



# HPV Vaccination Across Europe



## Introduction



Cervical cancer is caused by persistent infections with certain types of the Human Papilloma Virus or HPV. There are more than 100 types of HPV. About 40 of these can infect the genital area of both men and women, and are called genital HPVs. Some of these cause genital warts and others, about 15 high-risk types, can cause the cells of the cervix to become abnormal and eventually develop into cervical cancer.

HPV is an extremely common sexually transmitted infection and it is so common that most adults are likely to have had it at some time in their lives. Fortunately for the majority of people, their immune system will fight-off the HPV and clear it in 6 to 24 months. However, while a woman has HPV, it can produce the abnormal cervical cells found on her Pap test but these also usually disappear once the virus has been cleared. The biggest problem occurs when some women do not clear their HPV and the infection persists. In these cases, the abnormal cervical cells can progress to cervical cancer.

Because cervical cancer will not develop in the absence of HPV, vaccines that prevent HPV infection will protect against the cervical cancers as well as the abnormal cervical cells (and abnormal Pap tests) that could result from these infections. Two vaccines are now available to protect against the 2 most common high-risk types of HPV, types 16 & 18, which cause about 2/3 of cervical cancers and many cases of abnormal cervical cells together with their resulting abnormal cervical smears. One of the vaccines also prevents infection with HPV types 6 and 11 that cause the majority of genital warts but are not involved in the development of cervical cancer.

Both vaccines are very effective in preventing infection by the HPV types targeted and also provide lower levels of protection against a few other HPV types. The HPV vaccines have been designed to prevent HPV infection occurring in the first place and therefore provide the greatest protection if given before HPV infection has occurred, for example, to pre-adolescent girls before the start of sexual activities. The implementation of national programmes to vaccinate all pre-adolescent girls is therefore an important cervical cancer control strategy.

However, these vaccines do not protect against all the HPV types that can lead to the development of cervical cancer so cervical screening remains essential even for women who have been vaccinated so they are protected against cancers arising from the other HPV types. Together, cervical screening and HPV vaccination will provide the best protection against this highly preventable disease.

A summary of HPV vaccination policies and practices across Europe is set-out in this report. As can be seen from the information presented, HPV vaccination practices constitute a spectrum of activities from free, nationally organised, school-based vaccination programmes to the provision of HPV vaccination by the private sector on a patient-pay basis. For the purposes of this report, a vaccination programme has been defined as being when a country or region has put in place an organised effort to ensure high coverage of the target population.

A large amount of energy has been expended to ensure the data presented accurately represent HPV vaccination practices in each country. If any inaccuracies are noted, we would be grateful if these could be brought to our attention and the electronic version of the report available at [www.ecca.info](http://www.ecca.info) will be immediately updated.

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April 2009



## Cervical Cancer in Europe

For Europe as a whole, there are an estimated 60,000 new cases and 30,000 deaths from cervical cancer every year<sup>1</sup> which makes it the 7th most common cancer in European women.<sup>2</sup> Although this is not the most common cancer among the women of Europe, there are several other points that must be taken into account when considering how this disease fits within European public health priorities.

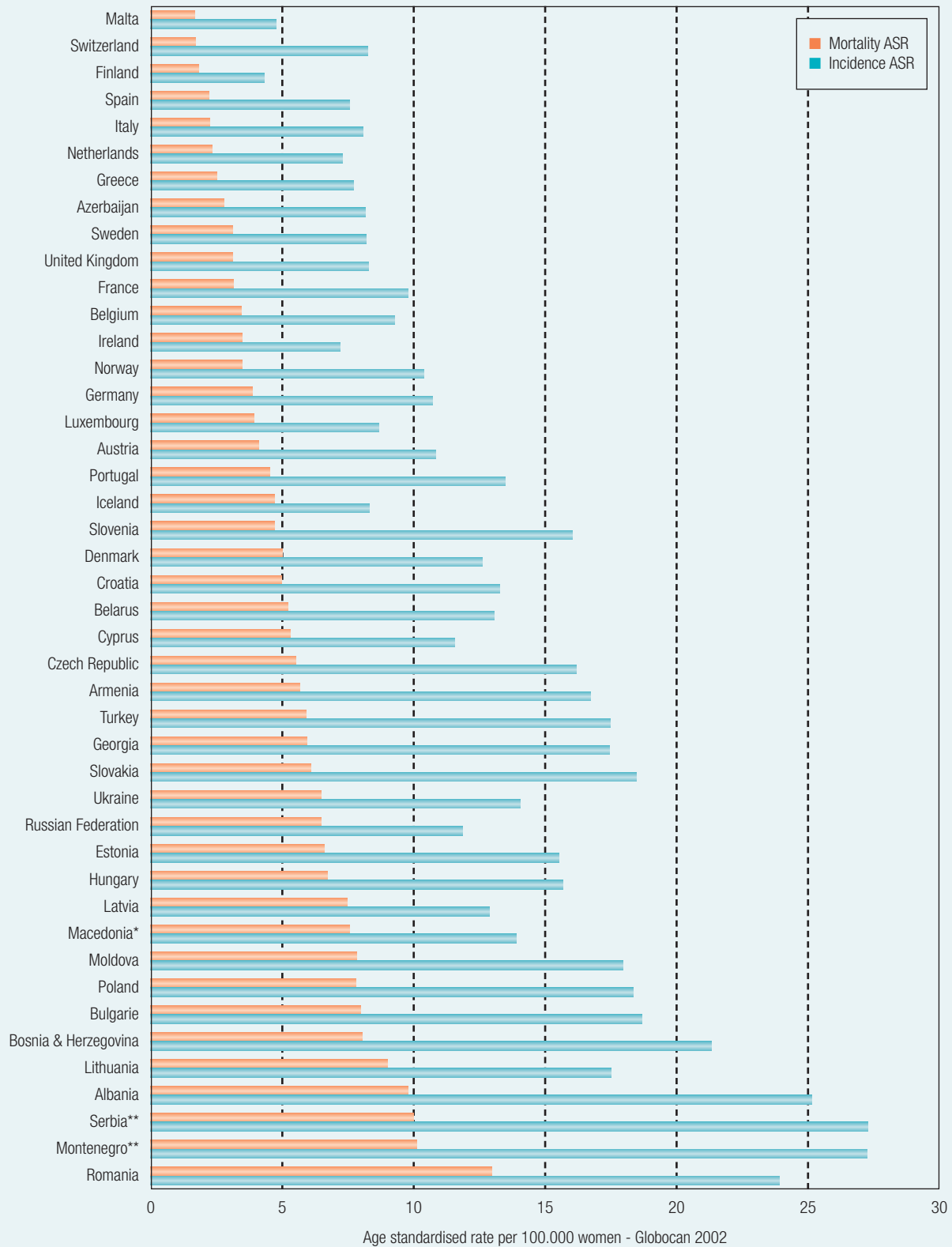
The first of these is that cervical cancer has a younger age of onset than most adult cancers and it is therefore the 2nd most common cancer in women from 15-44 years of age. Obviously this is when many women are actively involved with raising their families, pursuing their careers or both and the impact upon European society as a whole is therefore substantial.

Cervical cancer is also a clear example of health inequality in Europe where women from lower socio-economic groups, minorities and Eastern Europe experience far higher rates. The east-west gradient for cervical cancer can be clearly seen in Figure 1 where the EU 10+2 member states and non-EU European countries have incidence and mortality rates that are much higher than the EU 15. Further, women in Romania have an 11 times increased risk of dying from cervical cancer by 74 years of age than women in Finland, while the increased risk for women in Lithuania is almost 8 times and that for women in Bulgaria is 7 times.<sup>3,4</sup>

Finally, perhaps the most important point about cervical cancer is that we already know how to prevent almost every case of this disease. The differences in cervical cancer rates currently seen across Europe can be attributed to i) the prevalence of infection with one or more of the 15 oncogenic types of the Human Papilloma Virus (HPV) and ii) the presence or absence of effective cervical cancer screening programmes. It has been clearly established that organised, population-based cervical screening programmes can prevent 80% of cervical cancers. In addition, we now have vaccines that are highly effective in preventing infections with the two most common HPV types (16 & 18) which together are responsible for about 70% of cervical cancers in Europe. The deployment of these vaccines in population-based vaccination programmes would complement the protection afforded by the screening programmes by decreasing the background risk and thereby reducing cervical cancer rates even further.

In recognition of the importance of HPV vaccination programmes as a tool in the battle against cervical cancer, this report reviews the implementation of these programmes across Europe to provide a concise picture of their current status and a benchmark against which future progress can be measured.

Figure 1: Cervical cancer rates across Europe



\* The Former Yugoslav Republic of Macedonia.

\*\* Data for Serbia and Montenegro taken from the period before separation.



## HPV Vaccination across Europe

A summary of HPV vaccination policies and practices across Europe is set-out in Table 1 below. These data show that of the 40 countries contributing data to this survey only 9 (Denmark, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Spain and the UK) currently offer HPV vaccination free of charge to at least one age-cohort of females while an additional 3 countries (Belgium, France and Sweden) offer HPV vaccination on a co-payment basis. All of these countries are in Western Europe where healthcare budgets and existing infrastructure can more easily accommodate the introduction of the vaccines but where many countries also have organised cervical screening programmes or extensive opportunistic screening that have already greatly reduced cervical cancer rates.

The data also show that the UK is the only country that has implemented a national school-based vaccination programme, while in Spain only 9 of the 19 autonomous regions currently deliver HPV vaccination through this mechanism. School-based vaccination programmes are known to achieve high coverage of the target population for paediatric and adolescent vaccines<sup>5</sup> while on-demand provision through healthcare providers, even if supported by direct invitation and/or public education programmes, usually has suboptimal coverage rates and can miss lower socioeconomic groups and minorities.<sup>6</sup>

This can be seen in the preliminary statistics obtained from some of the countries that have started HPV vaccination. Provisional figures for Scotland where HPV vaccination is delivered through a school-based programme show coverage at 92% for the first dose and 88% for the second<sup>7</sup> with similar rates (>90%) seen in the Spanish regions that are providing HPV vaccination through their schools.<sup>8</sup> However, these high rates are not seen in the data available for countries or regions where HPV vaccination is given on-demand through healthcare professionals. Preliminary data from the Netherlands where on-demand vaccination is supported by invitation and public education puts coverage at approximately 50% although this likely reflects the impact of an anti-vaccination lobby in the country<sup>9</sup> and higher rates have been reported for the Spanish regions where on-demand vaccination is supported by invitation and/or public education. Then, coverage rates of <50% have been reported in the Spanish regions where on-demand vaccination is not supported by an organised effort to increase participation as well as in Greece where coverage is currently estimated at only 9% of the target population.<sup>10</sup>

These data show that HPV vaccination in Europe is currently being deployed by the countries with the lower cervical cancer rates while those with the higher rates have yet to implement it. Further, among the countries that have started HPV vaccination, we can see the majority are using on-demand provision rather than the school-based programmes that typically achieve the highest and most equitable coverage. Here it is important to remember that on-demand provision tends to miss lower socioeconomic groups and minorities which are exactly the groups that are missed by the opportunistic cervical screening that still prevails in Europe.<sup>11,12</sup> As such, these data show that HPV vaccination is being preferentially delivered to women who are at lower risk of cervical cancer while those who are at higher risk are again missing-out so the health inequalities we have seen with cervical cancer screening will be perpetuated. This is something that needs to be addressed as a matter of urgency along with the implementation of population-based organised cervical cancer screening programmes to ensure the benefits of these programmes are equitably realised by all European women.

Table 1: HPV vaccination policies and practices across Europe

COUNTRY REGION	NATIONAL RECOMMENDATIONS FOR VACCINATION				NATIONAL/REGIONAL PUBLICALLY FUNDED VACCINATION PROGRAMME			NOTES
	DATE	GENDER	AGE RANGE	CATCH-UP	START DATE	AGE(S)	HPV VACCINE REGISTRY	
<b>EU</b>								
<b>Austria</b>	11/2006	F & M	9-15 years	16-26 years (F)	N	N	N	
<b>Belgium</b>	05/2007	F	One age cohort between 10-13 years	N	Vaccination programmes are administered at the regional level.			National recommendations propose: a) Vaccination of 1 cohort females between 10-13 to be undertaken within a school-based programme b) Vaccination of virgin females aged 14-26 should be proposed by physicians c) Vaccination of sexually active females aged 14-26 is left to the doctor's discretion d) Vaccination should be recorded in a registry The cost of vaccination for females aged 12-18 is covered by the government but subject to a co-payment of €10.80 per dose.
<i>Flanders</i>					N	N	N	Flanders plans to launch a school- based vaccination programme for females aged 12 in 09/2010 and HPV vaccinations will then be recorded in a registry.
<i>Wallonia</i>					N	N	N	

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<b>EU</b>								
<b>Bulgaria</b>	N	N	N	N	N	N	N	A national cancer plan has been proposed to the government that includes HPV vaccination for females aged 13 but this has not been adopted.
<b>Cyprus</b>	N	N	N	N	N	N	N	
<b>Czech Republic</b>	N	N	N	N	N	N	N	
<b>Denmark</b>	10/2007	F	12 years	13-15 years	10/2008 (catch-up) 01/2009 (primary)	As per recommendations	Y	Vaccination is provided free of charge to females aged 12-15 through general practitioners. Letters of invitation are sent to families having females aged 12-15 and recruitment is supported by a nationwide information campaign targeting healthcare professionals and the general public.
<b>Estonia</b>	N	N	N	N	N	N	N	
<b>Finland</b>	N	N	N	N	N	N	N	A committee has been appointed to consider recommendations for HPV vaccination with a planned publication date of 10/2010.
<b>France</b>	03/2007	F	14 years	15-23 years for those having started sexual activity < 1 year	N	N	N	Vaccination is given on demand with 65% of the cost of the vaccine covered by national health insurance for those aged 14-23.
<b>Germany</b>	03/2007	F	12-17 years	N	N	N	NA	The costs of vaccination for females aged 12-17 is covered by health insurance and it is given on demand.
<b>Greece</b>	02/2008	F	12-15 years	16-26 years	N	N	NA	Vaccination is offered free of charge for females aged 12-26 and it is given on demand.
<b>Hungary</b>	N	N	N	N	N	N	N	HPV vaccination has been included in the recommended vaccination list but the costs are not covered by the government.
<b>Ireland</b>	02/2008	F	12 years	13-15 years	N	N	N	A national vaccination programme for females aged 12 was to have been launched in 2009 but has now been postponed because of the economic crisis.
<b>Italy</b>	02/2007	F	12 years		Vaccination programmes are administered at the regional level.			
<i>Abruzzo Bolzano Calabria Campania Lombardia Puglia Sardegna Trento</i>					01/2008  02/2008 06/2008 08/2008	F 12 years	Y	Vaccination is provided free of charge to females aged 12 through local health centres with direct invitation by letter.



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<b>EU</b>								
<i>Emilia R. Lazio Liguria Marche Molise Sicilia Veneto Umbria</i>					01/2008 05/2008 04/2008	F 12 & 13 years	Y	Vaccination is provided free of charge to females aged 12 through local health centres with direct invitation by letter. Vaccination for females aged 13 is also free but without invitation.
<i>Friuli V.G.</i>					02/2008 04/2008	F 12 & 15 years	Y	Vaccination is provided free of charge to females aged 12 & 16 through local health centres with direct invitation by letter.
<i>Piemonte</i>					02/2008	F 12 & 16 years	Y	Vaccination is provided free of charge to females aged 12 & 16 through local health centres with direct invitation by letter.
<i>V. d'Aosta Toscana</i>					10/2007 01/2009	F 12, 13 & 16 years	Y	Vaccination is provided free of charge to females aged 12 & 16 through local health centres with direct invitation by letter. Vaccination for females aged 13 is also free but without invitation.
<i>Basilicata</i>					07/2007	F 12, 15, 18 & 25 years	Y	Vaccination is provided free of charge to target cohorts through local health centres with direct invitation by letter.
<b>Latvia</b>	N	N	N	N	N	N	N	The Ministry of Health plans to publish recommendations for HPV vaccination in 2009 and a pilot programme to vaccinate females aged 12 is planned for 2010.
<b>Lithuania</b>	N	N	N	N	N	N	N	The Ministry of Health has announced plans to include HPV vaccination for females aged 12 in the vaccination schedule starting in 2012.
<b>Luxembourg</b>	02/2007	F	11-12 years	13-18 years	03/2008	12 years	N	Vaccination is provided free of charge for females aged 12-17 and given on demand through healthcare professionals with invitation letters sent to families with 12 year old females.
<b>Malta</b>	N	N	N	N	N	N	N	
<b>Netherlands</b>	07/2008	F	12 years	13-16 years	03/2009 (catch-up) 09/2009 (primary)	Per recom- mendations	Y	Vaccination is provided free of charge through healthcare professionals. Letters of invitation are sent to families having females in the target age range and recruitment is supported by a nationwide information campaign targeting healthcare professionals and the general public.
<b>Poland</b>	N	N	N	N	N	N	N	HPV vaccination has been included in the recommended vaccination list but the costs are not covered by the government.

Table 1: HPV Vaccination in Europe

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<b>EU</b>									
Portugal	12/2007	F	13 years	14-17 years	10/2008	13 & 17 years	Y	Catch-up vaccination of females aged 17 runs until 2011. Vaccination is provided free of charge on demand through regional health centres across the country. Invitation letters sent by the regional health centre to registered families with females aged 13 or 17.	
Romania	2008	F	10-11 years	N	N	N	N	A national school-based programme to vaccinate females aged 11 (110,000 females) was launched in 2008. Low acceptance limited uptake to 2,615 doses. Current plans are to analyse the causes for the low uptake, implement an information campaign and then re-launch the programme.	
Slovakia	N	N	N	N	N	N	N	Approximately 10% of the cost of vaccination is covered by compulsory medical insurance.	
Slovenia	N	N	N	N	N	N	N	A committee was appointed in 11/2007 to prepare recommendations for HPV vaccination but nothing has been published to date.	
Spain	10/2007	F	One cohort of females between the ages of 11-14	N	Vaccination programmes are administered at the regional level.			Vaccination is provided free of charge for the targeted ages through regional school-based programmes.	
Cataluna Pais Vasco					2007/8	F 12 years	Y		
Baleares Extremadura Melilla Murcia Valencia					2007/8	F 14 years	Y		
Rioja					2007/8	F 11 & 14 years	Y		
Navarra					2007/8	F 12 & 15 years	Y		
Asturias Ceuta					N	N	Y		Vaccination is provided free of charge for females aged 13 on demand through public health clinics.
Andalucia Aragon Canarias Cantabria Castilla La Mancha Castilla y Leon Galicia Madrid					N	N	Y		Vaccination is provided free of charge for females aged 14 on demand through public health clinics.
Sweden	11/2008	F	11-12 years	N	2010	11-12 years	Y		Vaccination is subsidised for females aged 13-17 but currently given on demand. A national school-based free vaccination programme for females aged 11-12 is planned to start in 2010.

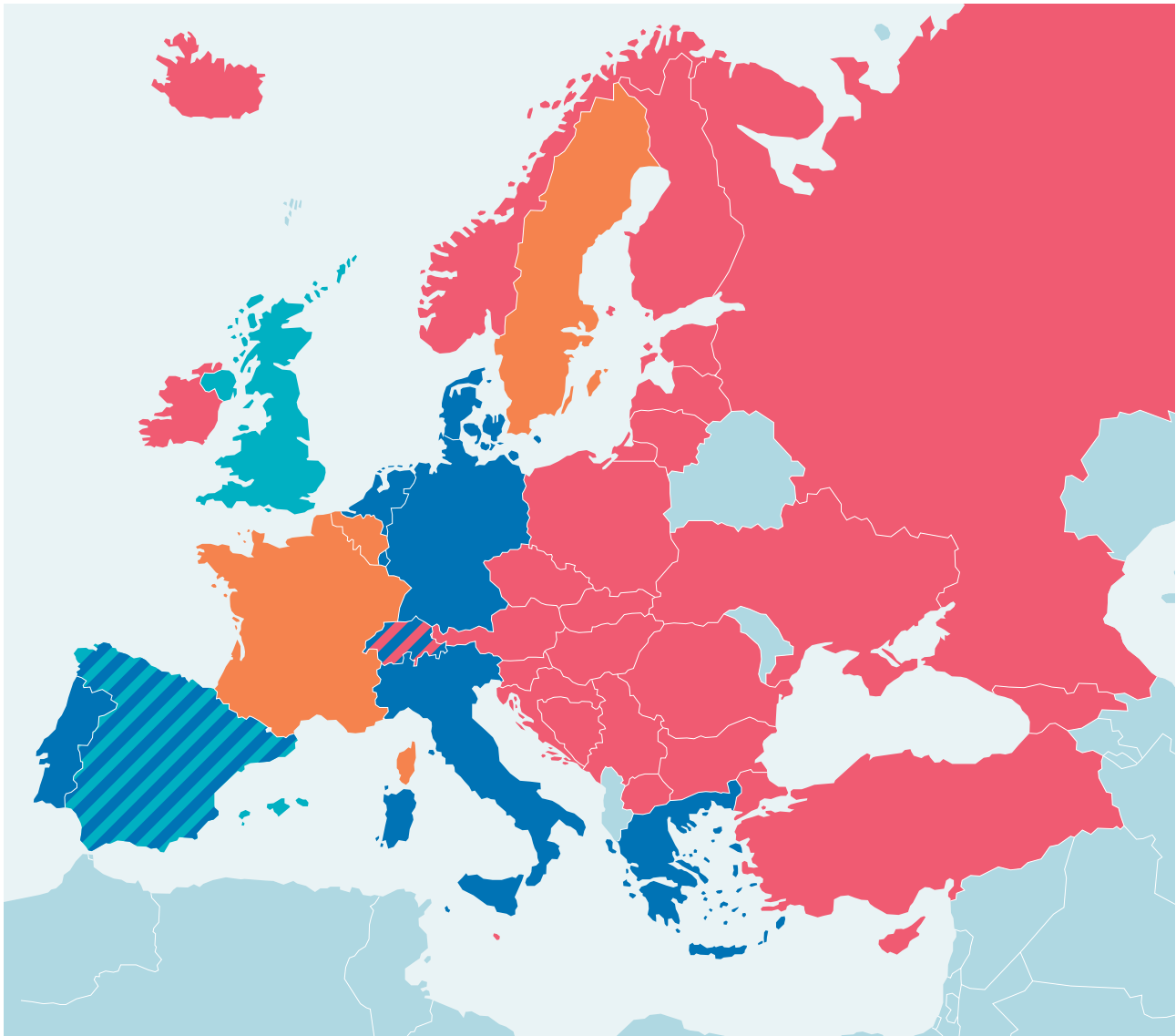
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<b>EU</b>								
<b>United Kingdom</b>	10/2007	F	12-13 years	15-18 years				
<i>England</i>					09/2008	Per recommendations	N	Vaccination is provided through a national school-based programme.
<i>Scotland</i>					09/2008	Per recommendations	Y	Vaccination is provided through a national school-based programme.
<i>Wales</i>					09/2008	Per recommendations	Y	Vaccination is provided through a national school-based programme.
<b>Non-EU</b>								
<b>Albania</b>	NA	NA	NA	NA	NA	NA	NA	
<b>Armenia</b>	NA	NA	NA	NA	NA	NA	NA	
<b>Azerbaijan</b>	NA	NA	NA	NA	NA	NA	NA	
<b>Belarus</b>	02/2008	F	11 years	N	N	N		A school-based programme to vaccinate females aged 11 is planned to start in 2010.
<b>Bosnia &amp; Herzegovina</b>	N	N	N	N	N	N	N	
<b>Croatia</b>	N	N	N	N	N	N	N	A recommendation to vaccinate males and females aged 9-15 and females aged 16-26 has been produced by a group of Croatian Medical Societies (10/2007).*
<b>Georgia</b>	N	N	N	N	N	N	N	A committee has been convened to prepare recommendations for HPV vaccination but nothing has been published to date.
<b>Iceland</b>	02/2008	F	12 years	N	N	N	N	Further consideration of the implementation of a vaccination programme has been delayed due to the economic crisis.
<b>Macedonia</b>	01/2009	F	12 years	N	09/2009	Per recommendations	Y	HPV vaccination is included in the national vaccination schedule and will be provided free of charge to females aged 12 starting 09/2009. Further details are not yet available.
<b>Moldova</b>	NA	NA	NA	NA	NA	NA	NA	
<b>Montenegro</b>	N	N	N	N	N	N	N	
<b>Norway</b>	03/2008	F	12 years	13-15 years	09/2009	12 years	Y	A national school-based vaccination programme for females aged 12 is planned to start autumn 2009. No catch-up programme is planned.
<b>Russian Federation</b>	N	N	N	N	N	N	N	Recommendations to vaccinate females aged 12-13 have been produced for Moscow and Sverdlovsk. Pilot vaccination programmes are being conducted in Moscow, Yakutiya, Siberia and Khanty-Mansiyskiy.
<b>Serbia</b>	N	N	N	N	N	N	N	
<b>Switzerland</b>	06/2007	F	11-14 years	15-19 years	Vaccination programmes are administered at the regional level.			Vaccination costs are covered if vaccination is provided as part of a programme organised by the canton.
<b>Turkey</b>	N	N	N	N	N	N	N	
<b>Ukraine</b>	N	N	N	N	N	N	N	

Y: Yes; N: No; N/A: Data not available.

\* A recommendation to vaccinate females aged 10-26 and ≥26 has been established by the Croatian Referral Center for Precursor Lesions of the Cervix, Vulva & Vagina of the Ministry of Health and Social Welfare and the Croatian Gynecologic Oncology Society (11/2008). HPV vaccination for females has been endorsed by the Referral Center for Epidemiology of Infectious Diseases of the Ministry of Health and Social Welfare (01/2009). Some counties (Zagreb, Rijeka, Karlovac, etc.) are reimbursing the cost of vaccination for girls at the 7th school class aged 13-14 from county funds starting 03/2009.

Figure 2:



- School-based programmes
- On-demand delivery with free vaccination
- On-demand delivery with co-payment
- Private sector provision only

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- 9 Dr Marina Conyn-van Spaendonck, National Immunisation Programme Manager, RIVM - Centre for Infectious Disease Control, Netherlands (personal communication, April 2009).
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