.g. by medications or HIV infection), people <19 years who receive long-term aspirin therapy, morbid obesity (i.e. BMI ≥40)

<sup>d</sup> In Sweden, people with severely inhibited immune systems and unvaccinated people in risk groups (including pregnant women with other underlying risk factors) are to receive post-exposure prophylaxis after exposure to influenza illness in the household during a local outbreak of influenza, regardless of influenza type. Unvaccinated healthy pregnant women should also receive post-exposure prophylaxis in the second or third trimesters if exposed to influenza infection if influenza A(H1N1)pdm09 cannot be ruled out.

<sup>e</sup> In Sweden antiviral agents are recommended only as an exception under very special circumstances, e.g. during local outbreaks. Severely immunosuppressed people should not receive PreEP.

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