Vaccination coverage assessment in EU/EEA, 2011

VENICE II Consortium

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Contents

Abbreviations

ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EU	European Union
GPs	General Practitioners
HCWs	Health Care Workers
MSs	Member States
VENICE	Vaccine European New Integrated Collaboration Effort
CINECA	Consortium of University, Bologna, Italy
WHO	World Health Organization

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ISO 3166-1 Country Codes

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DK	Denmark
EE	Estonia
FI	Finland
FR	France
DE	Germany
GR	Greece
HU	Hungary
IS	Iceland
IE	Ireland
IT	Italy
LV	Latvia
LT	Lithuania
LU	Luxembourg
MT	Malta
NL	The Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SK	Slovakia
SI	Slovenia
ES	Spain
SE	Sweden
GB	Great Britain

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Summary

Vaccines are powerful tools for protecting our health. Immunisations have led to the control and elimination of diseases in Europe that in the past caused death and disability for millions of people. Immunisation coverage is a key measure of immunisation system performance. National immunisation programmes vary across the EU in relation to the type of vaccines offered, number of doses for primary immunisation and timing of vaccine adminstration. Coverage rates for completion of the primary immunisation schedule vary across the countries. These national differences make the monitoring of vaccine uptake and the evaluation of a programme's effectiveness and impact very difficult.

The objective of this survey was to describe and to collate information on vaccination coverage assessment for different vaccines included in the National Immunisation Programme of each MS and to update data collected in a survey conducted in 2007.

An electronic based design of the survey was undertaken by VENICE project. Currently in the VENICE project there are 27 EU and two EEA (NO and IS) participating countries . Gatekeepers in each MS entered data directly on-line.

Of 29 countries invited to participate 27 responded. All participating countries include DTP, Polio, MMR, Hib vaccines in their National Immunisation Programmes and routinely assess vaccine coverage for these vaccines among children. HepB immunisation is included in the national immunisation programme in 21 countries. All countries recommending this vaccine assess coverage among children. Those countries that have routine BCG programmes (n=11), MenC (n=12), Pneumococcal (n=20), Varicella and Rotavirus (n=4) vaccines all assess childhood vaccination coverage.

In relation of adolescent vaccination, 23 countries recommend diphterhia and tetanus vaccination for adolescents as part of the National immunisation programme. Most countries monitor uptake: 17 countries monitor diphtheria vaccine uptake and 16 monitor tetanus vaccine uptake routinely; Italy conducts immunisation cluster sample survey every 5 years. Thirteen countries recommend pertussis vaccination for adolescents, eight of which monitor uptake. Eleven countries recommend polio vaccination for adolescents, three countries do not assess vaccine uptake. Eleven countries recommend MMR vaccine for this group with eight countries assessing uptake. For the twelve countries that have included HPV in their National immunisation programme all except one monitor vaccination coverage.

Adults are recommended diphtheria and tetanus vaccination in 16 and 19 countries but only six and 8 countries assess vaccination coverage among this age group. Pertussis vaccination is also recommended in four countries, but monitoried only in one country.

Vaccination coverage assessment is done at different time intervals in different countries, ranging from monthly/quarterly/half yearly/annually to 2-5 years. The majority of MSs (about two thirds of countries) reported assessing vaccine coverage annually. In one country (BE), the frequency of vaccine coverage assessment differs between the different country regions, being undertaken at irregular time intervals.

Twenty-five of the 27 participating countries have coverage data by birth cohorts. Most countries assess vaccination coverage using the number of children at or by first or second birthday as the denominator or the number of children at school entry age. A wide range of other age cohorts is used in some countries.

Most countries do not collect coverage data for specials risk groups (migrants, refugees, ethnic minorities, homeless, socially and economically disadvantaged groups). Four countries reported that they collect data on influenza vaccine uptake among individuals in clinical risk groups; five countries have data for HCWs for the same vaccine.

All countries (n=24), except two assess vaccination coverage according vaccines included to the National Immunisation Programme at national level. BE and ES assess vaccination at the sub-national (regional) level (one country did not respond). Nineteen countries reported that data are compatible with EUROSTAT NUTS classification. In 14 of them data are compatible with NUTS 2 or NUTS 3 level.

A variety of administrative methods (e.g. administrative, surveys and computerised records systems or combination of these) are used to calculate vaccination coverage. In those countries where the predominant method is administrative (n=17), the most common assessment of numerator is the number of subjects vaccinated (n=16). In those countries where survey methods predominate (n=9), the most common type of surveys used are face-to-face interviews (n=6) or school surveys (n=4).

Validation of vaccination coverage data is done in just over half of countries (n=16) using a variety of methods. The most common method reported in half of these countries involves use of vaccine sales data (n=5) followed by recounts of vaccination records (n=5).

Different performance indicators (up-to-date or on-time immunisation, late start rates, drop-off rates, valid doses) were used by approximately half of the countries (n=14), the most common performance indicator being the proportion of children who are up-to-date on immunisations (n=12) followed by on-time immunisation (n=10).

Five countries have implemented an E-health system; however in only two of these countries is an immunisation component included. Thirteen countries plan to develop such system within 5 years; eight countries plan to include immunisation in this system.

Immunisation registries are available in 11 counties but there is variation in terms of national versus regional coverage (five countries have a national registry and six have sub national registries), there is also variation in relation to the age groups covered. In addition nine countries reported an intention to develop national immunisation registries.

This report demonstrates that of the VENICE countries participating in this survey all collect, collate and analyse vaccination coverage data regularly. However, the methods they use to assess vaccination coverage and the frequency of doing so is highly variable, making comparison difficult.

Background

Vaccines are powerful tools for protecting our health. Immunisations have ledd to the control and elimination of diseases in Europe that in the past caused death and disability for millions of people. The global eradication of smallpox and the elimination of poliomyelitis from most regions of the world are excellent examples of successful vaccination programmes.

European national immunisation programmes for children include vaccines against nine to 11 diseases, depending on national priorities. Most vaccines provide lifelong protection for the immunised person but unimmunised people also benefit. Pneumococcal conjugate vaccine (PCV), which is given to young infants, also indirectly protects unimmunised elderly people from pneumococcal pneumonia by reducing the risk of getting exposed to an infected child.

Over the last few years, several new vaccines were licensed for use in the European Union, including vaccines against human papilloma virus (HPV), herpes zoster virus, and rotavirus. Two new conjugated pneumococcal vaccines and a new meningococcal vaccine were approved in 2009 and 2010. [1]

Immunisation coverage is a key measure of the vaccination programme performance. Information on the methods, materials and tools used to measure or estimate immunisation coverage, and on immunisation coverage at the country level vary between countries making comparison between them difficult. [2] National immunisation programmes also vary across the EU and coverage rates are lower in some countries than others. These national differences make the monitoring of vaccine uptake and the evaluation of a programme's effectiveness and impact very difficult.

In 2007, within the first VENICE project (2006-2008), a survey was done to describe the methods used to compute vaccination coverage in the VENICE network states. (Ref) Background information on immunisation programmes and vaccine coverage assessment was collected across EUand EEA Member States. Information was collected on frequency of vaccination coverage assessment for the vaccines that were recommended in each country, age at which vaccination coverage is assessed, administrative level at which vaccination coverage is assessed, methods used (administrative, or survey) to asses vaccination coverage, vaccination coverage data validation and immunisation registries were described. In 2010 the VENICE project MSs agreed to update the information previously collected by carrying out a new survey on vaccination coverage assessment in 2011.[3]

Objective

The objective of this survey was to describe and to collate information on vaccination coverage assessment for different vaccines included in to the National Immunisation Programme in each MSs and update data collected in survey conducted in 2007.

Methodology

Study Design

An electronic based design of the survey was undertaken. This survey was a collaborative study between the European Centre for Disease Prevention and Control (ECDC), VENICE Project (including CINECA) and European Union (EU) and European Economic Area (EEA) Member States (MS). Each MS previously identified and enrolled gatekeepers, who are responsible for conducting all VENICE surveys inside their countries. Currently in the VENICE project there are 27 EU and two EEA (NO and IS) participating countries.

Data collection

A standardised questionnaire was developed. Information was sought on vaccines routinely recommended in each country as part of the national immunisation programme; frequency of vaccination coverage data collection for different age groups and special risk groups; whether vaccination coverage data was available by birth cohort at national level; availability of vaccination coverage data by single vaccine doses versus full immunisation series; delivery methods for vaccines (e.g. by primary care physicians, public health nurses etc.) and whether provided (supplied by/paid for/ reimbursed) by the National Immunisation Programme; availability of vaccination coverage data by national or sub national level; availability of vaccination coverage data compatible with EUROSTAT NUTS (please see footnote under table 16) classification; description of numerator assessment (for administrative, surveys methods or immunisation registries); vaccination coverage data validation; feedback to stakeholders; and measurement of performance indicators. The last two parts of the questionnaire contained questions on implementation of E-Health system related to immunisation information and immunisation registries (IR) . Countries that did not have IRs at the time of 2007 survey but introduced and IR subsequently were able to complete this part of questionnaire (Appendix 1).

Data handling

The electronic questionnaire was developed on VENICE website in June 2011 by CINECA, which was available for all participating countries (**http://venice.cineca.org**). The electronic questionnaire was filled in August/September by gatekeepers in each country and saved. Non-responders were followed up. The data were analysed in October/November 2011. Data were validated by gatekeepers of 19 countries in December 2011.

Data processing

Gatekeepers in each MS entered data directly on-line.

Pilot study

The questionnaire was pilot tested by four VENICE project-leading partners: Italian Istituto Superiore di Sanità (ISS), the French Institut de la Veille Sanitare (INVS), CINECA Consortium of University, Bologna, Italy and the Irish Health Protection Surveillance Centre (HPSC). The piloting of the study was undertaken in late July 2011. After the pilot study, the questionnaire was reviewed and amended as necessary.

Study time

MSs were asked to complete the electronic questionnaire between August 10th and September 2nd 2011. The accompanying letter to MSs explained the objectives and rationale of the study.

Data analysis

The data were analysed using Excel.

Expected deliverables

The expected output of this survey is a technical report on the status of immunisation coverage assessment in EU/EEA MSs in order to inform policy makers at European, EU and national level who are working in the area of vaccination programmes in the member states.

Results

Response rate

Of 29 countries invited to participate in this survey 27 responded. BG and GB did not respond. Data validation: BE,IE,CZ,DE,DK,FR,GR,IS,IT,LT,EE,LU,MT,NL,NO,SE,SI,DE,HU (n=19)

National Immunisation Programme

The following vaccines are included to the national immunisation programmes: all countries (n=27) include immunisation with DTP, Polio, Hib and MMR vaccines; 21 and 20 country include hepatitis B and PCV vaccines respectively; Men C vaccine is recommended in 12 countries, BCG is included in 11 countries; four countries routinely recommend with rotavirus and varicella vaccines and three countries routinely recommend influenza vaccination for children. Most countries target adolescents for diphtheria and tetanus (n=23), some countries also include pertussis component (n=13) for adolescent vaccination; polio vaccine is recommended for adolescents in 12 countries. For adults, tetanus vaccination is recommended in 19 countries and 16 countries recommend diphtheria vaccine. Twelve countries have implemented HPV vaccination programmes. Most countries recommend additional vaccines for special groups: influenza vaccine (n=21), pneumococcal polysaccharide 23 valent vaccine (n=15) and hepatitis B vaccine (n=19). Detailed information on vaccines recommended in each National Immunisation Programme* are presented in table 1.

Table 1. Vaccinations recommended by National Immunisation Programmes in EU/EEA countries, by country and group. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

	Diphtheria	**Tetanus**	**Pertussis**	**Polio**	**Hib**	**Hep B**	**BCG**	**Men C**	**MMR**	**Var**[1]	PCV 7, 10,13[2]	**Pneumo 23**	**Rota virus**	**HPV**	**Influenza**
Children	AT, CY,CZ,DK, EE,FI,FR, DE,GR,HU, IS,IE,IT,LV, LT,LU,MT,NL, NO,PL,PT,RO, SK,SI,ES,SE, BE (n=27)	AT,CY,CZ,DK, EE,FI,FR, DE,GR,HU,IS, IE,IT,LV,LT, LU,MT,NL, NO,PL,PT,RO, SK,SI,ES,SE, BE (n=27)	AT,CY,CZ, DK,EE, FI,FR,DE, GR,HU,IS, IE,IT,LV, LT,LU,MT, NL,NO,PL, PT,RO, SK,SI,ES,SE, BE (n=27)	AT,CY,CZ,DK, EE,FI,FR,DE, GR,HU,IS,IE, IT,LV,LT,LU, MT,NL,NO,PL, PT,RO,SK,SI, ES,SE, BE (n=27)	AT,CY,CZ,DK, EE,FI,FR,DE, GR,HU,IS,IE, IT,LV,LT,LU, MT,NL,NO,PL, PT,RO, SK,SI,ES,SE, BE (n=27)	AT,CY,CZ,EE, FR,DE,GR, IE,IT,LV, LT,LU,MT,NL, PL,PT,RO, SK,SI,ES, BE (n=21)	EE,GR,HU, IE,LV,LT, MT,PL,PT, RO,SK (n=11)	CY,FR,DE, GR,IS,IE, IT,LU,NL, PT,ES, BE (n=12)	AT,CY,CZ, DK,EE, FI,FR,DE,GR, HU,IS,IE,IT,LV, LT,LU,MT,NL, NO,PL,PT,RO, SK,SI,ES,SE, BE (n=27)	DE, GR, LV, LU (n=4)	AT,CY,CZ, DK,FI, FR,DE, GR,HU, IS,IE, IT,LV, LT,LU, NL,NO, SK,SE, BE (n=20)		AT,FI , BE, LU (n=4)	SE,IT (n=2)	FI,HU,MT (n=3)
Adolescents	AT,CY,EE, FI,FR,DE,GR, IS,IE,IT,LV, LT,MT, NO,PL,PT,RO, SK,SI,ES,SE, BE,LU (n=23)	AT,CY,CZ, EE, FI,FR,DE,GR, IS,IE,IT,LV, LT, MT, NO,PL,PT,RO, SK,ES,SE, BE,LU (n=23)	AT,FI,FR, DE,GR, IS,IE,IT, SK, ES,SE, BE,LU (n=13)	AT,CY, FI,FR,DE,GR, IS,LV,MT,NO, SK,LU (n=12)		AT,CY,CZ, EE,HU, FR,DE,GR, LV,MT,ES, BE (n=12)		AT,FR, DE,GR (n=4)	AT,CY,DK,EE, FR,DE,GR,HU, IS,IT, BE (n=11)	DE, GR, IT, ES (n=4)				DK,GR, IS, LV, NO, PT,SI, ES, SE, BE (n=10)	
Adults*	CY,EE,FI,FR, DE,GR,IT,LV,	CY,***CZ,***EE, FI,FR,DE,GR,	FR,DE, BE,LU (n=4)	CY, FR, MT,LU (n=4)		CY,HU,MT (n=3)		FR (n=1)	CY,FR,DE (n=3)						IS,LU,MT (n=3)

	LT,PL,PT,RO, SK,ES, BE,LU (n=16)	IT,LV, LT,***MT***,PL,PT, RO, SK,ES, BE,LU,***SI*** (n=19)													
Special groups (e.g. risk groups, girls, elderly)	FR,PL,PT,IE (n=4)	FR,HU,IS,PL, PT,SK,IE (n=7)	FI,FR,DE,IE (n=4)	CY,FR,DE, GR,IT,PT,IE (n=7)	CY,DE,IE,PT,SI (n=5)	CY,CZ,FI,FR, DE,GR,IS, IE,IT,LV,LT,NL, NO,PL,PT,SK, SE, BE,SI (n=19)	CY,CZ,FI, FR,IE,NO, SK,SE (n=8)	CY,FR,DE, IE,IT,PL SI (n=7)	FI,FR,DE, GR,IT,PL,PT (n=7)	FR, DE, GR, IT, PL, BE, LU,SI (n=8)	CZ,DE, IT,PL,ES, BE,SI (n=7)	CY,CZ,FR, DE,GR, IS,IE,IT, SK,ES, SE, BE,LT,LU, SI (n=15)	PL (n=1)	FR,DE, GR, IE,LT, NL,PL, LU (n=8)	CY,CZ,DK, FI,FR, DE,GR, HU,IS, IE,IT,LT, NL,NO,PL, SK,SI,ES,SE , BE,LU (n=21)

* **Immunisation programme**: set of objectives, strategies, actions, and priorities for the organised use of va ccines for VPDs defined in your country.

Frequency of vaccination coverage data collection

The frequency of vaccination coverage assessment by different age groups (children, adolescents, adults) and vaccines across EU countries for each vaccination is presented in table 2, 3 and 4. Most countries indicated that vaccination coverage for most children and adolescents is assessed d annually; in LV and HU vaccination coverage is assessed monthly; in IE and MT – quarterly; PT and RO every 6 months; FI every two years; CY every three years;GR,LU, IT every 5 years.

Age group definitions in this survey: children are defined as children aged 0-11 years inclusive; adolescents are defined as children or young adults aged 12-18 years (inclusive); adults are defined as anyone aged 19 years and over.

Table 2. Frequency of vaccination coverage assessment for children in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Frequency	DTP	Polio	Hib	Hep B	BCG	Men C	MMR	Var[1]	PCV 7, 10,13[2]	Rota virus	HPV	Influenza
Monthly	LV,HU (n=2)	LV,HU (n=2)	LV,HU (n=2)	LV(n=1)	LV,HU(n=2)		LV,HU (n=2)	LV (n=1)	HU,LV (n=2)			
Quarterly	IE,MT(n=2)	IE,MT (n=2)	IE,MT(n=2)	IE,MT(n=2)	IE(n=1)	IE (n=1)	IE,MT (n=2)		IE (n=1)			
Annually	AT,CZ,DK,EE,FR,DE,IS,IT,LT,NL,NO,PL,SK, SI,ES,SE (n=16)	AT,CZ,DK,EE,FR, DE,IS,IT,LT,NL, NO,PL,SK,SI,ES, SE (n=16)	AT,CZ,DK,EE,FR,DE,IS,IT,LT,NL, NO,PL,SK,SI,ES, SE (n=16)	AT,CZ,EE,FR, DE,IT,LT,NL, PL,SK,SI,ES (n=12)	EE,MT,LT, PL,SK,FR (n=6)	FR,DE,IS, NL,ES,IT* (n=6)	AT,CZ,DK,EE, FR,DE,IS,IT,LT, NL,NO,PL,SK, SI,ES,SE (n=16)	DE, IT* (n=2)	AT,DK,FR, DE,IS,NL, NO,SK,SE, IT*(n=10)	AT (n=1)	SE (n=1)	FI,HU,MT (n=3)
Every 2 years	FI (n=1)	FI(n=1)	FI(n=1)				FI(n=1)		FI(n=1)	FI (n=1)		

Every 3 years	CY(n=1)	CY(n=1)	CY (n=1)	CY(n=1)		CY(n=1)	CY(n=1)		CY(n=1)			
Every 5 years	GR,LU,IT (n=3)	GR,LU,IT (n=3)	GR,LU,IT (n=3)	GR,LU,IT (n=3)	GR (n=1)	GR,LU,IT (n=3)	GR,LU,IT (n=3)	GR,IT (n=2)	GR,LU,IT (n=3)			IT (n=1)
Other, specify[3]	BE (n=1)	BE (n=1)	BE (n=1)	BE (n=1)		BE (n=1)	BE (n=1)	LU** (n=1)	BE (n=1)	BE, LU** (n=2)		
Every 6 months	PT,RO (n=2)	PT,RO (n=2)	PT,RO (n=2)	PT,RO (n=2)	PT,RO (n=2)	PT (n=1)	PT,RO (n=2)				IT (n=1)	

[1] Varicella vaccine

[2] conjugate 7(10, 13) valent Pneumococcal vaccine

[3] including "irregularly" – for Belgium: coverage is assessed per region, not always in the same year, and the assessments have been conducted at irregular time intervals in Flanders ('99, 2005, 2008 and now is planned in 2012). In Wallonia vaccine coverage assessment has been conducted every three years since 1989 (most recently in 1999, 2003, 2006 and 2009). In Brussels most recently in 1995, 2000 and 2006. In both Wallonia and Brussels the next coverage assessment is planned to take place in 2012. Based on these assessments, national vaccination coverage is then calculated, using a weighted average and based on the midyear populations.

[4] if not included in the Immunisation Programme

* IT-Routinely assessment is performed at sub national level but the data are not collated at national level.

**Universal VZV vaccination has been introduced.

Table 3. Frequency of vaccination coverage assessment for adolescents in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Frequency	Diphtheria	Tetanus	Pertussis	Polio	MMR	HPV	Var[1]	Hep B	Men C
Monthly	LV (n=1)			LV (n=1)		LV (n=1)		LV (n=1)	
Quarterly						NO (n=1)			
Annually	AT,EE,DE, IS,LT,MT,NO, PL,SK,SI,ES, SE (n=12)	SK,SI,ES,SE, AT,EE,DE, IS,LT, MT,NO,PL (n=12)	AT,DE,IS,SK,SE (n=5)	AT,DE,IS,MT,NO ,SK,CY,FI,GR,FR, LV (n=11)	AT,DK,EE,DE,I S,SE** (n=6)	DK,IS,SI,ES,SE,NO,FR, LU (n=8)	DE,ES (n=2)	AT,CZ,EE,DE,MT,ES,HU (n=7)	AT,DE(n=2)
Every 6 months	PT (n=1)	PT (n=1)				IT,PT (n=2)			
Every 5 years	IT* (n=1)	IT* (n=1)	IT* (n=1)	IT* (n=1)	IT* (n=1)	IT* (n=1)	**IT*** (n=1)	IT*(n=1)	IT*(n=1)
Every 6 years	FR (n=1)	FR (n=1)	FR (n=1)	FR (n=1)	FR (n=1)			FR (n=1)	FR (n=1)
Occasionally	GR (n=1)	GR (n=1)	GR (n=1)	GR (n=1)	GR, BE (n=2)	GR, BE (n=2)	GR(n=1)	GR, BE (n=2)	GR(n=1)
Vaccination coverage not assessed	CY,FI,IE,IT,RO, BE (n=6)	RO,CY,CZ,FI ,IE,IT, BE **(n=7)**	FI,IE,IT,ES, BE (n=5)		CY,IT,IE(n=3)	IE(n=1)	IT(n=1)	CY(n=1)	

[1] Varicella vaccine

[2] including "irregularly": For Belgium see above, at irregular time intervals for Flanders, and every three years for Wallonia (including dTpa booster in adolescence of Wallonia).

[3] if not included in the Immunisation Programme

* IT-an EPI cluster sampling survey is performed every 5 years to assess vaccination coverage for the above mentioned vaccines in children aged 12-24 months and 15-year old adolescents.
** MMR 2 is assessed for adolescents at the age of 12-13 years.

Table 4. Frequency of vaccination coverage assessment for adults in EU/EEA countries, by vaccine. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Frequency of assessment	Vaccine type					
	Diphtheria	**Tetanus**	**Pertussis**	**MMR**	**Influenza**	**Pneumo 23**
Every 6 months	PT (n=1)	PT (n=1)				
Annually	LV,PL (n=2)	DE,LV,PL (n=3)	DE (n=1)		IS,LU,MT, DK,SI (n=5)	IS (n=1)
Every 10 years	FR(n=1)	FR(n=1)				
Irregular assessment by surveys	DE (n=1)	BE (n=1)		DE (n=1)	BE (n=1)	BE (n=1)
Absolute number of vaccinated adults available every 3 months	EE (n=1)	EE (n=1)				
Vaccination coverage not assessed	CY,FI,GR,IT, LT, RO,SK,ES, BE,LU (n=10)	CY,***CZ***,FI,GR,IT, LT,MT,RO,SK, ES,LU (n=11)	BE, FR,LU (n=3)	BE(n=1)		LT (n=1)

[1] including "irregularly"
[2] if not included in the Immunisation Programme

The date (month and year) when vaccination coverage data are ready for data dissemination (e.g. report to VENICE/ECDC) is detailed in table 5. Most countries collect vaccination coverage data for children, adolescents, and adults by June of the following year after vaccination (18, 14, and 11 countries respectively).

Table 5. Availability of vaccination coverage data for data dissemination in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Data available	Children	Adolescents	Adults
The same year (N+0)			
May			ES,LT
June			SI*
July			LU
September	SE		FR
October		SI**	
November		SE	
Within the following year after vaccination (N+1)			
January	RO, BE	BE	
February	PT	PT	PT
March	AT,EE,LT,LV,SK	AT,EE,LT,LV,SK	EE,LV
April	HU,MT,NO,SI	HU,MT,NO	HU,MT
May	ES,FI,IE	ES	FI
June	IS,NL,DK	IS,NL,DK	DE,IS,NL,SK,DK
August	PL	PL	PL
November	IT		IT
December	CY		

2nd year after vaccination (N+2)			
April	DE	DE	
December	CZ,FR	CZ	
December (year was not specified)		FR	
Not applicable		CY,RO	CY,CZ,NO,RO,SE, BE
Not available	GR,LU	FI,GR,IE,IT,LU	AT,GR,IE

N = year of vaccination
*SI- VC for influenza is measured by season, for example 2010/11.
**SI- VC is measured by school year, not by calendar year, for example 2010/11.

Monovalent vaccines for measles, mumps and rubella are not used and not available in the country in 17 countries (table 6).

Table 6. Use of monovalent vaccines for measles, mumps, and rubella in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Use of monovalent vaccines for measles, mumps and rubella	Countries	Total
Only some of them are used*	DE,DK,FR,GR,IS,NL,SE	7
They are available only in private market, but not available for national vaccination programme	IT,LU,SK	3
Not used and not available in country at all	AT,CY,CZ,EE,ES,FI,HU,IE,LT, LV,MT,NO,PL,PT,RO,SI, BE	17

*DK,DE,NL-Measles and rubella monovalent vaccine available;
*FR, GR-Measles monovalent vaccine available (FR-Rouvax);
*IS-Rubella monovalent vaccine available.
*SE-Rubella monovalent vaccine has been available in Sweden until 2011.

Comments

AT-PCV 10 until 2011 only for children at risk; from 2012 will be recommended for all children; Men A,C,W,Y vaccination starts 2012;
EE-Vaccination of adolescents against pertussis will be introduced from the 1 of January 2012.
FI-For tetanus and diphtheria protection among adults serosurveys are found useful. No data on these coverage's are therefore sought;
FR- Frequency is annual for children aged 2 years (admin data) but every six years for children aged 6 years and 11 years (school surveys every 6 years). For children aged 2 years, data are released 2 years after the information is collected (i.e. in 2011 for VC in 2009). The month of dissemination is irregular and varies, so we put at the end of the year. For adolescents data are provided by surveys performed every 6 years and estimates are available at year N+2 but the month varies. For influenza VC, VC are available at the beginning of the following influenza season (i.e. September 2011 for VC of 2010-2011 season). Rouvax (monovalent measles vaccine) is used only in children aged 6-8 months who have been exposed to a measles case. For PCV: recommended to all children at 2, 4 and 12-15 months but also to children 2-5 years at risk (immunodepression, etc.) who have not been vaccinated. I put these latest children in the "children" category, not in the high risk category;
DE-from 2012 onwards we plan to try to use insurance claim data to monitor the immunisation status (e.g. of children aged 2 years). These data will be available in the same year of the vaccination. Annual coverage data for adolescents are not available for all federal states;
IT-For HPV vaccination, coverage data is currently collected every 6 months and data is available 6 months after data collection. So data is regularly updated at June and December;
NL-So far, for hep B only risk groups have been vaccinated. For children born on 01-08-2011 and later universal vaccination will be applied;
PL-We marked MenC, Var, Rota, HPV and INF vaccines as included in the immunisation schedule. Those vaccines are however not refunded and are only included in the "recommended vaccines" section;

SK-Special groups in Q1. = people in higher risk of infection and employees in higher professional risk.
ES-HPV only recommended for girls.
IE- HPV data and MMR/TdaP-IPV being sought systematically from adolescent programmein 2012 (for academic year).
BE – regional coverage assessments; in 2012 one is planned in the Flanders Region, Wallonia and Brussels region Assessment in adults, through National Health Interview Survey.
LU- Question 3:- Survey for assessment of vaccine coverage in children is performed once in every 5 years. Month at which data are available is not relevant. - Coverage data about influenza in the elderly: a first estimate is available in May at the end of the Flu season. Data are ready for dissemination in July the same year. - Coverage data about HPV vaccines given according to the program in a given year are available in May the following year.

Vaccination coverage data availability by birth cohort at the national level

Vaccination coverage is assessed by birth cohorts in 25 countries, 22 of which could provide aggregated data annually to ECDC; CY and GR do not have these data (table 7).
Table 7. Vaccination coverage data assessment by birth cohort in EU/EEA countries and availability to provide these data to ECDC. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

	Available	**Not available**
Coverage data by birth cohort	AT,CZ,DE,DK,EE,ES,FI,FR,HU, BE,LU IE,IS,IT,LT,LV,MT,NL,NO,PL,PT,RO,SE,SI,SK (n=25)	CY,GR (n=2)
	Can provide	**Can not provide**
Aggregated data on annual basis to ECDC	AT,CZ,DE,DK,EE,ES,FR,HU,IE,IS, IT,LT,LV,MT,NL,NO,PL,PT,RO,SE,SK,SI (n=22)	FI,LU (n=2)

BE: this is done already for WHO EURO; should fit in a collaborative agreement between WHO EURO and ECDC to avoid duplication of reporting and efforts. So, yes we can provide data to ECDC if jointly organized with WHO EURO.

Table eight show data when vaccination coverage is available after measurement at national level.

Table 8. Time period when vaccination coverage data available at national level. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Cohort vaccination coverage data available	**Countries**	**Total**
Within 3 months after age of measurement	AT,HU,LV,PT,RO,SK	6
Within 6 months after age of measurement	DK,IE,IS,MT,NL,NO	6
Within 12 months after age of measurement	EE,IT,LT,PL,SE,SI, BE	7
Other*	CZ,DE,ES,FI,FR,LU	6

No response- CY,GR

*Other:
CZ-approx. 18 months after date of measurement;
FI-We do coverage surveys for a sample of 1000 children at the age of 3 years and check retrospectively their immunisation data till the age of 2 years;
FR-VC data collected at age 2 y (i.e. about 20 mo after the first vaccinations) and VC estimates released about 2 years later (i.e. child born in 2011, assessed in 2013, VC at 2 years released in 2015);
DE-after 2 years for school entry examination, for billing data (see comment Q4) in the same year;
ES-regions send data to national level once a year.

LU-We perform every 5 years coverage survey for a sample of 600 children at the age 25-30 months, and check their vaccination status at age 2 years as well as the variations from the recommended schedule. The results are available 6 months later.

Vaccination coverage assessment by birth cohort and details for some birth cohorts presented in table 9 and sub tables 9a and 9b.

Table 9. Vaccination coverage assessment by birth cohort at the national level in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Birth cohort	DTP	Polio	Hib	Hep B	BCG	Men C	MMR	Var[1]	PCV 7, 10,13[2]	Rotavirus	HPV	Influenza	Pneumo 23
**All birth cohorts child related vaccinations until (specify age, e.g. by 6 years) (table 9b)	AT,DK,FR,HU, IS,MT,PL,RO, SE (n=9)	AT,DK,FR,HU, IS,MT,PL,RO, SE (n=8)	AT,DK,FR,HU, IS,MT,PL,RO, SE(n=9)	AT,FR,LT,PL, RO,SE (n=6)	FR,HU,LT, RO,SE (n=5)	AT,FR,IS (n=3)	AT,DK,FR,IS,PL, RO,SE,HU (n=8)	PL(n=1)	AT,DK,FR, IS,LV,HU (n=6)	AT,PL (n=2)	DK (n=1)		
At 12 months	CZ,EE,ES,IE,LT ,LV,NL,PT,RO, SI ,HU(n=11)	CZ,EE,IE,LV,LT ,NL,PT,RO,SI, ES,HU (n=11)	CZ,EE,IE,LV,LT ,NL,PT,SI,ES,H U (n=10)	CZ,EE,IE,LV,LT ,PT,RO,SK,ES (n=9)	IE,LV,PL,PT, RO,SK,HU (n=7)	IE,PT,ES (n=3)	EE,IE,LV,RO (n=4)	LV (n=1)	IE,LV,NL,HU (n=4)				
At 24 months	CZ,DE,EE,ES, FR,IE,IT,LT,LV, NL,NO,PT,RO, SE,SK, BE,HU (n=17)	BE, CZ,EE,FR,DE, IE,IT,LV,LT,NL, NO,PT,RO,SK, ES,SE,HU (n=17)	CZ,EE,FR,DE, IE,IT,LV,LT,NL, NO,PT,SK,ES, SE, BE,HU (n=16)	BE, CZ,EE,FR,DE, IE,IT,LV,NL,PT ,RO,ES,SE (n=13)	FR,IE,LV,PT, RO,SE (n=6)	FR,DE,IE, NL,PT,ES, BE (n=7)	BE, CZ,EE,FR,DE,IE, IT,LT,NL,NO,PT, RO,SK,ES,SE,SI, HU (n=17)	DE (n=1)	FR,DE,IE, NL,NO,SK, SE, BE,HU (n=9)	BE (n=1)			
At 36 months	FI (n=1)	FI (n=1)	FI (n=1)				CZ,SK (n=2)			FI (n=1)		FI (n=1)	
*At school entry (table 9a)	FR,DE,LV,LT, NO,PT (n=6)	FR,DE,LV,LT, NO,PT (n=6)	DE,PT (n=2)	FR,DE,PT (n=3)	PT (n=1)	FR,DE,PT (n=3)	FR,DE,LV,LT,NO, PT,SI (n=7)	DE (n=1)	DE (n=1)				
***Adolescent birth cohort vaccinations (please specify the age (or age range) when vaccination coverage is provided) (table 9b)	FR,IS,LV,LT, NO,SK, BE (n=7)	FR,IS,LV,NO, PT,SK (n=6)	IS (n=1)	CZ,EE,FR,LV, PT,ES, BE (n=7)	MT,PT (n=2)	FR,PT (n=2)	EE,FR,IS,NO,PT, BE (n=6)				IS,IT,LV ,NO,PT ES,SE, BE (n=8)		
Adult birth cohort vaccinations (please specify the age when vaccination coverage is provided) (table 9b)												LT,SI (n=2)	
****For a range of birth cohorts (please specify the age when vaccination coverage is provided) (table 9b)	DE (n=1)	DE (n=1)	DE,PT (n=2)	DE,HU,MT (n=3)		DE,PL (n=2)	DE,MT,HU (n=3)	DE (n=1)	DE,PL(n=2)	PL(n=1)	NO,PL(n=2)	DE,IT,PL, LU (n=4)	PL(n=1)
*****Other, specify (table	FR,NL,ES,SE,	FR,NL,SE,CZ,	SE,LU (=2)	NL,SI,LU (n=3)	EE (n=1)	LU (n=1)	NL,SI,ES,SE,LU,		CZ,LU		FR,DE,	CZ,DK,FR,	IS

9b)	CZ,LU,SI (n=7)	LU (n=5)					SI (n=6)		(n=2)		NL,SI, LU (n=5)	HU,IS,IE, NL,ES (n=8)	(n=1)
Not applicable				DK,FI,IS,NO (n=4)	AT,CZ,DK,FI ,DE,IS,IT,NL ,NO,ES,LU (n=11)	CZ,DK,EE, FI,HU,IT, LV,LT,MT ,NO,RO, SK,SE (n=13)		AT,CZ,DK, EE,FR,HU, IS,IE,IT, LV,LT,MT, NL,NO,PT, RO,SK,SI,ES, SE (n=20)	EE,FI,HU,IT, LT,MT,PT, RO,SI,ES (n=10)	CZ,DK,EE, FR,DE,HU ,IS,IE,IT, LV,LT,MT ,NL,NO, PT,RO,SK, SI,ES,SE (n=20)	AT,CZ, EE,FI, HU,IE, LT,MT, RO,SK (n=10)	AT,EE,LV, MT,NO RO,PT, SK,SE (n=9)	AT,CZ,DK, EE,FI,FR, DE,HU,IE, IT,LV,LT, MT,NL,NO ,PT,RO,SK, SI,ES,SE (n=21)

Table 9a.* Age at school entry and availability of vaccination coverage data for these birth cohorts:

*Age at school entry	Countries	
4,5,6,years depending on federal state and time of examination	DE	Range of these cohorts at school entry
6 years	FR,NO	Each birth cohort at school entry
7 years	LV	Each birth cohort at school entry
6 or 7 years	LT	Each birth cohort at school entry
Did not specify age	PT	Each birth cohort at school entry

Table 9b. Age for birth cohorts:

Country	Birth cohort
****Maximum age for children's birth cohort**	
AT	Until 15 years
DK	As long as relevant
FR-	Assessment is done in every cohort only once at the age of 2 years
HU	Until 7 years
IE	24 months
IS	Until 9 years
LT	Only newborns - data are collected for birth cohort children at age until 12 months;
MT	Until 16 years for DT and polio, at 2 years for Hib and hepatitis
PL	Until 18 years
RO	2 years
SE	Coverage data are collected for birth cohort children at age 24-35 months.
BE	24 months
*****Adolescents age**	
CZ	Hepatitis B at 14 years of age
EE	HepB3: 13-14 years. ; MMR2: 13-14 years
FR	See point 2 in the Comments section;
IS	Until 19 years
IT	For HPV, 12 years
LV	12 girls for HPV; 14 years for Td/POLIO and HepB;
LT	15 or 16 years
MT	BCG at 12 years
NO	16 years
PT	14 years;
SK	For DTaP-IPV vaccination coverage is provided for 13 years old adolescents (vaccination is given to 12 years old adolescents);
ES	14-16 years
SE	12-18 years (HPV vaccine).
BE	Adolescents: assessment at 13-14 years of age in Flanders. BE: (French community) adolescents at 11-12 y for MMR2 and HBV, at 13-14 for HPV (planned for the 2012 assessment) ,at 15-16 y for dTpa
Adult age	
LT,SI	>65 years
BE	>18 years
******Range, specify age:**	
DE	Depending on federal state and time of examination
HU	After the school campaign; 13-24 years old hepB.
IT	For influenza > 64 years
MT	MMR 1st dose at 18 months 2nd dose at 4 years
NO	Coverage of HPV is monitored for all birth cohorts that are included so far (1997 , 1998

	AND 1999)
PL	Different age groups for different vaccines
LU	For Influenza age >64 years
*******Other, specify:**	
CZ	For selected diseases/vaccines (e.g. influenza, PVC 7,10,13) specific studies were conducted; CZ-DTPa, IPV – at 11 years of age;
DK	Only risk groups offered free influenza vaccine;
EE	BCG coverage for the age 11 months and 29 days.
FR	Not applicable;
DE	Influenza assessed by surveys;
HU	AFTER INFLUENZA SEASON
IE	Influenza for elderly estimate only of those eligible for free vaccination from health services (padi by govt.);
NL	DTP/polio also at 5 years and 10 years, hepatitis B also at 3 days (HepB-0), MMR also at 10 years, HPV at 14 years (girls only), influenza at 60+ years plus risk groups;
SI	Hep B 5-6 years, MMR 18 months, HPV 11-12 years;
ES	14-16 years of age;
SE	Coverage data are collected for children at age 24-35 months and for schoolchildren in 6th grade (12-13 years old).
LU	Assessment of childhood vaccination coverage every 5 years by survey; yearly assessment of HPV coverage in girls aged 12-18 years for the whole cohort.

Comments

FI-We only do surveys of 1000 children. This sample is representing the specific birth cohort.
FR-1. At school entry means for us at the age of 6 years the year before entering primary school. This assessment is done through surveys every 6 years, i.e. not in all birth cohorts but only in 1 cohort out of 6 (i.e. in 2010 assessment of children aged 6 years born in 2004. The next survey is performed in 2016 in children of 6 years born in 2010. Cohorts 2005-2009 not assessed at 6 years. Etc.). 2. Same for adolescent birth cohort's vaccinations. In France, a school survey is made every 6 years in pre-adolescents aged 10-11 years and in adolescents aged 15 years. That means that in these age groups (as for children aged 6 years), vaccination coverage is estimated in 1 cohort out of 6. Hope this is clear. 3. In France, we assess VC at age=2 years for every cohort and for all recommended vaccinations. That is why I put "all birth cohorts child related vaccinations" and "at 24 months", hope this is correct. 4. Other means: for DT Polio= estimates in adults every 10 years (surveys); for HPV=annual estimates in girls aged 14 years and in 15-23 girls with no history of sexual activity; for influenza=annual estimates in 65+ and in <65 years with special chronic conditions. 5. BCG: estimates are produced annually in all birth cohorts but only in children considered at high risk of tuberculosis (i.e. not all the children in the cohort are vaccinated). 6. Varicella and Rotavirus are not recommended. I put "not applicable", hope this is correct. 7. Pneumo23 recommended to 5 years old and above with special conditions but VC figures are not regularly produced, data on this vaccination is lacking. I put "not applicable", hope this is correct.

IT-Some information are potentially available because existing at subnational level but not collected at national level (for example meningococcal, pneumococcal, varicella vaccines).

NL-DTP/polio also at 5 years and 10 years, hepatitis B (so far only for risk groups) also at 3 days (HepB-0), MMR also at 10 years, HPV at 14 years (girls only), influenza at 60+ years and for risk groups. Universal hepatitis B vaccination was introduced in the Netherlands at the end of this year (2011) so in the future (birth cohorts 2011/2012 and younger that will be reported for the first time in the year 2014) we will report coverage for hepatitis B for alle children instead of for risk groups only.

PL-PCV 7,10,13 and Pneumo 23 together: 0-14, 15-19, 20-64, 65+Varicella, Meningococcus C, HPV: 0-19, 20+Rotavirus: 0 y.o.Influenza: 0-4, 5-14, 15-64, 65+.

BE: infants are 18-24 months at assessment; adolescent's coverage is assessed according to school grade

Single vaccine doses versus full immunisation series

Information on national vaccination coverage data assessment by vaccine and number of doses which could be provided to ECDC are presented in table 10. Vaccine coverage data are available in all 25 countries (FI,CY did not respond) for DTP, Polio and Hib vaccines; data on completed immunisation series at 24 months are available for DTP in 19 countries and for Polio and Hib vaccines in 20 countries. All these countries could provide these data to ECDC. All 25 countries collect MMR vaccination coverage data for first dose of vaccine, however three countries (SI,IE,IT) do not collect MMR vaccination coverage data for second dose. These data also would be available to report to ECDC. Deatiled information presented in a table 10.

Table 10. Vaccination coverage assessment by number of doses at the national level in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=25)

Vaccination coverage collected	Country
DTP coverage available	AT,CZ,DK,EE,FR,DE,GR,HU,IS,IE,IT, LV,LT,MT,NL,NO,PL,PT,RO,SK,ES,SI,SE, BE,LU (n=25)
First dose	EE,LV,LT,NO, BE (n=5)
Every single dose	AT,DK,GR,LV,LT,NO, BE,IS,LU (n=9)
Primary immunisation series	EE,FR,IE,LV,LT,NL, BE,IS NO,PL,PT,RO,SK,SI,ES (n=15)
Full immunisation series (including booster) by 24 months	CZ,EE,DE,FR,HU,IE,IT,LV,LT,MT, NL,NO,PL,PT,RO,ES,SE, BE,LU (n=19)
Other, specify	FR-For DT, booster doses number 2 (6 y), 3 (11-13 y), 4 (18 y). Pertussis: booster dose number 2 at 11-13 years. Adult boosters every 10 years. DE-incomplete immunisation series; LV-DT 7 years and 14 years; NL-DTaP-IPV-3 at 12 months, DTaP-IPV-4 at 24 months, DTaP-IPV-5 at 5 years, DTaP-IPV-6 at 10 years; PT-Full immunisation series is 5 doses, measured at 7 years of age; SK-Full immunisation series (incl. booster) by the age 12 years (primary immunisation series and booster at 6-th year and 13-th year of life). BE: DTP booster 2 administered at 6y, assessed in the French community at 7y and assessed in Flanders at 13-14 years; dTpa booster 3, administered at 14-16 years, is assessed only in the French community
If yes, could you provide these data for ECDC?*	AT,CZ,DK,EE,FR IT,LV,LT,MT,NL,NO,PL,PT,RO,SK, ES,SE,DE,GR,HU,IS,IE, LU,SI (n=24)
Polio coverage available	AT,CZ,DK,EE,FR,DE,GR,HU,IS,IE,IT, LV,LT,MT,NL,NO,PL,PT,RO,SK,ES,SI,SE, BE,LU (n=25)
First dose	EE,LV,LT,NO, BE (n=5)
Every single dose	AT,DK,GR,LV,LT,NO, BE,IS,LU (n=9)
Primary immunisation series	EE,FR,IE,LV,LT,NL,NO,PL,PT,RO,SK,SI,ES, BE,IS (n=15)
Full immunisation series (including booster) by 24 months	AT,CZ,EE,DE,FR,HU,IE,IT,LV,LT,MT,NL,NO,PL,PT,RO,ES,SE, BE,LU (n=20)
Other, specify	FR-Booster doses number 2 (6 y), 3 (11-13 y), 4 (18 y). Adult boosters every 10 years. DE-incomplete immunisation series.

	LV-7 years and 14 years; NL-DTaP-IPV-3 at 12 months, DTaP-IPV-4 at 24 months, DTaP-IPV-5 at 5 years, DTaP-IPV-6 at 10 years; PT-Full immunisation series is 4 doses, measured at 7 years of age; complete vaccination measured at 14 years old; SK-Full immunisation series (incl. booster) by the age 12 years (primary immunisation series and booster at 6-th year and 13-th year of life). BE: polio booster 2 administered at 6y, assessed in the French community at 7y and assessed in Flanders at 13-14 years;
If yes, could you provide these data for ECDC?*	AT,CZ,DK,EE,FR IT,LV,LT,MT,NL,NO,PL,PT,RO,SK, ES,SE,DE,GR,HU,IS,IE,LU,SI (n=24)
MMR coverage available	AT,CZ,DK,EE,FR,DE,GR,HU,IS,IE,IT, LV,LT,MT,NL,NO,PL,PT,RO,SK,ES,SI,SE, BE,LU (n=25)
First dose	AT,CZ,DK,EE,FR,DE,GR,HU,IS,IE,IT,BE LV,LT,MT,NL,NO,PL,PT,RO,SK,ES,SI,SE,LU (n=25)
Second dose	AT,CZ,DK,EE,FR,DE,GR,HU,IS,BE LV,LT,MT,NL,NO,PL,PT,RO,SK,ES,SE (n=22)
	IE,IT,SI – do not collect vaccination coverage data for 2nd dose of MMR (n=3)
Other specify	PT-complete vaccination also measured at 14 years old;
If yes, could you provide these data for ECDC?*	AT,CZ,DK,EE,FR, IT,LV,LT,MT,NL,NO,PL,PT,RO,SK, ES,SE,DE,GR,HU,IS,IE,LU,SI (n=24)
Hib coverage available	AT,CZ,DK,EE,FR,DE,GR,HU,IS,IE,IT, LV,LT,MT,NL,NO,PL,PT,RO,SK,ES,SI,SE, BE,LU (n=25)
First dose	EE,LV,LT,NO, BE (n=5)
Every single dose	AT,DK,GR,IS,LV,LT,NO, BE,LU (n=9)
Primary immunisation series	EE,FR,IE,LV,LT,NL,PL,PT,SK,SI,ES, BE,IS,NO (n=14)
Full immunisation series (including booster) by 24 months	AT,CZ,EE,DE,FR,HU,IE,IS,IT, LV,LT,MT,NL,NO,PT,RO,ES,SE, BE,LU (n=20)
Other, specify	DE-incomplete immunisation series; PT-complete vaccination also measured at 7 years old;
If yes, could you provide these data for ECDC?	AT,CZ,DK,EE,FR ,IT,LV,LT,MT,NL,NO,PL,PT,RO,SK, ES,SE,DE,GR,HU,IS,IE,LU,SI (n=24)
Hepatitis B coverage available	AT,CZ,EE,FR,DE,GR,HU,IE,IT,LV,LT, MT,NL,PL,PT,RO,SK,SI,ES,SE, BE,LU (n=22)
Every single dose	AT,GR,LV,LT,MT, BE,LU (n=7)
Primary immunisation series	CZ,EE,FR,DE,HU,IE,IT,LV,LT,PL,PT,RO,SK,SI,ES, BE (n=16)
Other, specify	DE-incomplete immunisation series; LV-Full immunisation series (including booster) by 24 months, full immunisation at 14 years; NL-full immunisation at 2 years, hepB-0 at 3 days; PT-full immunisation at 2 years, hepB-0 at 3 days; SE-Full series by 24-35 months. Hepatitis B vaccine is offered for risk group children generally. Two counties offer the vaccine to all children.
If yes, could you provide these data for ECDC?*	AT,CZ,EE,FR,DE,GR,HU,IE,IT,LV,LT, MT,NL,PL,PT,RO,SK, ES,SE,LU,SI (n=21)
Pneumococcal vaccine (for children PCV 7, PCV 10, PCV 13)	AT,CZ,DK,FR,DE,GR,HU,IS,IE,LV,NL,NO,PL,SK,SE, BE (n=16)

First dose	LV,NO, BE (n=3)	
Every single dose	AT,DK,GR,IS,LV,NO, BE,LU (n=8)	
Primary immunisation series	FR,DE,HU,IE,IS,LV,NL,NO,SK, BE (n=10)	
Other, specify	AT-PCV 10 until 2011 only for children at risk; beginning with 2012 for all children; CZ-Until now only one national study was conducted. Uncertainty about the future studies. DE-incomplete immunisation series; NL-full immunisation series at 2 years; PL-Only number of doses administered in age groups. SE-Full series by 24-35 months;	
If yes, could you provide these data for ECDC?*	AT,CZ,DK,FR,DE,GR,HU,IS,IE,LV,NL,NO,PL,SK,SE,LU (n=16)	
Men C	AT,FR,DE,GR,IS,IE,NL,PL,PT,ES, BE,LU (n=12)	
First dose	FR,DE,NL, BE (only 1-dose schedule) (n=4)	
Every single dose	AT,GR,IS,LU (n=4)	
Primary immunisation series	IE,PT,ES,IS (n=4)	
Other, specify	AT-Men C,A,W,Y vaccination starts 2012; DE-vaccination is recommended in 2nd year of life, 1 dose is sufficient; PL-Only number of doses administered in age groups; PT-Full immunisation series is 3 doses, measured at 24 months; complete vaccination also measured at 7 and 14 years old; ES-full immunisation series (including booster) by 24 months.	
If yes, could you provide these data for ECDC?*	AT,FR,DE,GR,IS,IE,NL,PL,PT,ES,LU (n=11)	
Rotavirus	AT,PL, BE (n=3)	
Every single dose	AT, BE (n=2)	
Primary immunisation series	AT, BE (n=2)	
Other, specify	PL-Only number of doses administered in age groups;	
If yes, could you provide these data for ECDC? *	AT,PL (n=2)	
HPV	DK,FR,DE,IS,IT,LV,NL,NO,PL,PT,SI,ES,SE, BE (n=14)	
First dose	LV,NO, BE (n=3)	
Every single dose	DK,FR,IS,LV,NO,PT,SE, BE,LU (n=9)	
Primary immunisation series	DE,IT,LV,NO,SI,ES, BE,IS (n=8)	
Other, specify	NL-full immunisation series (3 vaccinations) at 14 years; PL-Only number of doses administered in age groups.	
If yes, could you provide these data for ECDC?*	Yes	DK,FR,IS,IT,LV,NL,NO,PL,PT,ES,SE,SI (n=12)
	No	DE,LU (n=2)

*BE did not respond to some parts of these questions.

With regard to the number and timing of doses of the conjugate vaccines (Hib, MenC or PCV) which are considered necessary for completion of the primary series there are differences in the the number of doses considered appropriate in the MS countries. Sixteen countries consider a child, who is not vaccinated with Hib vaccine during the 1st year of life (<12 months) but who gets one dose in the 2nd year of life (after 12 months) as a compelted serie; 11 countries consider one dose of MenC vaccine after 12 months of age as cocmpleted; and five countries consider one dose of PCV vaccine after 12 months as completed .

Five countries undertake vaccination coverage assessment for all these vaccines and eight countries assess vaccination coverage for some of these vaccines (table 11 and 11a).

Table 11. Whether one dose of conjugate vaccines (Hib, MenC and PCV) is considered as appropriate vaccination when vaccine is administered in the 2nd year of life (after 12 months of age) in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

Vaccine	Considered as appropriate vaccination	Not considered as appropriate vaccination	Not applicable
Hib	EE,ES,FR,GR,HU,IE,IS,IT, LT,MT,NL,NO,PL,SE, BE,SI (n=16)	AT,GY,DE,DK,LV,PT,LU (n=7)	CZ,RO,SK (n=3)
Men C	CY,DE,ES,FR,GR,IE,IS,IT,NL,PT,BE (n=11)	AT (n=1)	CZ,DK,EE,HU,LT,LV,MT, NO,PL,RO,SE,SI,SK,LU (n=14)
PCV	HU,IE,IT,NL, BE (n=5)	AT,CY,DE,DK,FR,GR, IS,LV,NO,SE,SK,LU (n=12)	CZ,EE,ES,LT,MT, PL,PT,RO,SI (n=9)

FI- did not respond.

Table 11a. Vaccination coverage assessment of one dose of conjugate vaccines (Hib, MenC and PCV) in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

One dose included in assessment	Countries	Total
Yes, for all these vaccinations (Hib,MenC,PCV)	DE,IS,NL,PT, BE	5
Yes, for some of these vaccinations, specify:	EE,FR,IE,IT,LT,MT,NO,PL	8
Only for Hib	EE,FR,IE,IT,LT,MT,NO,PL	8
Only for MenC	FR	1
No, not included	ES,SE,SI	3
I don't know	GR,HU	2

Seventeen countries (CZ,DE,DK,EE,FR,GR,IS,LT,LV,MT,NL,NO,PL,PT,SE,SK, BE) are able to link the 2nd dose of MMR to the first MMR dose at the child level so that it is evident that they have received two doses rather than just one. Five countries (AT,ES,HU,RO,SI) indicated that they are not able to do this.

Comments

FR-All VC estimates are produced at 24 months (2 years), i.e. not at one year. Hence, for example for DTP, we produce VC both for the primary immunisation series (first 3 doses) and for the primary+ first booster (4 doses), but theses two estimates are produced at the age of 24 months (in France we do not assess VC at 12 months).Men C: In France we recommend 1 dose at 12-24 months with a catch-up between 2 and 24 months. The vaccine is recommended and reimbursed since 2010.For Q11 it is not clear if you are asking if these vaccines are included in the assessment or if children who have received only one dose after one year are considered as appropriately vaccinated in the assessment. For ex. in France children of i.e. 18 months not vaccinated with PCV before 1 year who receive only one dose are not considered as appropriately vaccinated but are assessed for PCV VC at 24 months.

DE-At school entry we make a distinction between full und incomplete vaccinations according to defined terms.

IE-current IT systems used locally unable to accurately provide information on children who may have got just one dose after 12 months of age for MenC and PCV.
IT-I focus on the availability of data at national level.
PL-The information on the "complete" status is linked by the physician holding the medical documentation.
SK-Q12. We can link the data according to birth cohorts.
ES-Q12. Some regions that have an Immunisation Registry are able to have that information

Vaccination coverage data for special risk groups

Data relating to the availability of vaccination coverage data for specific risk groups at national level are presented in a able 12.

Four countries collect vaccination coverage data for clinical risk groups, 14 countries have these data for elderly and five countries have influenza vaccination data for HCWs; in addition to influenza FR have vaccination coverage data for hepatitis B, MMR, varicella, pertussis, diphtheria, tetanus and polio vaccines for HCWs; GR collect vaccination coverage data for hepatitis B, MMR, varicella and pertussis among migrants. No countries routinely collect data on ethnic minority groups, anthroporosphic groups, homeless, or other specific groups at social or economic disadvantage.

Table 12. Vaccination coverage assessment for specific risk groups and availability at national level in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

Specific groups	Not collected	Hepatitis B	Influenza	MMR	Varicella	Pertussis	Other, specify
Clinical risk groups	AT,CY,CZ,DK,EE,DE,GR,IS,IE,LV, LT,MT,NO,PT,RO,SK,SI,ES,SE, BE,LU (n=21)		FR,HU, IT,NL (n=4)				
Health care workers	AT,CY,CZ,DK,EE,GR,IS,IE,LV,LT, MT,NL,NO,PT,RO,SK,SI,SE, BE,LU (n=20)	FR,PL (n=2)	FR,DE, HU,IT, ES (n=5)	FR (n=1)	FR (n=1)	FR (n=1)	FR-DT and Polio (n=1)
Migrants	AT,CY,CZ,DK,EE,FR,DE,HU,IS,IE ,IT,LV,LT,MT,NL,NO,PL,PT,RO, SK,SI,ES,SE, BE,LU (n=25)	GR (n=1)		GR (n=1)	GR (n=1)	GR (n=1)	
Refugees	CY,CZ,DK,EE,FR,DE,GR,HU,IS,IE ,IT,LV,LT,MT,NL,NO,PL,PT,RO, SK,SI,ES,SE, BE,LU (n=25)			AT (n=1)			AT-polio (n=1)
Ethnic minorities (e.g. Roma, Travellers, other)	AT,CY,CZ,DK,EE,FR,DE,GR,HU, IS,IE,IT,LV,LT,MT,NL,NO,PL,PT, RO,SK,SI,ES,SE, BE,LU (n=26)						
Population sub groups (e.g. Anthroposophic)	AT,CY,CZ,DK,EE,FR,DE,GR,HU,I S,IE,IT,LV,LT,MT,NL,NO,PL,PT, RO,SK,SI,ES,SE, BE,LU (n=26)						
Homeless	AT,CY,CZ,DK,EE,FR,DE,GR,HU,I S,IE,IT,LV,LT,MT,NL,NO,PL,PT, RO,SK,SI,ES,SE, BE,LU (n=26)						
Socially and economically disadvantaged	AT,CY,CZ,DK,EE,FR,DE,GR,HU,I S,IE,IT,LV,LT,MT,NL,NO,PL,PT, RO,SK,SI,ES,SE, BE,LU (n=26)						
Elderly	AT,CY,CZ,DK,EE,GR,IS,MT,NO, RO,SE, BE (n=12)		FR,DE, HU,IE, IT,LT,				LV-Td coverage 60+;

			NL,PL, SK,SI, ES,DK, IS,LU (n=14)				PT-Td; SK-Pneumo coccal infectio n.(n=3)

FI- did not respond.

Other, specify:
FR-Children at high risk of tuberculosis vaccinated by BCG;
IT-Pregnant woman;
NL-hepatitis B only for children of whom at least one parent was born in a hepatitis B endemic country and for children of mothers with hepatitis B;
NO-Risk groups included those 65 +;
PL-students of medical schools, people from the vicinity of HBV carriers and of patients with hepatitis b and people prepared for procedures performed in extracorporeal circulation;
SE-Children in risk group for tuberculosis and hepatitis B.

Comments
FR-1. Underlying clinical conditions: influenza coverage is recorded each year.2. HCW: no routine data but data provided by occasional surveys, last one in 2009;
IT-The collection of data for some risk groups (those mentioned above plus personnel of essential services and children living in community) for Influenza is experimental. Influenza coverage data for special groups is requested and collected at national level, but less than half regions regularly provide this data;
LT-Vaccination coverage for influenza can be calculated only for age group 65 and older
NL-HPV only for girls' hepatitis B only for risk groups;
PL-Vaccine coverage at national level is collected by selected high risk group for hepatitis B vaccine. It's contains: vaccination of medical secondary school students, university students of medicine and related fields, health care workers, contacts with HBV carriers, hepatitis B cases, persons with chronic renal failure (with dialyses patients), chronic liver failure caused by autoimmune processes, metabolic factors, alcohol abuse, HCV infection, HIV infected persons, children with primary or secondary immune deficiency, persons prepared for interventions involving extracorporeal circulation;
SK-Vaccination against influenza and pneumococcal infections is monitored in elderly residents of long-term facilities;
SE-Sub national data is collected for elderly for influenza vaccine in some counties.
HU-vaccination coverage for influenza can be calculated for age group 60+ and 65+.

Delivery methods for vaccines

The main methods of vaccination delivery (e.g. by primary care physicians, public health nurses etc.) for vaccines provided (supplied by/paid for/ reimbursed) by the National Immunisation Programme for each specified population (children < 3 years of age; pre-school and schoolchildren ;≥65 years of age, clinical risk groups; HCWs, migrants, refugees) are described in a table/s 13 and 13a.

Table 13. Main methods of vaccination delivery provided by estimates of proportions (%) of each group involved for vaccines included to the National Immunisation Programme in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

Children < 3 years of age (%)						
Country	Primary care physician		Public health vaccination services	Hospitals		School health services
	Public	Private		Public	Private	
AT	0	90	10	0	0	0
CY	NA	57	43	NA	NA	NA
CZ	5	95	0	0	0	0
DK	99	0	0	1	0	0
FR	10	90	0	0	0	0
DE	NA	98	1	1	NA	NA
GR	30	70	NA	NA	NA	NA
HU	99	0.5	0	0.5	0	0
IS	0	0	100	0	0	0
IE	0	100	1	0	0	0
IT	NA	NA	100	NA	NA	NA
LV	99	1	NA	99	1	NA
LU	0	100	NA	0	0	NA
MT	0	10	90	0	0	0
NL	0	0	100	0	0	0
NO	NK	NK	100	NK	NK	NK
PL	65	5	10	15	5	0
PT	NA	NA	0.95	NK	NK	NA
RO	90	10	NA	NA	NA	NA
SK	99	NA	NA	1	NA	NA
SI	100	NA	NA	NA	NA	NA
SE	NA	NA	100	NA	NA	NA
BE	NA	20	80	-	-	NA
EE,ES,LT- Not available (NA) or not known (NK).						

IE-BCG is only vaccine given by public health vaccination service routinely. In outbreaks public health services may vaccinate children who were not vaccinated by GPs

BE approximation based on regional percentages/primary care physician includes pediatrician

Pre-school children (%)						
Country	Primary care physician		Public health vaccination services	Hospitals		School health services
	Public	Private		Public	Private	
AT	0	90	10	0	0	0
CZ	5	95	0	0	0	0
DK	99	0	0	1	0	0
FR	5	95	0	0	0	0
DE	NA	95	3	1	1	NA
GR	30	70	NA	NA	NA	NA
HU	99	0.5	0	0.5	0	0

IS	0	0	100	0	0	0
IE	0	20	80	0	0	0
IT	NA	NA	100	NA	NA	NA
LV	99	1	NA	NA	NA	NA
LU	0	100	NA	0	0	0
MT	0	10	90	0	0	0
NL	0	0	100	0	0	0
NO	NK	NK	100	NK	NK	NK
PL	75	5	10	5	5	0
PT	NA	NA	0.95	NA	NA	NA
RO	90	10	NA	NA	NA	NA
SK	100	NA	NA	NA	NA	NA
SI	100	NA	NA	NA	NA	NA
SE	NA	NA	100	NA	NA	NA
EE,LT,CY,BE,ES- Not available (NA) or not known (NK).						

IE-school health services are the same as the public health vaccination services.

BE approximation based on regional percentages/primary care physician includes pediatrician

School age children (%)						
Country	**Primary care physician**		**Public health vaccination services**	**Hospitals**		**School health services**
	Public	**Private**		**Public**	**Private**	
AT	0	0	10	0	0	90
CZ	5	95	NA	NA	NA	NA
DK	99	0	0	1	0	0
FR	0	95	0	0	0	5
DE	NA	95	3	1	1	NA
GR	30	70	NA	NA	NA	NA
HU	0	0	0	0	0	100
IS	0	0	10	0	0	90
IE	0	20	80	0	0	0
IT	NA	NA	100	NA	NA	NA
LV	86	1	NA	NA	NA	13
LU	0	100	NA	0	0	0
MT	0	15	0	0	0	85
NL	0	0	100	0	0	0
NO	NK	NK	NK	NK	NK	100
PL	75	5	10	3	2	0
PT	NA	NA	0.99	NA	NA	NA
RO	NA	NA	NA	NA	NA	100
SK	100	NA	NA	NA	NA	NA
SI	NA	NA	NA	NA	NA	100
SE	NA	NA	NA	NA	NA	100
BE		30	NA			70
CY,EE,LT,ES- Not available (NA) or not known (NK).						

IE-estimates of HPV uptake for 12 years olds at end of school year. To be available 2012.

PT-private primary care clinics.

RO-in case of low vaccination coverage or outbreaks vaccination campaigns is made by GP's or public health services.
BE approximation based on regional percentages/primary care physician includes pediatrician

≥ 65 years of age (%)						
Country	Primary care physician		Public health vaccination services	Hospitals		Other
	Public	Private		Public	Private	
DK	50	50	0	0	0	NA
FR	0	100	0	0	0	NA
DE	NA	100	NA	NA	NA	NA
HU	98	0	0	2	0	NA
IS	50	50	0	0	0	NA
IE	0	96	0	1	0	3
IT	60	NA	40	NA	NA	NA
LV	99	1	NA	NA	NA	NA
LU	0	100	NA	0	0	NA
MT	0	40	60	0	0	NA
NL	0	100	0	0	0	NA
PL	85	5	5	5	0	NA
PT	NA	NA	1	NA	NA	NA
SK	70	NA	NA	NA	NA	30
SI	70	NA	30	NA	NA	NA
AT,BE,CY,CZ,GR,EE,LT,ES,SE,NO,RO- Not available (NA) or not known (NK).						

IE-long term residents of nursing homes or institutions are vaccinated in these facilities usually, exact number unknown.
SK-Social care facilities.

Clinical risk group (%)							
Country	Primary care physician		Public health vaccination services	Hospitals		School health services	Other
	Public	Private		Public	Private		
DK	50	50	0	0	0	0	NA
FR	0	100	0	0	0	0	NA
DE	NA	98	NA	1	1	NA	NA
IE	0	98	0	2	0	0	NA
LV	0	0	NA	100	NA	NA	NA
LU	0	100	NA	0	0	0	NA
MT	0	5	95	0	0	0	NA
NL	0	0	0	0	0	0	100
PL	50	5	30	10	5	0	NA
PT	NA	NA	0.7	0.3	NA	NA	NA
SK	90	NA	NA	10	NA	NA	NA
LT,IT,GR,HU,IS,NO,RO,SI,ES,SE,BE,EE,AT,CY- Not available (NA) or not known (NK).							

IE-no data on high risk, sometimes also vaccinated by hospital team (e.g. in dialysis units)
NL-Influenza by private primary care physician, hepatitis B by public health vaccination services.

Health care workers (%)								
Country	Primary care physician		Public health vaccination services	Hospitals		Medic / Paramedic school health services	Occupational health services	Other
	Public	Private		Public	Private			
FR	0	30	10	0	0	0	60	NA
DE	NA	30	NA	NA	NA	NA	70	NA
HU	5	0	0	0	0	0	95	NA
IS	0	0	50	50	0	0	0	NA
IE	0	1	0	0	0	1	98	NA
MT	0	0	0	99	1	0	0	NA
NL	0	0	0	0	0	0	0	100
PL	30	3	0	50	15	0	2	NA
PT	NA	NA	0.5	NA	NA	NA	0.5	NA
SK	50	NA	NA	NA	NA	NA	50	NA
BE							100	
LV,LT,LU,GR,IT,NO,RO,SI,ES,SE,AT,CY,CZ,DK,EE- Not available (NA) or not known (NK).								

IE-no data- this is an estimate.
LU-Seasonal vaccination
NL-vaccination is arranged by company/institutes not through NIP so we do not know if it is done by GP or institute them.
BE except physicians

Migrants (%)							
Country	Primary care physician		Public health vaccination services	Hospitals		School health services	Other
	Public	Private		Public	Private		
DE	30	70	NA	NA	NA	NA	NA
IS	20	0	80	0	0	0	NA
IE	2	97	0	0	0	1	NA
LU	0	100	NA	0	0	0	NA
MT	0	0	100	0	0	0	NA
NL	0	0	0	0	0	0	NA
PL	70	0	20	10	0	0	NA
PT	NA	NA	1	NA	NA	NA	NA
SK	100	NA	NA	NA	NA	NA	NA
AT,CY,CZ,DK,EE,FR,GR,HU,IT,LV,LT,NO,RO,SI,ES,SE,BE- Not available (NA) or not known (NK).							

IE-estimate—public health services only for school aged children (school vaccination teams mainly.

Refugees (%)							
Country	Primary care physician		Public health vaccination services	Hospitals		School health services	Other
	Public	Private		Public	Private		
DE	50	50	NA	NA	NA	NA	NA
IS	20	0	80	0	0	0	NA
IE	1	98	1	0	0	0	NA

LU	0	100	NA	0	0	0	NA
MT	0	0	100	0	0	0	NA
NL	0	0	100	0	0	0	NA
PL	70	0	20	10	0	0	NA
PT	NA	NA	1	NA	NA	NA	NA
SK	NA	NA	NA	NA	NA	NA	100
HU,IT,LV,LT,GR,NO,RO,SI,ES,SE,BE,AT,CY,CZ,DK,EE,FR- Not available (NA) or not known (NK).							

FI-no response in all tables above.
IE-refugees would have access to free health care from private GPs contracted to provide service, some might have GPservice provided by public health service at asylum residence
SK-asylum facilities.

Table 13a. Vaccination coverage assement by population groups (e.g.children < 3 years old, scool children,HCWs, clinical risk groups, migrants and etc.) indicated in table/s 13 and delivery method (e.g. private vs public; primary care, hospitals, shool health service and etc.) used to administer vaccines. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

	Countries
Yes, for all indicated above	AT,CY,DK,EE,ES,GR,HU,IS,IT,LT,LV,PT,SI (n=13)
Yes, only for public (not private) health sector (primary care, hospitals)	FR,MT,PL,RO (n=4)
Yes, only for private sector (primary care, hospitals)	-
Yes, for schools	-
No	CZ,DE,IE,NL,NO,SE,SK, BE,LU(n=9)
If no, please describe	CZ-Data are obtained from primary care physicians; DE-Germany does not routinely assess coverage of specific target groups; IE-data not systematically collected for most groups, unless reimbursement sought from government funding; NL-not included: migrants (except risk groups hepatitis B), refugees, health care workers; NO-All vaccines included in the childhood immunisation programme is included in the routine assessment of vaccination coverage; SK-Vaccination coverage is routinely monitored only for children and adolescents and for elderly in long-term facilities; SE-data is not collected for each population listed above. BE: vaccination coverage is routinely assessed only for infants and adolescents; for those all vaccinators are included LU-only vaccines included in the childhood immunisation programme and in the elderly;

Among the participating countries 19 stated that they had a website that provides information on vaccine coverage for their country (links to published reports provided in table 14). In nine countries these reports are also published in printed/hard copy version.

Table 14. Website address providing information on vaccine coverage in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

	Countries
No	AT,CY,CZ,FI,GR,MT,PT,RO (n=8)
Yes	DE,DK,EE,ES,FR,HU,IE,IS,IT,LT, LU,LV,NL,NO,PL,SE,SI,SK, BE (n=19)
Published reports on vaccination coverage (hard copies; printed reports)	DE,DK,FR,HU,IS,LV,NL,PL, BE (n=9)
Vaccination coverage data published on website	DE,EE,ES,FR,HU,IE,IT,LT,LU,LV,NL,NO,PL,SE,SI,SK, BE ,IS,DK(n=19)
Countries	**Link to published reports**
EE	http://www.terviseamet.ee/fileadmin/dok/Nakkushaigused/immunoprof/2010/holmatus_2010.xls
FR	www.invs.sante.fr
DE	http://www.rki.de/cln_110/nn_199624/DE/Content/Infekt/EpidBull/Archiv/2011/16__11,templateId=raw,property=publicationFile.pdf/16_11.pdf
HU	http://www.oek.hu/oek.web
IE	http://www.hpsc.ie/hpsc/A-Z/VaccinePreventable/Vaccination/ImmunisationUptakeStatistics/
IS	http://landlaeknir.is/
IT	http://www.salute.gov.it/malattieInfettive/paginaInternaMenuMalattieInfettive.jsp?id=811&menu=strumentieservizi
LV	http://www.lic.gov.lv/statistikas-dati?p=8987
LT	http://www.ulac.lt/downloads/2010m_apzvalga.pdf
LU	http://www.sante.public.lu/fr/catalogue-publications/rester-bonne-sante/vaccinations/index.html
NL	http://www.rivm.nl/bibliotheek/rapporten/210021014.pdf Geographical presentation of sub-national vaccination coverage: http://zorgatlas.nl/preventie/vaccinaties-en-screening/
NO	http://www.norgeshelsa.no/norgeshelsa/ http://www.fhi.no/eway/default.aspx?pid=233&trg=MainArea_5661&MainArea_5661=5631:0:15,5119:1:0:0:::0:0 http://nesstar.shdir.no/khp/index.jsp
PL	http://www.pzh.gov.pl/oldpage/epimeld/index_p.html
SK	www.uvzsr.sk
SI	http://www.ivz.si/Mp.aspx?ni=96&pi=5&_5_id=357&_5_PageIndex=0&_5_groupId=210&_5_newsCategory=&_5_action=ShowNewsFull&pl=96-5.0.
ES	http://www.mspsi.gob.es/profesionales/saludPublica/prevPromocion/vacunaciones/coberturas.htm

SE	http://www.smittskyddsinstitutet.se/amnesomraden/vaccinationer/statistik-for-det-allmanna-vaccinationsprogrammet/vaccinationsstatistik-fran-barnavardcentraler/ http://www.smittskyddsinstitutet.se/amnesomraden/vaccinationer/statistik-for-det-allmanna-vaccinationsprogrammet/vaccinationsstatistik-fran-skolorna/
DK	http://www.ssi.dk/English/News/EPI-NEWS/2011/No%2018%20-%202011.aspx (HPV) http://www.ssi.dk/English/News/EPI-NEWS/2011/No%2019%20-%202011.aspx (PCV) http://www.ssi.dk/English/News/EPI-NEWS/2011/No%2020%20-%202011.aspx (DTaP-IPV/Hib) http://www.ssi.dk/English/News/EPI-NEWS/2011/No%2021%20-%202011.aspx (MMR)
BE	Flanders: http://www.zorg-en-gezondheid.be/ Wallonia: http://www.sante.cfwb.be/fileadmin/sites/dgs/upload/dgs_super_editor/dgs_editor/documents/Publications/vacc/2009_CVac_nourrissons.pdf Brussels : http://www.observatbru.be/documents/graphics/rapports-externes/enquete-de-couverture-vaccinale-des-enfants-de-18-a-24-mois-en-region-de-bruxelles-capitale.pdf

CY-information on vaccine coverage is provided in the annual report of the ministry of health;
GR-report;
PT-Internal reports and public presentations in scientific meetings;
RO-feedback provided using different channels of dissemination: publications, oral presentations, meetings.

Comments

CY-We would like to mention that every year a coverage survey is carried out by the School Health Services, among the children of specific age group. This is done for supplementary vaccination, except for the 14 years old students that can be vaccinated in the school for DT adults' vaccine. Unfortunately we are not able to estimate any percentage as we can not measure the percentage from the private sector.

EE-Health care system in Estonia is private.

FR-1. < 3 years: about 90% are done by private doctors and about 10% in MCH clinics (based on local unpublished estimations). There is a very small proportion performed in vaccination clinics, traveler's clinics, etc. but this represents an extremely low percentage and exact figures are not known. The percentage of children who are vaccinated in MCH at the preschool level decreases and a roughly guess is 5%.2. At school, school services do vaccinate but this does not represent a large percentage (schools perform catch up in children not vaccinated by their family (usually private) doctor.3. HCW: In public (majority) hospitals and clinics, the occupational doctors vaccinate 90% of HCW. Opposite to that, in private (minority) hospitals and clinics 90% of HCW are vaccinated by their private (family doctor). Finally, a small percentage (personnel of kindergarden,MCH clinics, etc.) is vaccinated by public health services from the town/city. There are no validated figures on distribution of vaccinations among sectors but a reasonable guess is that 60% are vaccinated by the occupational doctor, 30% by the private doctors and 10% by the public health services.4. Vaccination Coverage data of InVS Website: a specific space has been dedicated to VC in 2011, although this is currently being tested and is not yet public, will be accessible before the end of 2011.

IE-generally, private GPs administer most vaccines. They will be reimbursed for vaccines that are part of routine programme. For school aged vaccines public health teams will go into schools in most areas to provide vaccine, but some areas may request GPs to do this on their behalf (and then they are reimbursed).In those areas that do not have school programme the GPs are paid to give these vaccines.
MT-there is some information on the WHO website.
NL-For children that are born too early vaccinations are sometimes given in the hospital. Vaccination of health care workers is arranged by company/institute (sometimes through institute themselves, sometimes by reimbursing vaccination by GP or hospital). We do not have national information on the coverage. For influenza, the NIP is coordinated by public health vaccination service but vaccination itself is conducted by the GP's.
PL-The official estimate is not available in country. The presented estimation was based on our team consultations.
ES-There is some variability depending on the Region and we do not ask for this information at national level. It is difficult to put some figure for the whole country.

National or sub national level coverage data

Twenty-six countries responded to this question, of which 24 collect national vaccination coverage data for DTP, Polio, HiB and MMR vaccines. In addition, BE assesses tetanus vaccination coverage data among adults through health interview surveys. Nineteen countries collect data for the same vaccines at regional level; 14 countries collect data for diphtheria, pertussis, polio and 13 countries reported that they have a data for tetanus and Hib vaccines at local level. Eighteen and 14 countries assess vaccination MMR coverage data at regional and local level respectively. With regard to PCV vaccination 17, 14, and eight countries assess vaccination coverage at national, regional, and local level respectively.

Table 15. Vaccine coverage assessment by different vaccines on national and sub-national level in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

Level	Diphtheria	Tetanus	Pertussis	Polio	Hib	HepB	BCG	MenC	MMR	Var	HPV	Rota	PCV 7,10,13	Pneumo 23	Influenza
National															
National	AT,CY,CZ,DK, EE,FR,DE,GR, HU,IS,IE,IT,LV ,LT,LU,MT,NL ,NO,PL,***PT***,RO ,SK,SI,SE (n=24)	AT,CY,CZ, DK,EE,FR, DE,GR,HU, IS,IE,IT,LV, LT,LU,MT, NL,NO,PL, PT,RO,SK, SI,SE, BE* (n=25)	AT,CY,CZ,DE, EE,FR,GR,HU, IE,IS,IT,LT,LU, LV,MT,NL,NO ,PL,RO,SE,SI, SK,DK,PT (n=24)	AT,CY,CZ,DE, DK,EE,FR,GR, HU,IE,IS,IT,LT ,LU,LV,MT,NL ,NO,PL,PT,RO ,SE,SI,SK (n=24)	AT,CY,CZ,DE, DK,EE,FR,GR, HU,IE,IS,IT,LT ,LU,LV,MT,NL ,NO,PL,PT,RO ,SE,SI,SK (n=24)	CY,CZ,DE,EE, FR,GR,HU,IE, IT,LT,LU,LV, MT,NL,PL,PT, RO,SE,SI,SK (n=20)	EE,FR,GR,HU,IE ,LT,LV,MT,PL, PT,RO,SE,SK (n=13)	AT,CY,DE,FR, GR,IE,IS,IT,LU ,NL,PL,PT (n=12)	AT,CY,CZ,DE,DK ,EE,FR,GR,HU, IE,IS,IT,LT,LU, LV,MT,NL,NO, PL,PT,RO,SE,SI, SK (n=24)	CY,DE,GR ,IT,LU,LV, PL (n=7)	DE,DK,FR, IS,IT,LV,NL, NO,PL,PT, SE,SI,LU (n=13)	AT, PL, LU (n=3)	AT,CY, DE,DK, FR,GR, HU,IE,IS, LU,LV,NL, NO,PL, SE,SK,IT (n=17)	DE, LU, BE (n=3)	CZ,DE,DK, FR,HU,IT,LT ,LU,MT,NL, NO,PL,SI,SK , BE (n=15)
Sub national:															
Regional	AT,CZ,DK,FR, DE,HU,IE,IT, LV,NL,NO,PL, PT,SK,SI,ES, SE, BE,LT (n=19)	BE, AT,CZ,DK, FR,DE,HU, IE,IT,LV,NL, NO,PL,PT, SK,SI,ES,SE, LT (n=19)	AT,CZ,DE,DK, ES,FR,HU,IE, IT,LV,NL,NO, PL,PT,SE,SI, SK, BE,LT (n=19)	BE, AT,CZ,DE,DK, ES,FR,HU,IE, IT,LV,NL,NO, PL,PT,SE,SI, SK,LT (n=19)	AT,CZ,DE,DK, ES,FR,HU,IE, IT,LV,NL,NO, PL,PT,SE,SI, SK, BE,LT (n=19)	BE, AT,CZ,DE,ES, FR,HU,IE,IT, LV,NL,PL,PT, SE,SI,SK,LT (n=17)	FR,HU,IE,LV,PL, PT,SE,SK,LT (n=9)	AT,DE,ES,FR, IE,IT,NL,PL,PT , BE (n=10)	AT,CZ,DE,DK,ES ,FR,HU,IE,IT,LV, NL,NO,PT,SE,SI, SK,BE,LT (n=18)	DE,IT,LV, PL (n=4)	DK,ES,IT,LV ,NL,NO,PL, PT,SE,SI, BE (n=11)	BE, AT, PL (n=3)	BE, AT, DE,DK, FR,HU,IE, IT,LV,NL, NO,PL, SE,SK (n=14)	SE (n=1)	DK,HU,IT,PL ,SI,ES,SE (n=7)
Local	EE,FR,DE,HU, IE,IT,NL,NO, PT,RO,SK,SE, DK,LT (n=14)	EE,FR,DE, HU,IE,IT,NL ,NO,PT,RO, SK,SE,DK, LT (n=13)	DE,EE,FR,HU, IE,IT,NL,NO, PT,RO,SE,SK, DK,LT (n=14)	DE,EE,FR,HU, IE,IT,NL,NO, PT,RO,SE,SK, DK,LT (n=14)	DE,EE,FR,HU, IE,IT,NL,NO, PT,RO,SK,DK, LT (n=13)	DE,EE,FR,HU, IE,IT,PT,RO, SE,SK,LT (n=11)	EE,FR,HU,IE,PT, RO,SE,SK,LT (n=9)	DE,FR,IE,IT, NL,PT (n=6)	DE,EE,FR,HU,IE, IT,NL,NO,PT,RO ,SE,SK,DK,LT (n=14)	DE,IT (n=2)	IT,NL,NO, PT,SE,DK (n=6)	IT (n=1)	DE,FR, HU,IT, NL,NO,SE ,SK (n=8)	IT (n=1)	HU,IT (n=2)

FI-No response

*BE: only adult data on national level by health interview survey

IT: annually assessment of vaccination coverage by administrative method is performed for DTP, polio, Hib, HepB, MMR, Influenza at national and regional/local level, but only at regional/local level for MenC, Var and PCV vaccinations. For all these vaccines, a survey is performed at national and regional level every 5 years. HPV vaccination coverage is assessed at national and regional/local level every 6 months by administrative method.

Compatibility and availability of vaccination coverage data among countries according to EUROSTAT NUTS* classification is presented in a table 16. Vaccination coverage data that is compatible with EUROSTAT NUTS classification available in 19 countries. The most appropriate level to report data to ECDC specified by most countries (n=17) would be level NUTS2 or NUTS3.

Table 16. Vaccine coverage data compatibility with EUROSTAT NUTS* classification in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=25)

Vaccination coverage data compatibility with EUROSTAT NUTS* classification	**Countries**
Data compatible	AT,CY,CZ,EE,ES,FR,GR,IE,IT,LT,LV,PL,PT,RO, SE,SK,DK,LU,HU (n=19)
Data not compatible	DE,IS,MT,NL,NO,SI (n=6)
If no, define your sub national classification:	
DK-sub national units are geographic regions	
DE-federal states reaching from 600.000 to 17 million inhabitants	
IS-No specific classification used	
MT-no subnational data the country is two small	
NL-province (NUTS2) and municipality (LAU2)	
NO-County (NUTS3) and municipality (LAU2)	
SI-9 health regions	
Possible NUTS level report to ECDC	**Countries**
LAU Level 1	EE,SK
LAU Level 2	NL,NO
NUTS1	GR, BE
NUTS2	IT,PL,PT, BE
NUTS3	CZ,FR,HU,IE,IS,LT,LV,RO,SE,DK
Other (non NUTS):	CY,DE,ES,MT,SI
CY-national coverage only	
DK-geographic regions	
DE-federal states	
MT-Not available	
SI-9 health regions	
ES-by Region	
Most appropriate level to be used	
LAU Level 1	EE,SK
LAU Level 2	
NUTS1	
NUTS2	ES,FR,GR,IT,NL,PL,PT
NUTS3	CZ,HU,IE,IS,LT,LV,NO,RO,SE,DK
Other (non NUTS):	CY,DE,MT,SI
CY-national coverage only	
DK-probably geographic regions	
DE-federal states	
MT-Not available	
SI-9 health regions	

FI not responded.

*According EUROSTAT NUTS levels means: **NUTS1**: 3-7 millions/**NUTS2:** 800.000 – 3 millions/ **NUTS3:** 150.000 – 800.000. There is also, two other levels of Local Administrative Units (LAU) have been defined (**LAU level 1**

(formerly NUTS level 4)/ **LAU level 2** (formerly NUTS level 5)). The lowest level (LAU 2) consists of municipalities or equivalent units in the 27 EU Member States.
If you need more information please use the link to the EUROSTAT NUTS levels:
http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/correspondence_tables/national_structures_eu

Comments
CZ-Czech Republic:NUTS1=1 (Czech Republic)NUTS2=8 (not representative for administrative units)NUTS3=14 (14 administrative Regions)LAU level 1= 86 (86 administrative Districts);
DK-we are not sure to what extend the geographic regions can be converted to NUTS levels;
FR-1. We mean by local for the department, which is the level below the region.2. In France we have 22 regions (NUTS2) and 100 departments (NUTS3);
IT-Data are currently collected on a paper form at national level;
MT-Our data has never been classified using the NUTS classification as our numbers are small;
NL-It depends on what you want to do with these data. If you want to make maps to see risk at boundaries of countries LAU level 2 might be best but NUTS2 might also be sufficient? Anyway, the system to upload data must be user-friendly (not like this questionnaire....). For influenza and hepatitis B we might not be able to provide this detailed information;
PT-Health ministry uses NUTS2 different from the ones;
ES-not exactly NUTs but Regions, each region have different figure of inhabitants.Q18: some regions are inside the categorization of NUTs1 and some are NUTs2 ... (NUTs1=4; NUTS2=10; NUTs3=3.
BE: regions: Flanders and Wallonia NUTS1; Brussels NUTS2
LU-not able to provide information on LAU level 1 or 2; country population is comparable to a NUTS3 level.

Numerator assessment

The methods (administrative, survey or computerize immunisation registries (CIR)) and detailed information used to assess the numerator for DTP vaccines are presented in Table 17.

Table 17. Method(s) used and details to assess the DTP numerator in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

Vaccines	Method used	Method did not used	Not appli cable
Diphtheria, Tetanus, Pertussis (DTP) numerator assessment			
Administrative method*			
	AT,CZ,DE,EE,ES,FR,HU,IT, LT,LV,PL,PT,RO,SE,SI,SK,IS (n=17)	CY,FI,GR,IE,LU, MT,NL,NO,DK (n=9)	BE (n=1)
Aggregate collection of no. of vaccines administered	AT,EE,FR,HU,IT, LT,LV,PL,PT,RO,SI,SK,ES (n=13)	SE ,DE,CZ,DK (n=4)	
Aggregate collection of no. of vaccines distributed	AT,FR,LT,RO (n=4)	DE,DK,EE,ES,HU,IT,LV, PL,PT,SE,SI,SK,CZ (n=13)	
The number of subjects vaccinated from vaccination services or primary care physicians	AT,CZ,DE,EE,FR,HU, IT,LT,LV,PL,PT,RO,SI,SK,IE,IS (n=16)	ES,SE,DK (n=3)	
The number of subjects vaccinated from school or day care records	DE,EE,PT,RO,SE,IS (n=6)	AT,DK,ES,FR,HU, IT,LT,LV,PL,SI,SK (n=11)	CZ (n=1)
Other:			
DK-Case based data on each child vaccinated;			

EE-The number of subjects vaccinated from hospitals ;				
FR-Vaccine reimbursement data .				
Same methods used in all sub national units				
Yes, in all sub national units	AT,CZ,DE,EE,FR,HU,IT,LT,LV,PL,PT,RO,SE,SI,SK,IE,IS (n=17)			
Yes, in some sub national units	ES (n=1)			
Survey method				
	CY,FI,FR,DE,GR,IT,LU,RO, BE (n=9)		MT,NL,NO,PL,PT,SK,SI, ES,SE,AT,CZ,DK,EE,HU,IS,IE,LV, LT (n=18)	
If yes, specify:				
Household	CY,FR (n=2)			
Telephone	FR,DE (n=2)			
Mail	FI,LU (n=2)			
Face-to-face	CY,FR,DE,GR,IT, BE (n=6)			
Focus groups	DE (n=1)			
School survey	FR,DE, BE,GR (n=4)			
Other	RO (n=1)			
If survey conducted at regular intervals	**Yes**		**No**	
	CY,FI,FR,DE,IT,LU,RO (n=7)		GR (2006),IS (n=2)	
Details of frequency:				
Annually	FI,DE (n=2)			
Each 5 years	IT,LU (n=2)			
Other:				
CY-Every 3 years. School surveys are carried out every year but related to specific vaccines.				
FR-every 6 years for school surveys in children 6, 11-13 and 15 years old, every 10 years for population surveys in adults.				
RO-biannually				
BE- In the French community we have an annual school survey according a 3 year cycle for 7-8 year old,11-12 y and 15-16 year In Flanders there are only face to face interviews, frequency as mentioned earlier.				
Computerised record systems**				
Computerised immunisation registries	DK,IS,IE,IT,MT,NL,NO,PT,ES, BE (n=10)			AT,CY,CZ,EE,FI,FR,DE,GR, HU,LV,LT,LU,PL,RO,SK,SI,SE (n=17)
	Both national and sub national	**National**	**Sub national**	**None**
Childhood	IS,NL,NO,DK (n=4)	MT (n=1)	ES,IE,IT,PT, BE (n=5)	
Adolescents	IS,NL,NO,DK (n=4)	MT (n=1)	ES,IT,PT, BE (n=4)	IE (n=1)
Adults	IS (n=1)		ES,IT,NL,PT, BE (n=5)	DK,MT,NO,IE (n=4)
Elderly	IS (n=1)	DK (n=1)	ES,IT,NL,PT, BE (n=5)	MT,NO,IE (n=3)
If the same methods being used in all sub regions				
Yes, in some sub national units	IT (n=1)			
Yes, in all sub national units	DK,NO,PT,IS (n=4)			

Other:	ES,IE,MT,NL (n=4)
IE- different regions use different CIR systems	
MT-Not applicable	
NL-sub national systems can be different	
ES-each Region have a different system BE : CIR in Flanders only	

**Administrative methods employ aggregate data. Information is not retrievable on specific individual.*
***Computerised immunisation registries hold information on each individual.*

The methods (administrative, survey or computerized immunisation registries (CIR)) and detailed information used to assess the numerator for other vaccines are presented in Table 19. All countries (except ES) reported that they have the same monitoring methods for other vaccines as for DPT. Detailed information on differences for MMR vaccine monitoring in ES is presented in Table 20.

Table 19. Method/s used and details to assess numerator for other vaccines in comparison to DTP in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

Vaccines	The same method/s used as for DTP vaccine	Different methods used than for DTP vaccine
Measles	AT,CY,CZ,DK,EE,FR,DE,GR,HU,IS,IE,IT,LV,LT, LU,MT,NL,NO,PL,PT,RO,SK,SI,SE, BE (n=25)	ES (n=1)
Mumps	AT,CY,CZ,DK,EE,FR,DE,GR,HU,IS,BE IE,IT,LV,LT,MT,NL,NO,PL,PT,RO,SK,SI,SE,LU (n=25)	ES-see below; the same as for measles.
Rubella	AT,CY,CZ,EE,FR,DE,GR,HU,BE,NO IE,IS,IT,LV,LT,MT,NL,PL,PT,RO,SK,SI,SE,IE,LU (n=25)	ES-see below; the same as for measles.
Hep B	AT,CY,CZ,DE,EE,FR,GR,IE,IT,LT,LV, MT,NL,PL,PT,RO,SE,SI,SK, BE,LU,HU (n=22)	ES-see above; same as above vaccines.
Polio	AT,CY,CZ,DE,DK,EE,FR,GR,HU,IE,IS,IT,LT,LV, MT,NL,NO,PL,PT,RO,SE,SI,SK, BE,LU (n=25)	ES-see above; same as DTP.
HiB	AT,CY,CZ,DE,DK,EE,FR,GR,HU,IE,IS,IT,LT,LV, MT,NL,NO,PL,PT,RO,SE,SI,SK, BE,LU (n=25)	ES-same as DTP for infants;
Varicella	CY,DE,GR,LV (n=4)	PL-Number of doses administered; MT-given in the private sector only; records not kept. IT- for this vaccination, national coverage is assessed every 5 years by survey method.
PCV 7,10,13	AT,CY,DE,DK,FR,GR,HU,IE,IS,LV,BE, NL,NO,SE,SK,LU (n=16)	PL-Number of doses administered; IT- for this vaccination, national coverage is assessed every 5 years by survey method.
Pneumo 23	LV (n=1)	ES-different by Region
Men C	AT,CY,DE,FR,GR,IE,IS,NL,PT, BE,LU (n=11)	ES-same as DTP; PL-Number of doses administered. IT- for this vaccination, national coverage is assessed every 5 years

		by survey method.
HPV	DK,FR,IS,IT,LV,NL,NO,PT,SI, BE (n=10)	DE-Survey or sold vaccines; ES-same as DTP for adolescents; PL-Number of doses administered; IE-in 2012 will be in CIR. SE-Vaccinations will be registered in a computerised registry.
BCG	EE,FR,GR,HU,LT,LV,MT,PL,PT,RO,SE,SK (n=12)	IE-not all areas have BCG information on IIS -therefore cannot measure it.
Rotavirus	AT, BE (n=2)	PL-Number of doses administered.

FI not responded.

Table 20. Method/s used and details to assess numerator for measles, mumps and rubella in ES (Different from DTP assessment presented in the table above). Vaccination coverage assessment survey in Europe, August 2011. (n=1)

Method used to assess numerator for MMR vaccine	Comments
Measles, mumps, rubella treated as DTP?	Different from DTP
Administrative method	Yes
Aggregate collection of no. of vaccines administered	Yes
Aggregate collection of no. of vaccines distributed	No
The number of subjects vaccinated from school or day care records	Yes
Other	No
If administrative methods used, is the same methods being used in all sub national units?	Yes, in some sub national units
Survey used	No
Computerised immunisation registries	Yes
Childhood	Sub national
Adolescents, adults, elderly	Not applicable
If computerised record systems used, is the same methods being used in all sub regions?	Other: same as DTP

Comments

AT- PCV 10 until 2011 only for children at risk; beginning with 2012 for all children; Men A,C,W,Y vaccination starts 2012.

FR -1. We suppose that you are asking all methods used and not the main one. For example DTP coverage in children 24 months of age is assessed through administrative data, for older children and adults data are provided by surveys, hence the two methods are mentioned, hope this is the correct way of filling in.2. Survey methods differ. These are school based for children and population based for adults. The latter combine face-to-face interviews and telephone interviews. HCW data are collected through personal interviews performed through surveys performed in health care settings.3. What do you mean exactly by household survey. I suppose it is a survey where you interview persons living in a house. Then this can be a telephone survey or a face-to-face survey, correct. Q21. Assess only childhood vaccinations, this that means that methods used for measuring VC in adults are not concerned? (i.e. in France surveys to measure DT coverage).

PT- The existent computerised record system is being updated and soon all levels (local, regional and national) will be using it.

RO- registry under implementation.

Vaccination coverage data validation, feedback and measure of performance indicators

Of 27 responding countries 16 validate vaccination coverage data. Of these, six countries reported that they do it routinely for all data and three countries do it routinely at defined times; five countries validate vaccination coverage for some and two countries validate data for all occasionally as part of research (table 21).

Table 21. Vaccination coverage data validation, feedback and measure of performance indicators in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Data validation, feedback	Countries	
	Yes	No
Does your country validate vaccine coverage data?	AT,DK,DE,IE,IS,IT,LV,LT, LU,NL,NO,PL,PT,RO,ES,HU (n=16)	SE,CY,CZ,EE,FI,FR,GR, MT,SK,SI (n=10)
If yes, is vaccination coverage data validation done LU did not responded		
Routinely (at defined time times) for all	AT,IT,LT,NO,PT,HU (n=6)	
Routinely (at defined times) for some (e.g. sample)	DE,PL,LU (n=3)	
Occasionally for some as part of research	DK,IE,IS,LV,NL (n=5)	
Occasionally for all as part of research	ES,RO (n=2)	
If yes, please indicate what method is used to do so:		
Vaccine sales	AT,DE,DK,LT,LU (n=5)	ES,IE,IT,LV,NL,PL,PT,RO,NO (n=9)
WHO Data Quality Self Assessment tool	LU,RO (n=2)	AT,DE,DK,ES,IE, IT,LT,LV,NL,NO,PL,PT (n=12)
Recounts of vaccination records	AT,LV,NL,PL,PT,IS (n=5)	DE,DK,ES,IE,IT,LT,LU,NO,RO (n=9)
Other:		
DK-data analysis for e.g. double entry, vaccine given twice, age at time of vaccination etc.		
DE-insurance claim date and vice versa		
IE-contact with GPs to validate coverage sometimes (not routine).		
IT-EPI Cluster sampling surveys		
NO-Validation of the information in the computerized system.		
PL-Annual comparison of number of vaccination cards held compared to number of inhabitants, by birth cohort and NUTS-2		
PT-number of doses distributed		
HU- at national level routinely, annual comparison of number of vaccination cards held compared to number of inhabitants, by birth cohort and NUTS-3; at local level occasionally, visit GPs and health visitors to validate coverage		
ES-national serological survey in 1996		
Describe briefly for which vaccines and the frequency		
AT-annually for all purchased vaccines by public sector		
DK-all childhood vaccines and influenza vaccines		
DE-esp. for newly introduced vaccine like varicella, pneumococcal, meningococcal		
IE- recent study for MenC and Hib booster		
IT- all vaccines for children and adolescents, every 5 years		
LV -It was done twice several years ago		
NL- irregularly		
NO- All vaccines included in the childhood immunisation programme, yearly		
PL- All vaccines, at least annually		

RO- as above
ES- all included in the vaccination schedule
BE – with sales and sero-surveys/ comparison Face to face and computerized ordering system.
LU-all vaccines included in the childhood immunisation schedule, every 5 years

Of 27 countries 17 indicated that they provide (print/distribute) or have available on the web for download, a standard authoriised vaccination record that parents/guardians can keep on the vaccination history of the child; eight countries reported that they have standard health care provider vaccination records.

Table 22. Availability of standard authorised vaccination record in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

	Have	**Do not have**
Personal immunisation record (for parents/guardians of the child)	CZ,DK,FR,GR,IE,IS,LT,LU, LV,MT,NL,NO,PT,RO,SI,BE, HU (n=17)	AT,CY,DE,EE,ES,FI, IT,PL,SE,SK (n=10)
Health care provider record (e.g. General practitioner, immunisation office)	IS,LT,LV,NL,PL,RO, BE,HU (n=8)	AT,CY,CZ,DE,DK,EE,ES,FR, GR,IE,IT,MT,NO, PT,SE,SI,SK (n=17)

FI did not respond
BE: Flanders only, for Wallonia planned in 2012-2013

Of 27 countries 16 indicated that they assess vaccination coverage (routinely or sometimes). Different performance indicators are used to assess vaccination coverage: up-to date for immunisation is used by 12 countries; on-time immunisation is used by ten countries; late start rates indicator and drop off rates indicators is used by eight and seven countries respectively; valid doses indicator is used by six countries.

Table 23. Assessment of immunisation coverage performance indicators in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

Immunisation coverage assessment	**Countries**	
Never	SI,ES,SE,AT,CY,CZ,DE,GR,IT,MT,PL (n=11)	
Not routinely but if needed	IE,RO (n=2)	
Yes, routinely	DK,EE,FI,FR,HU,LV,LT,LU,NL,NO,PT,SK, BE,IS (n=14)	
Performance indicators used assessing vaccination coverage(n=14)	**Use**	**Did not use**
Up-to-date immunisation	DK,FI,FR,IE,LU,NL,NO,PT,RO,SK, BE,IS (n=12)	EE,HU,LT,LV (n=4)
On-time immunisation	DK,BE, EE,FI,HU,LT,LU,LV,NL,RO (n=10)	FR,IE,NO,PT,SK (n=5)
Late start rates	DK,EE,FI,HU,LT,LV,NL, BE (n=8)	FR,IE,LU,NO,PT,RO,SK (n=7)
Drop-off rates	DK,FI,HU,LT,LV,NL, BE (n=7)	EE,FR,IE,LU,NO,PT,RO,SK (n=8)
Valid doses	DK,FI,NL,NO,SK, BE (n=6)	EE,FR,HU,IE,LT,LU,LV,PT,RO (n=9)

BE : on a regional level

Four countries (DE,LT,LU,PT) indicated that they have agreed standards for immunisation coverage assessment (Appendix A for American Standards as an example).

Comments

EE- Regulation of the Minister of Social Affairs nr 116, 17.11.2003 sets data, which should be recorded to the "immunisation book" or electronic database: - name of patient-age of patient -name of vaccine, seria number, date of expire-date of administration the same regulation sets form of the Passport of Immunisatiom.

DE-we have an agreement between all federal states about complete and incomplete vaccination coverage

NL-Vaccination record only available for immunisation services, not for GP. We have a standard analysis method that is explained in our yearly report (in Dutch).

E-Health system

Of 27 survey responding countries four reported that their country has implemented an e-Health system on a national level. Of these four countries, two countries (EE,IS) reported that immunisation questions are included. In 13 countries, there are plans to introduce e-Health system within 5 years; in eight of which the immunisation will be included. Details are presented in a table 24.

Table 24. E-Health system in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=27)

	E-Health system implemented	**E-Health system not implemented**
E-health system implemented	AT,EE,MT,IS	CY,CZ,DE,DK,ES,FR,GR,HU,IE,IT,LT, LV,NL,NO,PL,PT,RO,SE,SI,SK,LU
Immunisation included	EE,IS	MT,AT
Access to Public Health Official	IS	EE
Data at individual level	IS	
Aggregated	IS	
National level	IS	
Sub national	IS,BE	
Other		
	Plans to introduce E-Health system	**No plans to introduce E-Health system**
Introduction of E-Health system within 5 years	CY,CZ,DK,ES,GR,HU,IT,LT,LV ,PT,SE,SK,LU	DE,FR,IE,NL,NO,PL,RO,SI
Immunisation will be included	CY,DK,HU,LV,PT,SE,SK,LU	CZ,ES,GR,IT,LT
Accessed to immunisation data for Public Health Officials	CY,DK,HU,LV,PT,SE	SK
	Planned data availability in E-Health system	**Did not plan data availability in E-Health system**
Data availability at individual level	DK,PT,LV,SE	-
Aggregated data availability	LV,SE	-
Data availability at national level	DK,LV,SE	-
Data availability at sub national	DK,LV,SE	-
Not known	CY,HU,SK	-

FI-did not respond

Comments

AT-study started 2011

CY-This can only be done if the New National Health System is launched and we are not sure how is exactly going to be.

IT-In Italy there is not an e-health system covering whole country, but some initiatives have been performed or planned. A common service for booking sanitary visits/checks and an e-system for transmitting medical certificates assessing absence from job for disease are active at the national level. Electronic patient summary and e-prescription are being experimented in some Regions. For details (website in Italian):
http://www.salute.gov.it/eHealth/paginaMenuEHealth.jsp?lingua=italiano&menu=iniziative

NL-Q26: I do not know what is meant with these questions on e-health system?Q31: all vaccinees are included automatically in the immunisation registry unless they indicate that they object to registration (occurs seldom).

SK-Implementation of e-health system is in the competence of the Ministry of Health of the Slovak Republic. Data on immunisation status of a person should be just one part of it. The completion of the whole e-health system implementation is estimated for the year 2016. Further information can be found on www.health.gov.sk. Currently another separate immunisation registry is not planned to be implemented. We do have legislation passed for protection of personal data when electronically operated but this is general legislation not specifically aimed at the immunisation data.

LU-details on the future eHealth system, and data access & availability are still to be determined.

EE- IIS in Estonia is formally operating from January 2011. IIS exists in the frame of the e-health system (TIS). Immunisation register is directly connected with medical records (history) of each patient and other registers (Estonian Communicable Diseases Register, Register of Population). Taking into account the fact that technical ability (PC, software, connection with TIS) of different medical care facilities varies a lot, only a small number of medical care facilities have joined the immunisation register. The majority Of family doctors have not yet joined TIS. At the moment it`s possible to extract data concerning only a certain patient from IIS. However, it is not possible to extract aggregated data, because the statistical module is in the stage of development.

Immunisation registries

Of 27 countries that responded to this question four countries reported that they have an immunisation registry at national level; six countries have immunisation registries at sub-national level. One country (IS) indicated that there is immunisation registry at both national and subnational level. Nine countries indicated that they plan to develop a national immunisation registry. Details on immunisation registries implementation presented in table 25.

Table 25. Immunisation registries in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=26)

	Yes	No
National computerised immunisation registry		
National computerised immunisation registry implemented	DK,IS,MT,NL,NO (n=5)	AT,BE,CY,CZ,DE,EE,ES,FI,FR,GR,HU,IE,IT, LT,LU,LV,PL,PT,RO,SE,SI,SK (n=22)
Sub national computerised immunisation registry implemented	DE,ES,IE,IT,PT, BE,IS (n=7)	AT,CY,CZ,EE,FI,FR,GR,HU,LT, LU,LV,PL,RO,SE,SI,SK (n=16)
% Country covered (sub-national)		
DE	< 25%	
IE,IT,PT	> 75%	
ES	25 - 50%	
BE	60%	
IS	>95%	

Intention to develop a national immunisation registry		
National computerized immunisation registry implementation is planned	AT,EE,FI,HU,LU,LV,RO,SI,IE (n=9)	CY,CZ,FR,GR,LT,PL,SE*,SK (n=8)
Not known	AT,FI,HU,LU,SI (n=5)	
EE	Jan 2013	
LV	2013	
RO	2012	

Of 17 countries that have already or intend to implement a national immunisation registry ten countries stated that their country has legislation relating to immunisation registries, which ensures privacy and confidentiality in relation to the use of these registries.

Table 26. Legislation relating to immunisation registries which addressed privacy and confidentiality issues relating to the use of these registries in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=17)

	Legislation exist	Legislation do not exist
Countries	AT,DK,IS,IT,MT,NL,NO,PT,RO,ES (n=10)	EE,DE,HU,IE,LV,SI,LU (n=7)
Institution irresponsible to ensure this legislation		
AT	Austrian Federal Chancellery	
DK	National Data Authority (Danish Data Protection Agency)	
IS	the chief epidemiologist	
IT	A special national agency for every matter concerning privacy	
LU	Commission Nationale pour la Protection des donne? es	
MT	Data Protection Officer	
NL	RIVM	
NO	The Data Inspectorate (Datatilsynet)	
PT,RO	Unknown	
ES	health authorities	
BE	Federal Government (privacy commission)	

Of seven countries presented in a table 27, four of them specified that, data entry to the immunisation system is compulsory for children and in three for adults; in two countries data entry is compulsory for childhood vaccination but voluntary for adults vaccination. In BE data entry is voluntary for both, children and adults in table 27.

Table 27. Immunisation data entry to national programme (voluntary or compulsory) in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=7)

Country	Childhood vaccination data entry	Adult vaccination data entry
DK	Compulsory	Compulsory
IS	Compulsory	Compulsory
MT	Compulsory	Voluntary
NL	Compulsory	Compulsory
IE	Compulsory	Not relevant
NO	Compulsory	Voluntary
BE	voluntary	voluntary

In 16 countries a consent form from the vaccinee/ parent/ legal guardian is not required for inclusion on the immunisation registry (AT,DE,DK,EE,IE,IS,IT,LV,MT,NL,NO,PT,RO,SI, BE,HU); ES specified that verbal

consent is required. Al 17 countries reported that confidentiality protected (AT,DE,DK,EE,ES,HU,IE,IS,IT,LU,LV,MT,NL,NO,PT,RO,SI, BE).
Of 17 countries with immunisation registries, ten reported that they have agreed a core dataset for the CIR (in 12 of them data are agreed for national and in two countries for sub national levels) (table 29).

Table 29. Agreed core data set for your immunisation registry/ies in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=17)

	Agreed CIR core data set	Did not agreed CIR core data set
Countries	DK,EE,IE,IT,LV,MT,NO,PT,RO,SI	ES,AT,DE,HU,IS,LU,NL
National	DK,EE,IE,IT,LV,MT,NO,PT,RO,SI,IS	
Sub national	IS,BE	

Of 17 countries responding to this question, 13 countries reported that the name of patient (i.e. first, middle and last names) and unique identifying number/personal identifier is recorded in the system. A number to identify all health system encounters is used in 12 countries. These two unique identifiers are the same in ten countries.

Table 30. Data recorded in immunisation registries in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=17)

	Countries that have/record following data	**Countries that did not have/record following data**	**Yes, varies by sub national level**
Names recorded	EE,ES,IE,IS,IT,LV,MT,NL,NO,PT,RO,SI, BE (n=13)	AT,DE,DK,HU (n=4)	
Unique identifying number/personal identifier	DK,EE,ES,IS,IT,LV,MT,NL,NO,PT,RO,SI,BE (n=13)	AT,DE,HU (n=3)	IE (n=1)
Unique identifying number for all health system encounters	DK,EE,ES,IS,IT,LV,MT,NO,PT,RO,SI, BE (n=12)	AT,DE,HU,IE,NL (n=5)	
Is this the same number as above	DK,ES,IS,IT,LV,MT,NO,PT,SI,BE (n=10)	EE,RO (n=2)	
If not, can the data for the different encounters be linked	-	-	

All age groups (children/adults/adolescents) are covered in the CIR in seven countries. In the remaining ten countries, age groups covered by immunisation registries vary (table 31).

Table 31. Age groups covered in immunisation registries in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=17)

Age group(s) covered by immunisation registries	Countries
All ages (children/adolescents/adults)	DK,IS,LV,NO,PT,SI, BE (n=7)
All children/adolescents (< 18 years)	EE,NL (n=2)
Children<7 years	HU (n=1)
Children/adolescents<16 years	AT,MT (n=2)
Varies by sub national level	DE,ES,IT (n=3)
Other:	IE,LU,RO (n=3)
IE-up to 24 months typically	
LU-Not applicable - Registry not yet developed	
RO-for the beginning we start with under 5 but in future all personal vaccination history	

BE- for the French Community in Belgium it will be limited to < 20 year old population, versus all ages in Flanders.

Access to different medical staff groups to the data in immunisation registries presented in table 32.

Table 32. Access to the information on the immunisation registries in EU/EEA countries. Vaccination coverage assessment survey in Europe, August 2011. (n=17)

	Access to the immunisation registry exists	Access to the immunisation registry does not exist	Yes, varies by sub national level
Ministry of Health	AT,LV,RO (n=3)	DK,EE,ES,HU,IE,IS,IT, MT,NL,NO,SI (n=11)	DE,BE (n=2)
Vaccination services	AT,LV,RO,IS,IT (n=5)	DK,EE,HU,IE, MT,NL,NO,SI (n=8)	ES,DE,BE (n=3)
Public Health Doctors	HU,IS,IT,NO,PT,RO,SI (n=7)	AT,DE,DK,EE,LV,MT,NL (n=7)	ES,IE,BE (n=3)
Public Health Nurses	HU,IS,IT,LV,NO,PT,SI (n=7)	AT,DE,DK,EE,MT,NL,RO (n=7)	ES,IE,BE (n=3)
Primary care staff (physicians/nurses)-public	DE,HU,IS,LV,PT,RO,SI (n=7)	AT,DK,EE,IE,IT,MT,NL,NO (n=8)	ES,BE (n=2)
Primary care staff (physicians/nurses)-private	EE,IS,LV,RO,SI (n=5)	AT,DE,DK,HU,IE,IT, MT,NL,NO,PT (n=10)	ES,BE (n=2)
Hospital staff - public	HU,IS,LV,RO,SI (n=5)	AT,DE,DK,EE,IE,IT, MT,NL,NO (n=9)	ES,PT (n=2)
Hospital staff - private	EE,IS,LV,RO,SI (n=5)	AT,DE,DK,ES,HU,IE, IT,MT,NL,NO (n=10)	PT (n=1)
Vaccinee/Parent/Legal Guardian	EE,IS,LV,PT,NO* (n=5)	AT,DE,DK,ES,HU,IE, IT,MT,NL,NO,RO,SI (n=12)	
Medical Products Agency		AT,DE,DK,EE,ES,HU,IE,IS, IT,LV,MT,NL,NO,PT,RO,SI (n=16)	
National Immunisation Programme	LV,SI,DK,IS,NO (n=5)	AT,DE,EE,ES,HU,IE,IT,MT,NL,PT,RO (n=11)	BE (n=1)
Other:			
DK-specific projects with a scientific purpose such as registry studies			
LV-Health Inspectorate			

NL-Doctors and nurses working for EPI have limited access, NIP full access
NO- Some general practitioners and vaccination services has access to the information in the registry.
RO-each doctor for his own vaccinees list, only national can see all

* Since 1.12.11 the vaccinees /parents/legal guardian has access to the information registered on them or their children.
**Public has no access to database in Belgium.

Adverse vaccine related events are recorded in the immunisation registry in six of 17 countries; two countries have a linkage with adverse event database. Eleven countries reported that immunisation information could be available for vaccinee. Detailed information on immunisation information capabilities available in table 33.

Table 33. Capabilities of immunisation registries. Vaccination coverage assessment survey in Europe, August 2011. (n=17)

	Capabilities in immunisation registry exist	**Capability in immunisation registry not exist**	**Capabilities exist, but varies by sub national level**	**Capabilities exist only to health care provider**	**Yes, to both**
Adverse events (AE) recorded	EE,LV,MT, PT,RO,SI (n=6)	AT,DE,DK,IE,IS, LU,NL,NO,HU (n=9)	ES,IT,BE (n=3)		
Linkage with AE database	IS,NO (n=2)	AT,DE,DK,IE, IT,LU,NL (n=7)	ES (n=1)		
Linkage with surveillance data	DK,EE,IS,LV,NO (n=5)	AT,DE,HU,IE,IT,LU, MT,NL,PT,RO,SI (n=11)	ES (n=1)		
Report vaccine failures	DK,LV,MT,NL (n=4)	AT,DE,EE,HU,IE,IS, IT,LU,PT,RO,SI,NO (n=12)	ES (n=1)		
CIR manages vaccine inventories	HU,NL,PT (n=3)	AT,DE,DK,EE,IE,IS, LU,LV,MT,NO,RO,SI (n=12)	ES,IT (n=2)		
CIR issues notifications		AT,DE,DK,EE,HU, LU,NO,SI (n=8)	ES,IT (n=2)	RO (n=1)	IE,IS,LV, MT, NL,PT (n=6)
CIR used for statistical purposes	DK,EE,IS,IT,LV,MT, NL,NO,PT,RO,SI (n=11)	AT,DE,LU,HU (n=4)	ES,IE (n=2)		
CIR provide record to vaccinee	DK,EE,IS,IT,LV,MT, NL,NO,PT,RO,SI (n=11)	AT,DE,HU,IE,LU (n=5)	ES (n=1)		
CIR feed back to health providers	DK,IS,LV,MT, NL,NO,PT,RO,SI (n=9)	AT,DE,EE,IT,LU,HU (n=6)	ES,IE (n=2)		

The terminology to report on ages differs between countries. In order to avoid any misunderstanding the question was asked at the time of survey (August 2011): *"For data collection purpose, you say that a girl born in January 1999 is 12 years old (she has celebrated her 12th birthday) or 13 year old (she is living her 13th year of life)*". All responding countries (except IT) indicated that in their country the age of the child is defined as the number of birthdays the child has celebrated since birth (with birth being "0"). The responses are indicated in a table 34.

Table34. Use of terminology with regard to the age of achild who has celebrated her 12th birthday – what age is she?. Vaccination coverage assessment survey in Europe, August 2011. (n=24)

Terminology used	Countries
12 years old (she has celebrated her 12th birthday)	AT,CY,CZ,DE,DK,EE,ES,FR,GR,HU,IE,IS,LT,LV, MT,NL,NO,PL,PT,RO,SE,SI,SK,BE,LU
13 years old (she is living her 13th year of life)	IT

FI did not respond.

Summary and conclusions

This report demonstrates that amongst the VENICE countries participating in this survey all MSs collect collate and analyse vaccination coverage data regularly. However, the methods they use to assess vaccination coverage and the frequency of doing so is highly variable, making comparison difficult.

Vaccinations included to the National immunisation Programmes and vaccination coverage assessment

Children

All countries of 27 countries that responded to survey include DTP, Polio, MMR, Hib in their National Immunisation Programmes and assess vaccine coverage for these vaccines. Immunisation with HepB vaccine is included in 21 countries; vaccination coverage is assessed in all of them. Those countries that have routine BCG (n=11), MenC (n=12), Pneumococcal (n=20), Varicella and Rotavirus (n=4) vaccination programmes all assess vaccination coverage.

Adolescents

Of 27 countries 23 include in Diphtheria and Tetanus vaccination in their national immunisation programmes; six and seven countries do not monitor vaccination coverage among this population, although Italy conduct EPI cluster sampling surveys every 5 years. Among the 13 countries that recommend pertussis vaccination, five do not monitor uptake in this population. Eleven countries recommend polio vaccination for this group but three countries do not assess vaccine uptake. Eleven countries recommend MMR vaccine for this group, but three countries do not assess uptake. Those countries that have included HPV in to National immunisation programme (n=12) all except one (IE) monitor vaccination coverage.IE plans to obtain coverage data in 2012.

Adults

From 16 and 19 countries where immunisation of adults with diphtheria and tetanus vaccine is recommended ten and 11 countries respectively do not assess vaccination coverage. Pertussis vaccination is recommended in four countries, but monitored in only one.

Frequency of vaccination coverage assessment

Different vaccination coverage assessment time intervals are used in different countries ranging from monthly/quarterly/half yearly/annually to 2-5 years. The majority of MSs (about two thirds of countries) reported assessing vaccine coverage annually. In one country (BE), the frequency of vaccine coverage assessment differs by region, with irregular time intervals.

Vaccination coverage data availability by birth cohort

Twenty five of the 27 countries have coverage data by birth cohorts. Most of countries assessing vaccination coverage use population at or by first or second birthday and also age at school entry for the age specific denominators. A wide range of other age cohorts is used in some countries.

Vaccination coverage data by special risk groups

Most countries do not collect coverage data for specials risk groups (migrants, refugees, ethnic minorities, homeless, socially and economically disadvantaged groups). Four countries reported collecting data for influenza for clinical risk groups; five countries have data for HCWs for the same vaccine.

Administrative level at which vaccination coverage is assessed

All countries (n=24), except two, assess national vaccination coverage of those vaccines included in the National Immunisation Programme. BE and ES assess vaccination at sub-national

(regional) level. Nineteen countries reported that data are compatible with EUROSTAT NUTS classification. In 14 of them data are compatible with NUTS 2 () n=7 or NUTS 3 level.

Methods used to for numerator assessment

A variety of administrative methods (e.g. administrative, surveys and computerised records systems or combination of these) are used to calculate vaccination coverage. In those countries where the predominant method is administrative (n=17), the most commonly used numerator is the number of subjects vaccinated (n=16). In those countries where survey methods predominate (n=9), the most common type of surveys used are face-to-face interviews (n=6) or school surveys (n=4).

Vaccination coverage data validation and used of performance indicators

Validation of vaccination coverage data is done in just over half of countries (n=16) using a variety of methods. The most common method reported in half of these countries involves use of vaccine sales data (n=5) followed by recounts of vaccination records (n=5).

Different performance indicators (up-to-date or on-time immunisation, late start rates, drop-off rates, valid doses) were used by approximately half of the countries (n=14), the most common performance indicator being the proportion of children who are up-to-date immunised (n=12) followed by on-time immunisation (n=10).

E-Health system

Five countries have implemented E-health system; however only in two of them immunisation component is included. Thirteen countries plan to develop such system within 5 years; eight countries plan to include immunisation in this system.

Immunisation registries

- Immunisation registries are available in 11 counties but vary regarding administrative level covered (five countries have registry at national and six on sub national level) and also by age groups covered. In addition nine countries have intention to develop national immunisation registries.
- Of the 17 countries that have already implemented or plan to develop and immunisation registry, the majority of countries (n=13) have (or will have) named patient and personal identifiers (or unique health system encounter number); ten countries have legislation to ensure privacy and confidentiality in relation to their use.

Reference List

[1] ECDC. Immunisation - Spotlight 2011.Vaccines – powerful tools.Challenges. http://ecdc.europa.eu/en/healthtopics/spotlight/Spotlight_immunisation/Pages/challenges.aspx . 2011.

[2] WHO. Immunisation surveillance, assessment and monitoring.Immunisation coverage. http://www.who.int/immunization_monitoring/routine/immunization_coverage/en/index.html . 7-11-2011.

[3] VENICE network. Report on the vaccination coverage assessment. http://venice.cineca.org/Final_Report_I_WP3.pdf . 2012.

Appendices

Appendix1. Questionnaire

NATIONAL DATA STANDARDS FOR VACCINATION COVERAGE ASSESSMENT QUESTIONNAIRE

Please Return Questionnaire by ----------, 2011

COUNTRY: _____

Gatekeeper:_____

NAME OF PERSON WHO FILLS QUESTIONNAIRE (IF DIFFERENT FROM ABOVE): _____

_____

CONTACT EMAIL:_____

We kindly ask you to complete this questionnaire in order to make updates for the vaccination coverage assessment survey which was conducted in 2007. The objective of this survey is to finalise the *"Consensus document for data collection on vaccination coverage"*, which was discussed on the VENICE project meeting in Stockholm in December last year.

The following questions relate to immunisation coverage collected at the national level for recommended vaccines in each country Immunisation Programme.

Data obtained from the previous survey are provided (prefilled) where it was possible to do so. You are asked to update the information if there have been changes since the last survey. There are also some new questions (or modified questions), which are marked in red. Please complete the new questions fully and check prefilled questions (which should be modified if required).

The last part of questionnaire, which is not very long, relates to questions on Immunisation Registries (IR). We know that you (or some of you) recently completed the survey on Immunisation Information Systems for ECIIS network. However, we kindly ask you to review this part of questionnaire for this specific survey as it is prefilled with data in order to see if it is still correct for your country. Countries that did not have IRs at the time of survey in 2007, but introduced IR after are welcome to complete this part of questionnaire.

National Immunisation Programme

Q1.Please tick (√) which of the following vaccinations are **recommended in your countries National Immunisation Programme***:

* **Immunization programme**: set of objectives, strategies, actions and priorities for the organised use of vaccines for VPDs defined in your country.

	Diphtheria	Tetanus	Pertussis	Polio	Hib	Hep B	BCG	Men C	MMR	Var[1]	PCV 7, 10, 132	Pneumo 23	Rotavirus	HPV	Flu
Children															
Adolescents															
Adults *															
Special groups (e.g. risk groups, girls, elderly)															
Not included															

Frequency of vaccination coverage data collection

Q2. Vaccination coverage by different age groups
In the following 3 sections age groups are defined for this survey specifically- the age group definitions may not reflect the age group monitored in your country - please tick each table as necessary (if HPV uptake monitored for ages 11-12 years, then tick HPV box in both Q2a and Q2b)

Age group definitions in this survey:
Children are defined as children aged 0-11 years inclusive
Adolescents are defined as children or young adults aged 12-18 years (inclusive)
Adults are defined as anyone aged 19 years and over

Q2a. Please tick (√) the **frequency** that **vaccination coverage is assessed for CHILDREN vaccinations** in your country for each of the following:

Frequency	DTP	Polio	Hib	Hep B	BCG	Men C	MMR	Var[1]	PCV 7, 10,132	Rotavirus	HPV	Influenza
Monthly												
Quarterly												
Annually												
Every 2 years												
Every 3 years												
Every 5 years												
Other, specify[3] _____												
Not applicable[4]												

Vaccination coverage not assessed												

1 Varicella vaccine
2 conjugate 7(10, 13) valent Pneumococcal vaccine
3 including “irregularly”
4 if not included in the Immunisation Programme

Q2b.Please tick (√) the **frequency** that **vaccination coverage is assessed for ADOLESCENTS (usually 12 years +) vaccinations** in your country for each of the following:

Frequency	Diphtheria	Tetanus	Pertussis	Polio	MMR	HPV	Var[1]	Hep B	Other, I f other specify_____
Monthly									
Quarterly									
Annually									
Every 2 years									
Every 3 years									
Every 5 years									
Other, specify[2] _____									
Not applicable[3]									
Vaccination coverage not assessed									

[1] Varicella vaccine
[2] including “irregularly”
[3] if not included in the Immunisation Programme

Q2c.Please tick (√) the **frequency** that **vaccination coverage is assessed for ADULTS vaccinations** in your country for each of the following:

Frequency	Diphtheria	Tetanus	Pertussis	Influenza	Pneumo 23	Other, I f other specify_____
Monthly						
Quarterly						
Annually						
Every 2 years						
Every 3 years						
Every 5 years						
Other, specify[1] _____						
Not applicable[2]						
Vaccination coverage not assessed						

[1] including “irregularly”
[2] if not included in the Immunisation Programme

Q3. Please specify the date (or month of the next year) when **vaccination coverage** data are ready for data dissemination (e.g. report to VENICE/ECDC)?

Vaccination coverage for children_____

Vaccination coverage for adolescents_____
Vaccination coverage for adults (Influenza) _____
Vaccination coverage for other vaccines, please specify_____

Q4.Are monovalent vaccines for measles, mumps and rubella are used in your country?

☐Yes, all three monovalent products are used
☐Only some of them are used (please specify_____)
☐They are available only in private market, but not available for national vaccination programme
☐Not used and not available in country at all

Comments for this section_____

Vaccination coverage data availability by birth cohort at the national level

Q5. Is vaccination coverage assessed by birth cohorts in your country?

☐ Yes
☐ No

Q6. If yes, could your country provide (be able to provide) aggregated data to ECDC on an annual basis?

☐ Yes
☐ No

Q7. How timely is vaccination coverage data? (in other words, when /how soon after the age of uptake measurement is data available at national level)

Cohort vaccination coverage data available:

☐Within 3 months after age of measurement
☐Within 6 months after age of measurement
☐Within 12 months after age of measurement
☐Other, please specify_____

Q8. Please tick (√) for each of the following vaccinations if vaccination coverage is assessed for/at (More than one option may be appropriate).

Birth cohort	Children /Adolescents												Adults	
	DTP	Polio	Hib	Hep.B	BCG	Men C	MMR	Var1	PCV 7, 10,132	Rotavirus	HPV	Influenza	Influenza	Pneumo 23
All birth cohorts child related vaccinations until ____ (specify age, e.g. by 6 years)														
At 12 months														
At 24 months														
At 36 months														
At school entry*														
Adolescent birth cohort vaccinations_____ (please specify the age (or age range) when vaccination coverage is provided)														

Adult birth cohort vaccinations_____ (please specify the age when vaccination coverage is provided)														
For a range of birth cohorts_____(please specify the age when vaccination coverage is provided)														
Other, specify_____														
Not applicable														

*If yes, at school entry please specify age (e.g. 4, 5 years or 6, 7 years) at school entry_____

*If yes, at school entry, specify if vaccination coverage data are assessed for each birth cohort or range of these cohorts?

- ☐ Each birth cohort above at school entry
- ☐ Range of these cohorts at school entry
- ☐ Children at school entry, independently on the birth cohort
- ☐ Other, specify_____

Comments for this section_____

Single vaccine doses versus full immunisation series

Q9. Please indicate (tick (√)) for which of the following vaccinations, vaccination coverage data is collected: (more than one option may be appropriate)

Vaccine	Vaccination coverage collected
DTP	☐ First dose ☐ Every single dose ☐ Primary immunisation series ☐ Full immunisation series (including booster) by 24 months ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No
Polio	☐ First dose ☐ Every single dose ☐ Primary immunisation series ☐ Full immunisation series (including booster) by 24 months ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No
MMR	☐ First dose ☐ Second dose ☐ Other specify_____ ☐ Not applicable ☐ If yes, could you provide these data for ECDC? Yes/No
Hepatitis B	☐ Every single dose ☐ Primary immunisation series ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No
Hib	☐ First dose ☐ Every single dose ☐ Primary immunisation series

	☐ Full immunisation series (including booster) by 24 months ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No
Pneumococcal vaccine (for children PCV 7, PCV 10, PCV 13)	☐ First dose ☐ Every single dose ☐ Primary immunisation series ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No
Men C	☐ First dose ☐ Every single dose ☐ Primary immunisation series ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No
Rotavirus	☐ First dose ☐ Every single dose ☐ Primary immunisation series ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No
HPV	☐ First dose ☐ Every single dose ☐ Primary immunisation series ☐ Other, specify_____ ☐ Not applicable If yes, could you provide these data for ECDC? Yes/No

Q10. With regard to vaccinations with conjugate vaccines Hib, MenC and PCV, if a child, not vaccinated during the 1st year of life (<12 months), gets one dose in the 2nd year of life (after 12 months)e, is he/she considered as age appropriately vaccinated in your country?

Vaccine	Vaccination status
Hib	Yes/No/Not applicable
Men C	Yes/No/Not applicable
PCV	Yes/No/Not applicable

Q11. If YES, are children who have received one dose after 12 months of age included in the routinely vaccination coverage assessment?

☐ Yes, for all these vaccinations
☐ Yes, for some of these vaccinations, specify_____
☐ No
☐ I don't know
☐ Not applicable

Q12. If you measure vaccination coverage for MMR received at the time of 2nd dose administration, are you able to link this data at the child level to MMR dose 1 so that it is evident that they have received two doses rather than just one?

☐ Yes
☐ No

Comments for this section_____

Vaccination coverage data for special risk groups

Q13. Are vaccine coverage data collected for specific risk groups and available at national level? If yes, please indicate which groups for which vaccines.

Specific groups	Hepatitis B	Influenza	MMR	Varicella	Pertussis	Other, specify
Health care workers						
Under immunised individuals (all categories below):						
Migrants						
Refugees						
Ethnic minorities (e.g. Roma, Travellers, other)						
Population sub groups (e.g. Anthroposophic)						
Homeless						
Socially and economically disadvantaged						
Elderly						
Other, specify____						

Comments for this section_____

Delivery methods for vaccines

Q14. For each population specified please describe the main methods of vaccination delivery (e.g. by primary care physicians, public health nurses etc.) for vaccines provided (supplied by/paid for/ reimbursed) by the National Immunisation Programme. Please provide estimates of proportions of each group involved.

Population	Primary care physician*		Public health vaccination services* (estimated % of delivery)	Hospitals*		School health services* (estimated % of delivery)	Other* specify_____
	Public** (estimated % of delivery)	Private** (estimated % of delivery)		Public** (estimated % of delivery)	Private **(estimated % of delivery)		
<3 years of age							
Preschool							
School age							
≥ 65 years of age							
High risk group							
Health care workers							
Migrants							
Refugees							
Not applicable							
Other, specify							

*Sum of all should not exceed 100%. E.g. If in your country vaccinations are delivered by primary care physicians and in hospitals, please tick them and indicate e.g. 90% and 10 % respectively. Choose not applicable for others.
**Within each setting, both public and private services may be available. Please indicate the proportion of vaccinations done in private versus public , the sum of which should not exceed 100% for any one setting. E.g. Primary care physicians: 70% public; 30% private; Hospitals: 100% public.

Q14.1 Are all vaccinations delivered by the administrators of vaccines, as indicated above in question (Q4. table), included in the routine assessment of vaccination coverage?

- ☐ Yes, for all indicated above
- ☐ Yes, only for public (not private) health sector (primary care, hospitals)
- ☐ Yes, only for private sector (primary care, hospitals)
- ☐ Yes, for schools
- ☐ No
- ☐ If no, please describe

Q15. Does your country have a website address providing information on vaccine coverage for your country? Yes ☐ No ☐

If yes, please specify

- ☐ Published reports on vaccination coverage (hard copies; printed reports)
- ☐ Vaccination coverage data published on website
- ☐ Other, specify_____

If published on website, please provide link to these reports_____

If no, is there any other mechanism used to inform vaccination providers or the public?
Specify_____

Comments for this section_____

National or sub national level

Q16.Please tick (√) at which level immunization coverage for the following vaccines is assessed? (More than one option may be appropriate)

Level	Diphtheria	Tetanus	Pertussis	Polio	Hib	HepB	BCG	MenC	MMR	Var	HPV	Rota	PCV 7,10,13	Pneumo 23	Flu
National															
Sub national:															
Regional															
Local															
Not Applicable															

Q17. Are available vaccination coverage data in your country geographically aggregated in a classification compatible with EUROSTAT NUTS* classification?

Yes/No

If no, please define your sub national classification (i.e. sub national units for the vaccination coverage data collection purpose, if any)_____

Q18. To what sub-national level could your country report vaccination coverage data to VENICE/ECDC? (please specify)

NUTS1/**NUTS2**/ **NUTS3**/ **LAU level 1**/ **LAU level 2** /
other if NUTS classification is not used, specify

Q19. In your opinion which is the most appropriate level to be used in your country to provide an appropriate sub national vaccination coverage data?
(example: in Italy NUTS 1=5, NUTS=21, NUTS3=107; the more appropriate NUTS level for vaccination coverage data collection purpose is NUTS2)

NUTS1/**NUTS2**/ **NUTS3**/ **LAU level 1**/ **LAU level 2** /
other if NUTS classification is not used, specify

*According EUROSTAT NUTS levels means: **NUTS1**: 3-7 millions/**NUTS2:** 800.000 – 3 millions/ **NUTS3:** 150.000 – 800.000. There is also, two other levels of Local Administrative Units (LAU) have been defined (**LAU level 1** (formerly NUTS level 4)/ **LAU level 2** (formerly NUTS level 5)). The lowest level (LAU 2) consists of municipalities or equivalent units in the 27 EU Member States.
If you need more information please use the link to the EUROSTAT NUTS levels:
http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/correspondence_tables/national_structures_eu

Comments for this section_____

Numerator assessment

Q20. For each of the following vaccines please indicate the method used to assess the numerator in the following question. You will then be asked to specify further.

Q20.1 For **Diphtheria, Tetanus, Pertussis (DTP)** which method does your country use to measure the numerator in assessing vaccine coverage

a) Administrative (excluding computerised records) Yes ☐ No ☐

b) Surveys Yes ☐ No ☐

c) Computerised immunisation registries Yes ☐ No ☐

(Administrative methods employ aggregate data. Information is not retrievable on specific individual. Computerised immunisation registries hold information on each individual)

Whichever of a/b/c/ is selected then the corresponding table will open up below after ticking yes/no.

Answer either

a) Please indicate which of the following administrative methods are used?

Administrative	Answer
Aggregate collection of no. of vaccines administered	Yes/no
Aggregate collection of no. of vaccines distributed	Yes/no
The number of subjects vaccinated from school or day care records	Yes/no/not applicable
Other , if other please describe	Yes/no

If administrative methods used, is the same methods being used in all sub national units?

☐ Yes, in all sub national units

☐ Yes, in some sub national units
☐ Other, specify_____

Or

b) Please indicate which of type of survey is used?

Surveys	Answer
Household survey	Yes/no
Telephone interview	Yes/no
Mail survey	Yes/no
Face to face interview	Yes/no
Focus groups	Yes/no
School survey	Yes/no
Other, if other please describe	Yes/no

Are these surveys conducted at regular intervals Yes ☐ No ☐

If yes, please give details of frequency? Drop down menu selection

If No, when was the last survey conducted? Drop down menu selection

Or

c) Please indicate at which level **computerised record systems** are used?

Vaccine Target Groups	
Childhood	Sub national/national/national+sub national/none/not applicable
Adolescents	Sub national/national/national+sub national/none/not applicable
Adults	Sub national/national/national+sub national/none/not applicable
Elderly	Sub national/national/national+sub national/none/not applicable

If computerised record systems used, is the same methods being used in all sub regions?
☐ Yes, in all sub national units
☐ Yes, in some sub national units
☐ Other, specify_____

Q21. Is vaccination coverage for all recommended childhood vaccinations measured with the same methodology as you provided above (e.g. DTP)

Vaccine	Vaccination coverage methods measurment
Measles	Yes/No ***If NO, the same questions as Q20.1 will open.***
Mumps	Yes/No/ If no, please describe _____
Rubella	Yes/No/ If no, please describe _____
Hep B	Yes/No/ If no, please describe _____
Polio	Yes/No/ If no, please describe _____
Hib	Yes/No/ If no, please describe _____
Varicella	Yes/No/ If no, please describe _____
PCV &7,10,13	Yes/No/ If no, please describe _____
Pneumo 23	Yes/No/ If no, please describe _____

Men C	Yes/No/ If no, please describe _____
HPV	Yes/No/ If no, please describe _____
BCG	Yes/No/ If no, please describe _____
Rotavirus	Yes/No/ If no, please describe _____

Comments for this section_____

Vaccination coverage data validation, feedback and measure of performance indicators

Q22. Does your country validate vaccine coverage data?

Yes ☐ No ☐

If yes, is vaccination coverage data validation done

☐ Routinely (at defined time times) for all
☐ Routinely (at defined times) for a some (e.g. sample)
☐ Occasionally for all as part of research
☐ Occasionally for some as part of research
☐ Other _____

If yes, please indicate what method is used to do so:

Vaccine sales Yes ☐ No ☐
WHO Data Quality Self Assessment tool Yes ☐ No ☐
Recounts of vaccination records Yes ☐ No ☐
Other Yes ☐ No ☐
If other, please describe_____

Describe briefly for which vaccines and the frequency _____

Q23. Does your country provide (print/distribute) or have available on the web to be downloaded, a standard authorised vaccination record? Please specify:

Personal immunisation record (for parents/guardians of c the child)

Yes ☐ No ☐

Health care provider record (e.g. General practitioner, immunisation office)

Yes ☐ No ☐

Q24. Does your country routinely or sometimes assess immunisation coverage performance indicators (detailed in next question)?

☐ Yes, routinely
☐ Yes, sometimes
☐ Not routinely but if needed
☐ Never

If yes, please indicate which of the performance indicators listed below your country uses for assessing immunisation coverage. (Please see glossary for explanations)

Up-to-date immunisation Yes ☐ No ☐
On-time immunisation Yes ☐ No ☐
Late start rates Yes ☐ No ☐
Drop-off rates Yes ☐ No ☐
Valid Doses Yes ☐ No ☐
Other _____

Q25. Does your country have agreed standards for immunisation coverage assessment?
Please see Appendix A for American Standards as an example.

Yes ☐ No ☐

If yes and this is in any language please attach by email to jolita.mereckiene@hse.ie or fax to 00353 18561299

If no, please go to Q26.

Comments for this section_____

E-Health system

Q26. Has your country implemented an e-Health system covering whole country?

Yes ☐ No ☐

If yes, is immunisation questions are included to that system?

Yes ☐ No ☐

If yes, does public health officials have an access (receive data) to these data?

Yes ☐ No ☐

If yes if these data are available at (tick all that applies):

- ☐ Individual level
- ☐ As aggregated
- ☐ National level
- ☐ Sub national level
- ☐ Other, specify_____

Comments_____

If no, to Q26. Does your country have a plan to introduce e-Health in the nearest future (5 years)?

Yes ☐ No ☐

If yes, will it contain an immunisation e-Health component?

Yes ☐ No ☐

If yes, will public health officials will have access to this information?

Yes ☐ No ☐

If yes, will these data be available at:

- ☐ Individual level
- ☐ As aggregated data only
- ☐ Available at National level
- ☐ Available at Sub national level
- ☐ Other, specify_____

Comments_____

Immunisation registries

Q27. Does your country have?

a) a national computerised immunisation registry?

Yes ☐ No ☐

if yes go to Q29

if no answer part b)

b) sub national computerised immunisation registry?

Yes ☐ No ☐

if no go to Q28.

if yes go to Q29

Q28. Does your country intend to develop a national immunisation registry?

Yes ☐ No ☐

if no, go to Q46

if yes go to Q28a and complete the remainder of the questionnaire

Q28a. If yes, when do you envisage a national start up date?

Please insert drop down menu with month and year

Also please insert "not known" option

Q29. Does your country have legislation authorising immunisation registries ensuring privacy and confidentiality in relation to the use of such registries?

Yes ☐ No ☐

Q29a. If yes, who is charged with ensuring legislation is applied and monitored?

_____

Q30. For those countries who have an immunisation registry, is data entry completed by health provider (public health doctor, public nurse, primary care physician etc.)

health provider Yes ☐ No ☐

other Yes ☐ No ☐

if other, please specify_____

Q30a. please indicate if the immunisation data entry related to national programme is voluntary or compulsory

Childhood vaccination program	Voluntary/Compulsory/Not applicable
Adult vaccination program	Voluntary/Compulsory/Not applicable

Q31. Is consent from the vaccinee/ parent/ legal guardian required for inclusion on the immunization registry?

Yes ☐ No ☐

If yes, in what form is consent given?

Verbal consent Yes ☐ No ☐

Signed official immunization form Yes ☐ No ☐

Signed consent but not on official form Yes ☐ No ☐

Q32. Is confidentiality of data protected by current legislation in your country?

Yes ☐ No ☐

Q33. Does your country have agreed core data set for your immunisation registry (or registries)?

Yes ☐ No ☐

If yes, is this agreement is:

☐ National

☐ Sub national

☐ Varies among sub national units

If yes, please attach via email jolita.mereckiene@hse.ie or fax to 00353 18561299 in any language.

Q34. Does your country record named patient (i.e. first, middle and last names) data on your registry?

Yes ☐ No ☐

Q35. Does your country use a unique identifying number/personal identifier in your registry(or registries)?

Yes ☐ No ☐

Q36. Do you have a unique identifying number for all health system encounters in your country?

Yes ☐ No ☐

Q36a. If yes, is this the same number? Yes ☐ No ☐

If not, can the data for the different encounters be linked?

Yes ☐ No ☐

Q37. What ages are covered in the registry (Drop down menu)

- ☐ All ages (children/adolescents/adults)
- ☐ Children <5 years
- ☐ Children <6 years
- ☐ Children <7 years
- ☐ Children/adolescents <16 years
- ☐ All children/adolescents (< 18 years)
- ☐ Varies by sub national level
- ☐ Other, specify_____

Q38. Who has access to the information on the registry?

Ministry of Health	Yes	☐	No	☐
Public health doctors	Yes	☐	No	☐
Public health nurses	Yes	☐	No	☐
Primary care staff (physicians/nurses):				
Public	Yes	☐	No	☐
Private	Yes	☐	No	☐
Hospital staff:				
Public	Yes	☐	No	☐
Private	Yes	☐	No	☐
Vaccinee/Parent/Legal Guardian	Yes	☐	No	☐
Vaccine Manufacturers	Yes	☐	No	☐
Medical Products Agency	Yes	☐	No	☐
National Immunisation Program	Yes	☐	No	☐

Other _____

Q39. Are adverse vaccine related events recorded in the registry?

Yes ☐ No ☐

Q39a. If not, is the registry capable of linking to adverse event databases?

Yes ☐ No ☐

-

Q40. Is the immunisation registry capable of linking with vaccine preventable disease reporting i.e. surveillance data?

Yes ☐ No ☐

Q40a. Can these systems detect and report vaccine failures?

Yes ☐ No ☐

Q41. Is the immunisation registry capable of managing vaccine inventories?

Yes ☐ No ☐

Q42. Can the immunisation registry issue reminder and recall notifications to?

Vaccinee Yes ☐ No ☐

Health care provider Yes ☐ No ☐

Q43. Can the immunisation registry be used for statistical purposes?

Yes ☐ No ☐

Q44. Can the system provide information to the vaccinee on immunisations (eg. obtain record of completed vaccinations)?

Yes ☐ No ☐

Q45. Can the registry be a source of feedback information to health providers?

Yes ☐ No ☐

Q.46 We realise that different terminology is used for indicating ages. In order to avoid any misunderstanding, we kindly ask you to answer to the following question.
For data collection purpose, you say that a girl born in January 1999 is:

- ☐ 12 year old (she has celebrated her 12th birthday)
- ☐ 13 year old (she is living her 13th year of life)

Thank you very much for your time.

Appendix 2. Definitions:

Full immunisation series – recipient received primary immunisation and booster dose by the age 24 months and is considered appropriately vaccinated for age according to Immunisation Schedule in the MSs Immunisation programme.

Primary immunisation series – the recipient received appropriate number of doses at the appropriate minimal time intervals in accordance with official recommendations (number of doses required as part of primary immunisation series will vary according to countries Immunisation Schedule of the MSs Immunisation programme).

Booster dose- the recipient received one dose of vaccine with relevant time interval for that vaccine after primary immunisation series in order to raise antibodies back to protective levels.

Full immunisation series = primary immunisation series + booster. (mainly for inactivated vaccines)

Single dose- the recipient received one dose of vaccine that can be combination of vaccines (e.g. DTP, one dose of hexavalent vaccine e.g. DTP, Polio, Hib, Hep B) or have only one antigen (e.g. Men C).

Multidose vaccines- vaccine that require two or more doses of the same vaccine for development of adequate and persisting antibody response.

Combination vaccines are developed to protect more than one infection. The term "combined vaccines" may also be used to describe the mixture of two separate vaccines in a single vial prior to administration or vaccines that are separately manufactured but combined into one product during the final packaging stages. Polyvalent vaccines against multiple strains or serotypes of the same infectious agent are not considered to be combination vaccines.

Age appropriate vaccinations-the recipient who received all doses of vaccines by a defined age as specified by the Immunization Schedule of the Ms Immunisation Program.

Definition of age in this survey e.g.12 year old we mean that this is a person who celebrated the 12th birthday and this person will be accounted as 12 year old by 12 years, 11 months and 29 or 30 days according month of birth (by the next 13th birthday).

The **age limit between child and adolescent** in this survey defined as adolescent recipient of vaccine >12years.

The **age limit between adolescent and adult** define in this survey as adult recipient of vaccine >18 years.

Vaccine failure- is when an organism develops a disease in spite of being vaccinated against it. Primary vaccine failure occurs when an organism's immune system does not produce enough antibodies when first vaccinated. Secondary vaccine failure occurs when enough antibodies are produced immediately after the vaccination, but the levels fall over time. While antibody levels always fall over time, this would be a more rapid loss of immunity than expected for that vaccine.
http://en.wikipedia.org/wiki/Vaccine_failure

Recommended vaccines – we mean in this survey vaccines that are included in your countries official Immunisation Programme.

Up-to-date immunisation is defined as the receipt of the full number of doses by the assessed age according to recommendations of the National Advisory Committee on Immunisation. (E.g. assessed at 12 months or 24 months)

On-time immunisation is defined as age-specific receipt of immunisation during acceptable time periods according to recommendations of the National Advisory Committee on Immunisation. Measured in some areas as median age in months at receipt of each vaccine dose.

Late start rates % infants who don't have first dose by certain age.

Drop –off rates % children with DTP1 at 6 months - % with DTP3 at 12 months.

Valid doses % doses that were administered when the child had reached the minimum age for the vaccine, and were administered with the proper spacing between doses according the national schedule.

Underimmunised (hard to reach) individuals (or groups of individuals) are defined as: 1. Hard core opponents (e.g. persons opposed to immunisation based on religious or philosophical beliefs), 2. The inadequately informed (e.g. parents who seek more information that what is routinely provided) and 3. Those with decreased access to the health system (e.g. migrants and ethnic minorities).
http://www.euro.who.int/__data/assets/pdf_file/0007/79036/E86885.pdf

Migrant- the person (or groups) who move from one country or locality to another.

http://www.google.com/search?hl=en&rls=com.microsoft:en-US&defl=en&q=define:Migrants&sa=X&ei=x9yRTefQM8u4hAeUkMmgDw&sqi=2&ved=0CBoQkAE

A Refugee- is a person who has been forced to leave his or her home and seek refuge elsewhere. Under the United Nations Convention Relating to the Status of Refugees of 1951, a refugee is more narrowly defined (in Article 1A) as a person who "owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country".
http://en.wikipedia.org/wiki/Refugees

Ethnic minorities- a group that has different national or cultural traditions from the majority of the population.
http://www.thefreedictionary.com/ethnic+minority

Homeless- categorizes the condition of people without a regular dwelling because they are unable to acquire, maintain regular, safe, and adequate housing, or lack "fixed, regular, and adequate nighttime residence.
http://en.wikipedia.org/wiki/Homeless

E-Health system- means the Electronic Health Record, which allows the sharing of necessary information between care providers across medical disciplines and institutions.
http://www.hc-sc.gc.ca/hcs-sss/ehealth-esante/index-eng.php

Socially and economically disadvantaged-
The U.S. government defines "socially and economically disadvantaged" individuals under the Small Business Act (15 USC 637) as:
(5) Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities.

(6)(A) Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged. In determining the degree of diminished credit and capital opportunities the Administration shall consider, but not be limited to, the assets and net worth of such socially disadvantaged individual. http://womeninbusiness.about.com/od/smallbusinessfunding/a/sbadefsociodis.htm

Anthroposophy: Knowledge of the nature of man. A spiritual and mystical doctrine that grew out of theosophy and derives mainly from the philosophy of Rudolph Steiner, Austrian social philosopher (1861-1925). (Webster, 3d ed) Children attending Steiner schools often have an anthroposophic (holistic) lifestyle in which some immunizations are avoided or postponed.

Health Care Workers - The Association of National Health Occupational Physicians (ANHOPS) guidance on Immunisation of healthcare workers defines three categories of healthcare workers:

1. Clinical and other staff, including those in primary care, who have regular, clinical contact with patients. This includes staff such as doctors, dentists and nurses, paramedical professionals such as occupational therapists, physiotherapists, radiographers, ambulance workers and porters, and students in these disciplines;
2. Laboratory and other staff (including mortuary staff) who have direct contact with potentially infectious clinical specimens and may additionally be exposed to pathogens in the laboratory. This includes those in academic (or commercial research) laboratories who handle clinical specimens. They do not normally have direct contact with patients;
3. Non-clinical ancillary staff who may have social contact with patients, but not usually of a prolonged or close nature. This group includes receptionists, ward clerks and other administrative staff working in hospitals and primary care settings and maintenance staff such as engineers, gardeners, cleaners, etc. These staff may be exposed to other specific occupational risks which require their own surveillance programmes.

http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733758763

Appendix 3. American Standards for Immunisation Registries.

National Immunization Program, 2001
Immunization registry minimum functional standards
http://www.cdc.gov/vaccines/programs/iis/stds/min-funct-std-2001.htm

Standard#1
Electronically store data on all approved core data elements.
Definition: the registry's computer database contain fields for all NVAC*-approved core data elements. These elements are: patient name (first, middle and last); patient birth date; patient sex; patient birth state/country; mother's name (first middle last and maiden); vaccine type; vaccine manufacturer; vaccination date; and vaccine lot number.
*NVAC National Vaccine Advisory Committee, United States.

Standard#2
Establish a registry record within 6 weeks of birth for each newborn child born in the catchment area

Standard#3
Enable access to and retrieval of immunization information in the registry at the time of the encounter

Standard#4
Receive and process immunization information within 1 month of vaccine administration

Standard#5
Protect the confidentiality of health care information
Definition: the registry has written confidentiality policies and procedures in place and implemented. Access to registry information is limited and audit trails are monitored

Standard#6
Ensure the security of health care information
Definition: the registry has written security policies and procedures in place and implemented, including administrative and technical practices and physical safeguards to protect healthcare information.

Standard#7
Exchange information using Health Level Seven (HL7) standards
This standard uses a common format to allow registries to exchange information when needed and allows disparate systems to talk to one another. The standard also defines vocabulary for manufacturers and vaccine names.

Standard#8
Automatically determine the routine childhood immunization(s) needed, in compliance with current ACIP recommendations, when an individual presents for a scheduled immunization

Standard#9
Automatically identify individuals due/late for immunization(s) to enable the production of reminder/recall notifications

Standard#10
Automatically produce immunization coverage reports by providers, age groups and geographic areas

Standard#10
Produce official immunization records

Standard#12

Promote accuracy and completeness of registry data

Definition; The registry has developed and implemented a data quality protocol to combine all available information relating to a particular individual into a single, accurate immunization record