Human Papillomavirus and Related Diseases Report

NORWAY

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Executive summary

Human papillomavirus (HPV) infection is now a well-established cause of cervical cancer and there is growing evidence of HPV being a relevant factor in other anogenital cancers (anus, vulva, vagina and penis) as well as head and neck cancers. HPV types 16 and 18 are responsible for about 70% of all cervical cancer cases worldwide. HPV vaccines that prevent HPV 16 and 18 infections are now available and have the potential to reduce the incidence of cervical and other anogenital cancers.
This report provides key information for Norway on: cervical cancer; other anogenital cancers and head and neck cancers; HPV-related statistics; factors contributing to cervical cancer; cervical cancer screening practices; HPV vaccine introduction; and other relevant immunisation indicators. The report is intended to strengthen the guidance for health policy implementation of primary and secondary cervical cancer prevention strategies in the country.

Table 1: Key Statistics

Population			
Women at risk for cervical cancer (Female population aged >=15 years)			2.2 million
Burden of cervical cancer and other HPV-related cancers			
Annual number of cervical cancer cases			294
Annual number of cervical cancer deaths			101
Crude incidence rates per 100,000 and year:		Male	Female
	Cervical cancer	-	11.9
	Anal cancer ‡	0.8	2.0
	Vulvar cancer ‡	-	3.9
	Vaginal cancer ‡	-	0.7
	Penile cancer ‡	1.7	-
	Pharynx cancer (excluding nasopharynx)	3.8	1.5
Burden of cervical HPV infection			
Prevalence (%) of HPV 16 and/or HPV 18 among women with:			
	Normal cytology		2.4
	Low-grade cervical lesions (LSIL/CIN-1)		13.3
	High-grade cervical lesions (HSIL/CIN-2/CIN-3/CIS)		38.7
	Cervical cancer		78.2
Other factors contributing to cervical cancer			
Smoking prevalence (%), women			23.9 [19.4-28.2]
Total fertility rate (live births per women)			1.8
Oral contraceptive use (%) among women			31
HIV prevalence (%), adults (15-49 years)			-
Sexual behaviour			
Percentage of 15-year-old who have had sexual intercourse (men/women)			- / -
Range of median age at first sexual intercourse (men/women)			17.5-19.3 / 16.0-19.5
Cervical screening practices and recommendations			
Cervical cancer screening coverage, % (age and screening interval, reference)	66.5% (All women aged 25-69 screened every 3.5y, Anual Report Screening 2013-2014 Norway)		
Screening ages (years)			25-69
Screening interval (years) or frequency of screens			3 years
HPV vaccine			
HPV vaccine introduction			
	HPV vaccination programme		National program
	Date of HPV vaccination routine immunization programme start		2009

‡Please see the specific sections for more information.

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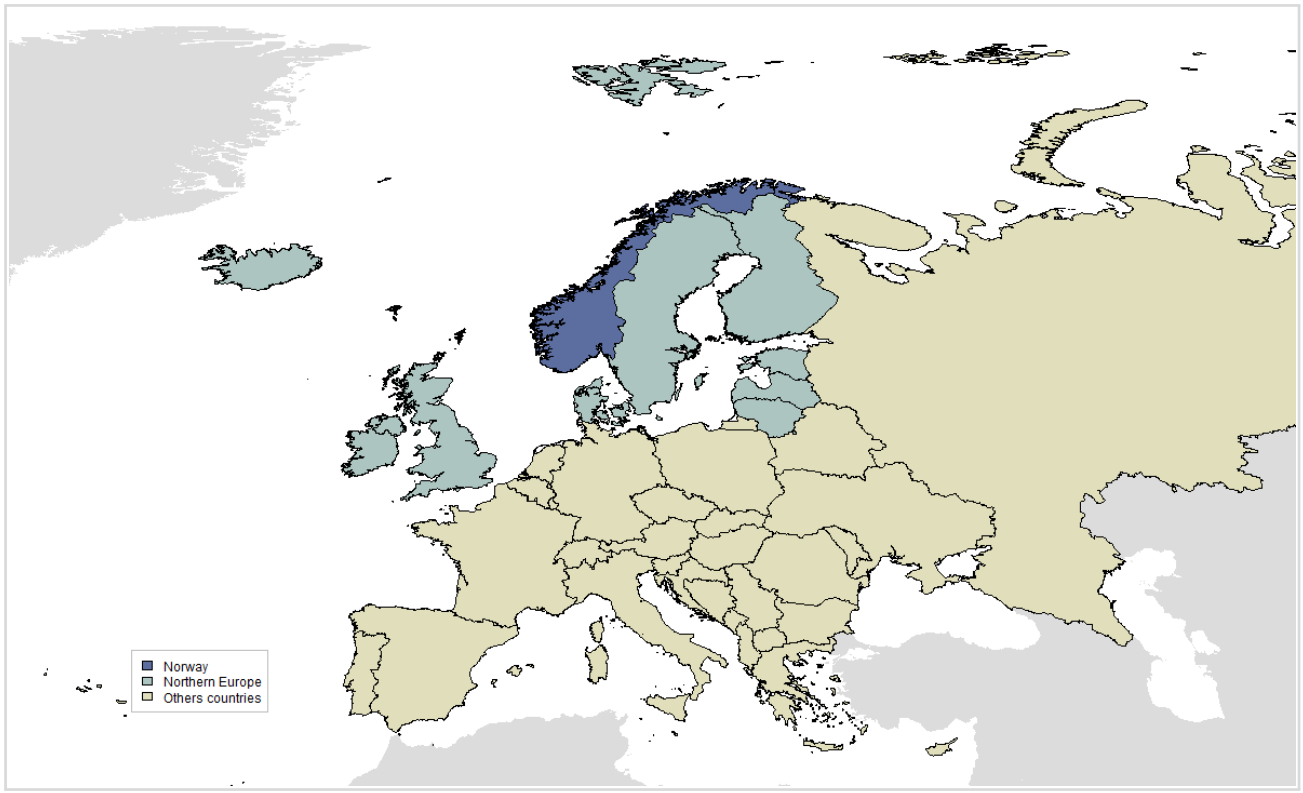
1 Introduction

Figure 1: Norway and Northern Europe



The HPV Information Centre aims to compile and centralise updated data and statistics on human papillomavirus (HPV) and related cancers. This report aims to summarise the data available to fully evaluate the burden of disease in Norway and to facilitate stakeholders and relevant bodies of decision makers to formulate recommendations on cervical cancer prevention. Data include relevant cancer statistic estimates, epidemiological determinants of cervical cancer such as demographics, socioeconomic factors, risk factors, burden of HPV infection, screening and immunisation. This report is part of the PREHDICT project (health-economic modelling of Prevention strategies for Hpv-related Diseases in European CounTries) granted by the EU Seven Franmework Programme. PREHDICT has been projected to provide objective data and supported criteria for future cancer prevention across European countries. Its overall goals are to determine prerequisites and strategies for vaccination in European countries and to predict the impact of vaccination on screening programmes. The report is structured into the following sections: The ICO Information Centre on HPV and Cancer (HPV Information Centre) participates in the PREHDICT project compiling and centralising updated data and statistics on human papillomavirus (HPV) and HPV-related cancers of European countries. The aim is to disseminate the information to all European countries concerned to facilitate stakeholders and relevant bodies of decision makers to formulate recommendations on the prevention of cervical cancer and other HPV-related cancers. This is a NOR report based on data from the European epidemiological database specifically created for this project. Data include relevant cancer statistic estimates, epidemiological determinants of cervical cancer such as demographics, socioeconomic factors, risk factors, burden of HPV infection, screening and immunisation. The report is structured into the following sections:

Section 2, Demographic and socioeconomic factors. This section summarises the sociodemographic profile of Norway, 43 European countries are covered in the PREHDICT project: *EU-27* (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom), *12 Associated Countries* (Albania, Bosnia

and Herzegovina, Croatia, FYR Macedonia, Iceland, Israel, Liechtenstein, Montenegro, Norway, Serbia (including Kosovo), Switzerland and Turkey) and *4 countries from Eastern Europe* (Russia Federation, Belarus, Republic of Moldova and Ukraine) (Figure 1).

Section 3, Burden of HPV related cancers. This section describes the current burden of invasive cervical cancer and other HPV-related cancers in Norway with estimates of prevalence, incidence, and mortality rates. Information in other HPV-related cancers includes other anogenital cancers (anus, vulva, vagina, and penis), head and neck cancers (oral cavity, oropharynx, and hypopharynx) genital warts and recurrent respiratory papillomatosis.

Section 4, HPV related statistics. This section reports on prevalence of HPV and HPV type-specific distribution in Norway, in women with normal cytology, precancerous lesions and invasive cervical cancer. In addition, the burden of HPV in other anogenital cancers (anus, vulva, vagina, and penis), head and neck cancers (oral cavity, oropharynx, and hypopharynx) and men are presented.

Section 5, Factors contributing to cervical cancer. This section describes factors that can modify the natural history of HPV and cervical carcinogenesis such as smoking, parity, oral contraceptive use, and co-infection with HIV.

Section 6, Sexual and reproductive health behaviour indicators. This section presents sexual and reproductive behaviour indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers, such as age at first sexual intercourse, average number of sexual partners, and receptive anal intercourse among others.

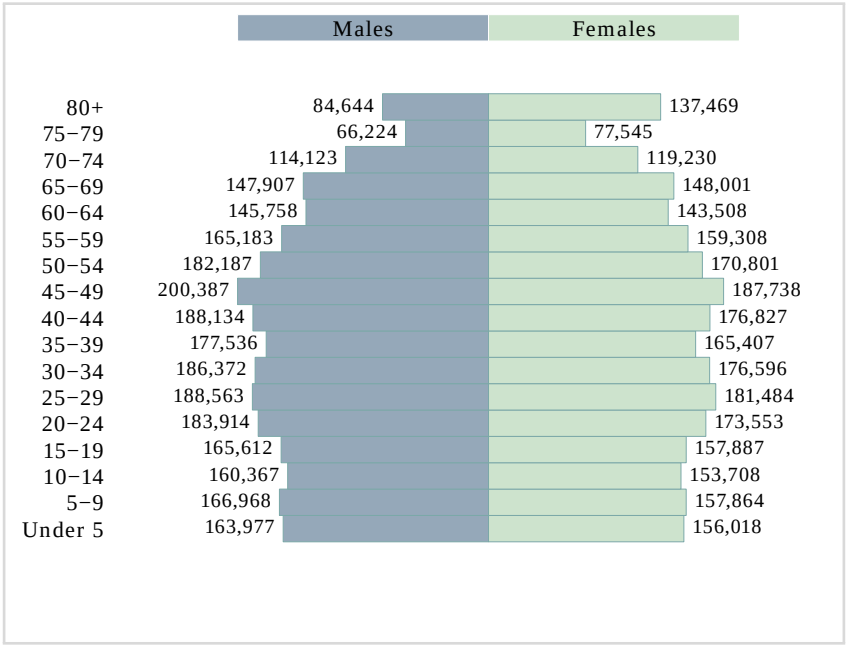
Section 7, HPV preventive strategies. This section presents preventive strategies that include basic characteristics and performance of cervical cancer screening status, status of HPV vaccine licensure introduction, and recommendations in national immunisation programmes.

Section 8, Protective factors for cervical cancer. This section presents male circumcision and the use of condoms.

Section 9, Indicators related to immunisation practices other than HPV vaccines. This section presents data on immunisation coverage and practices for selected vaccines. This information will be relevant for assessing the country's capacity to introduce and implement the new vaccines.

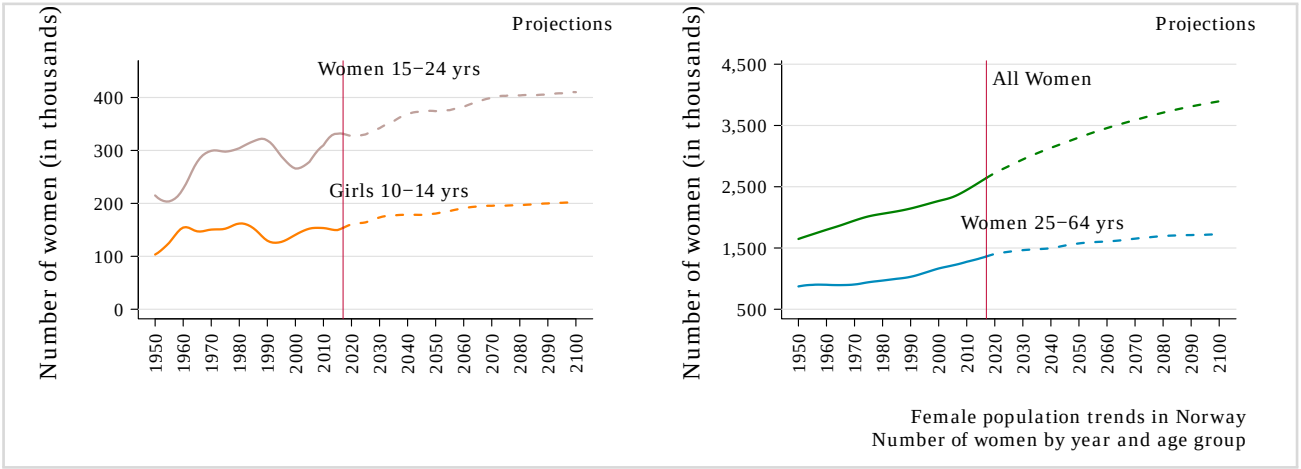
2 Demographic and socioeconomic factors

Figure 2: Population pyramid of Norway for 2017



Data accessed on 27 Mar 2017.
Please refer to original source for methods of estimation.
Including Svalbard and Jan Mayen Islands.
Year of estimate: 2017;
Data sources:
United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition. Available at: https://esa.un.org/unpd/wpp/Download/Standard/Population/. [Accessed on March 21, 2017].

Figure 3: Population trends in four selected age groups in Norway



Data accessed on 27 Mar 2017.
Please refer to original source for methods of estimation.
Including Svalbard and Jan Mayen Islands.
Year of estimate: 2017;
Data sources:
United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition. Available at: https://esa.un.org/unpd/wpp/Download/Standard/Population/. [Accessed on March 21, 2017].

Table 2: Sociodemographic indicators in Norway

Indicator	Male	Female	Total
Population in thousands[1,±]	2,687.9	2,642.9	5,330.8
Population growth rate (%)[1,a,∓]	-	-	1.3
Median age of the population (in years)[1,a,*]	-	-	39.1
Population living in urban areas (%)[2,a,*]	-	-	80.5
Crude birth rate (births per 1,000)[1,a,∓]	-	-	11.7
Crude death rate (deaths per 1,000)[1,a,∓]	-	-	8.4
Life expectancy at birth (in years)[3,b,c,*]	79.8	83.7	81.8
Adult mortality rate (probability of dying between 15 and 60 years old per 1,000)[4,*]	73	44	59
Maternal mortality ratio (per 100,000 live births)[3,d,*]	-	-	5
Under age five mortality rate (per 1,000 live births)[3,e,*]	-	-	2.6
Density of physicians (per 1,000 population)[5,f,⋆]	-	-	4.42
Gross national income per capita (PPP current international $)[6,g,*]	-	-	65430
Adult literacy rate (%) (aged 15 and older)[7]	-	-	-
Youth literacy rate (%) (aged 15-24 years)[7]	-	-	-
Net primary school enrollment ratio[7,*]	99.9	99.7	99.8
Net secondary school enrollment ratio[7,*]	95.1	95.9	95.5

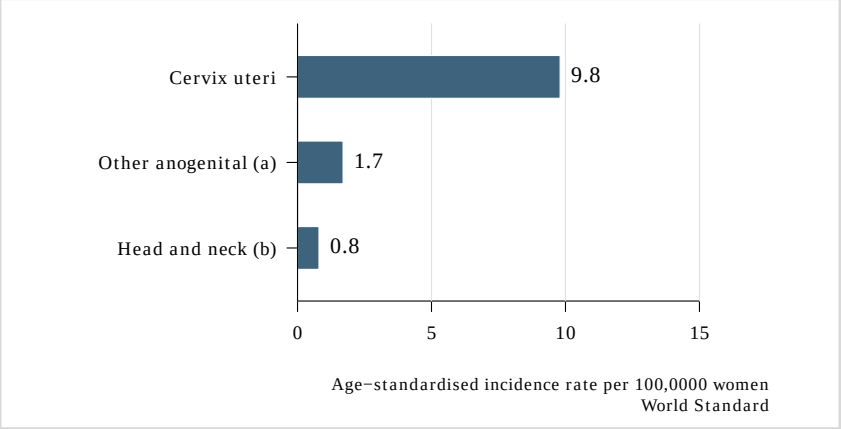
Data accessed on 27 Mar 2017.
Please refer to original source for methods of estimation.
[a] Including Svalbard and Jan Mayen Islands.
[b] World Population Prospects, the 2015 revision (WPP2015). New York (NY): United Nations DESA, Population Division.
[c] WHO annual life tables for 1985–2015 based on the WPP2015, on the data held in the WHO Mortality Database and on HIV mortality estimates prepared by UNAIDS. WHO Member States with a population of less than 90 000 in 2015 were not included in the analysis.
[d] WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Trends in maternal mortality: 1990 to 2015. Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2015 (http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2015/en/, accessed 25 March 2016). WHO Member States with a population of less than 100 000 in 2015 were not included in the analysis.
[e] Levels & Trends in Child Mortality. Report 2015. Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation. New York (NY), Geneva and Washington (DC): United Nations Children's Fund, World Health Organization, World Bank and United Nations; 2015 (http://www.unicef.org/publications/files/Child_Mortality_Report_2015_Web_9_Sept_15.pdf, accessed 26 March 2016).
[f] Number of medical doctors (physicians), including generalist and specialist medical practitioners, per 1 000 population.
[g] GNI per capita based on purchasing power parity (PPP). PPP GNI is gross national income (GNI) converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GNI as a U.S. dollar has in the United States. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Data are in current international dollars based on the 2011 ICP round.
Year of estimate: [±] 2017; [∓] 2010-2015; [*] 2015; [⋆] 2014;

Data sources:
[1] United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition. Available at: https://esa.un.org/unpd/wpp/Download/Standard/Population/. [Accessed on March 21, 2017].
[2] United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, CD-ROM Edition. Available at: https://esa.un.org/unpd/wup/CD-ROM/. [Accessed on March 21, 2017].
[3] World Health Statistics 2016. Geneva, World Health Organization, 2016. Available at: http://who.int/entity/gho/publications/world_health_statistics/2016/en/index.html. [Accessed on March 21, 2017].
[4] World Health Organization. Global Health Observatory data repository. Available at: http://apps.who.int/gho/data/view.main.1360?lang=en. [Accessed on March 21, 2017].
[5] The 2016 update, Global Health Workforce Statistics, World Health Organization, Geneva (http://www.who.int/hrh/statistics/hwfstats/). [Accessed on March 21, 2017].
[6] World Bank, World Development Indicators Database. Washington, DC. International Comparison Program database. Available at: http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#. [Accessed on March 21, 2017].
[7] UNESCO Institute for Statistics Data Centre [online database]. Montreal, UNESCO Institute for Statistics. Available at: http://stats.uis.unesco.org [Accessed on March 21, 2017].

3 Burden of HPV related cancers

HPV is the cause of almost all cervical cancer cases and is responsible for an important fraction of other anogenital and head and neck cancer. Here, we present the most recent estimations on the burden of HPV-associated cancer.

Figure 4: HPV-related cancer incidence in Norway (estimates for 2012)



Data accessed on 08 May 2017.
[a] Other anogenital cancer cases (vulvar, vaginal, anal, and penile).
[b] Head and neck cancer cases (oropharynx, oral cavity and larynx).
ASR: Age-standardized rate, rates per 100,000 per year.
Please refer to original source for methods.
GLOBOCAN quality index for availability of incidence data: High quality national data or high quality regional (coverage greater than 50%).
GLOBOCAN quality index of methods for calculating incidence: Methods to estimate the sex- and age-specific incidence rates of cancer for a specific country: Rates projected to 2012
Data sources:
de Martel C, Plummer M, Vignat J, Franceschi S. Worldwide burden of cancer attributable to HPV by site, country and HPV type. Int J Cancer. 2017

3.1 Cervical cancer

Cancer of the cervix uteri is the 4th most common cancer among women worldwide, with an estimated 527,624 new cases and 265,672 deaths in 2012 (GLOBOCAN). The majority of cases are squamous cell carcinoma followed by adenocarcinomas. *(Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012, Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90)*

This section describes the current burden of invasive cervical cancer in Norway and in comparison to geographic region, including estimates of the annual number of new cases, deaths, incidence, and mortality rates.

3.1.1 Cervical cancer incidence in Norway

KEY STATS

About **294 new cervical cancer cases** are diagnosed **annually** in **Norway** (estimations for 2012).

Cervical cancer **ranks* as the 10^{th} leading cause** of female cancer in **Norway**.

Cervical cancer is the **3^{th} most common** female cancer in **women aged 15 to 44 years in Norway**.

* Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st). Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.

Table 3: Cervical cancer incidence in Norway (estimates for 2012)

Indicator	Norway	Northern Europe	World
Annual number of new cancer cases	294	5,382	527,624
Crude incidence rate[a]	11.9	10.6	15.1
Age-standardized incidence rate[a]	9.8	8.7	14.0
Cumulative risk (%) at 75 years old[b]	0.9	0.8	1.4

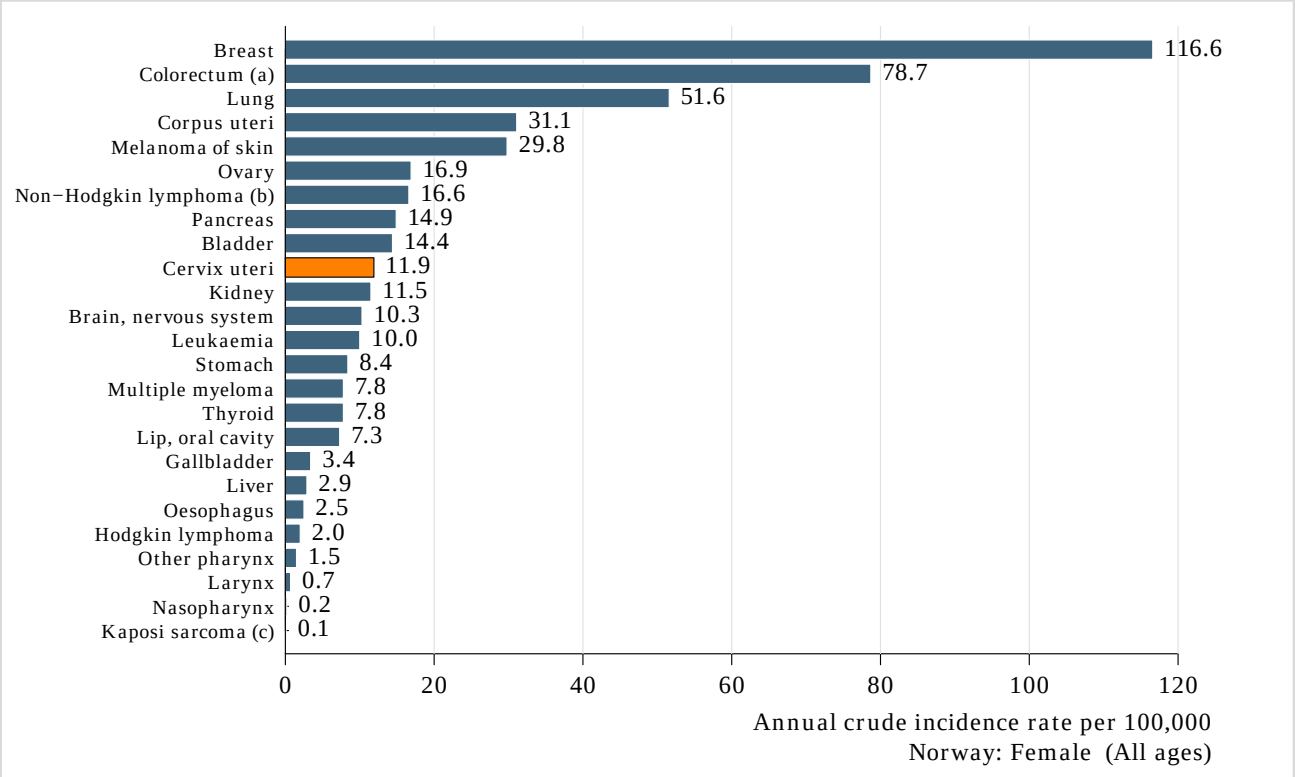
Data accessed on 15 Nov 2015.
Incidence data is available from high quality national data or high quality regional (coverage greater than 50%) sources. Data is included in Cancer incidence in Five Continents (CI5) volume IX and/or X. Incidence rates were estimated projecting rates to 2012. For more detailed methods of estimation please refer to http://globocan.iarc.fr/old/method/method.asp?country=578
[a] Rates per 100,000 women per year.
[b] Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Table 4: Cervical cancer incidence in Norway by cancer registry

Cancer registry	Period	N cases[a]	Crude rate[b]	ASR[b]
National[1]	2003-2007	1,464	12.6	9.4
National (Rural)[2]	1978-1982	882	15.5	13.4
National (Urban)[2]	1978-1982	1,071	23.3	18.1

Data accessed on 05 May 2015.
ASR: Age-standardized rate, Standardized rates have been estimated using the direct method and the World population as the reference;
Please refer to original source (available at http://ci5.iarc.fr/CI5i-ix/ci5i-ix.htm)
[a] Accumulated number of cases during the period in the population covered by the corresponding registry.
[b] Rates per 100,000 women per year.
Data sources:
[1] Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr
[2] Muir, C.S.,Waterhouse, J.,Mack, T.,Powell, J.,Whelan, S.L., eds (1987). Cancer Incidence in Five Continents, Vol. V. IARC Scientific Publications No. 88, Lyon, IARC.

Figure 5: Comparison of cervical cancer incidence to other cancers in women of all ages in Norway (estimates for 2012)



Data accessed on 15 Nov 2015.

[a] Includes anal cancer (C21).

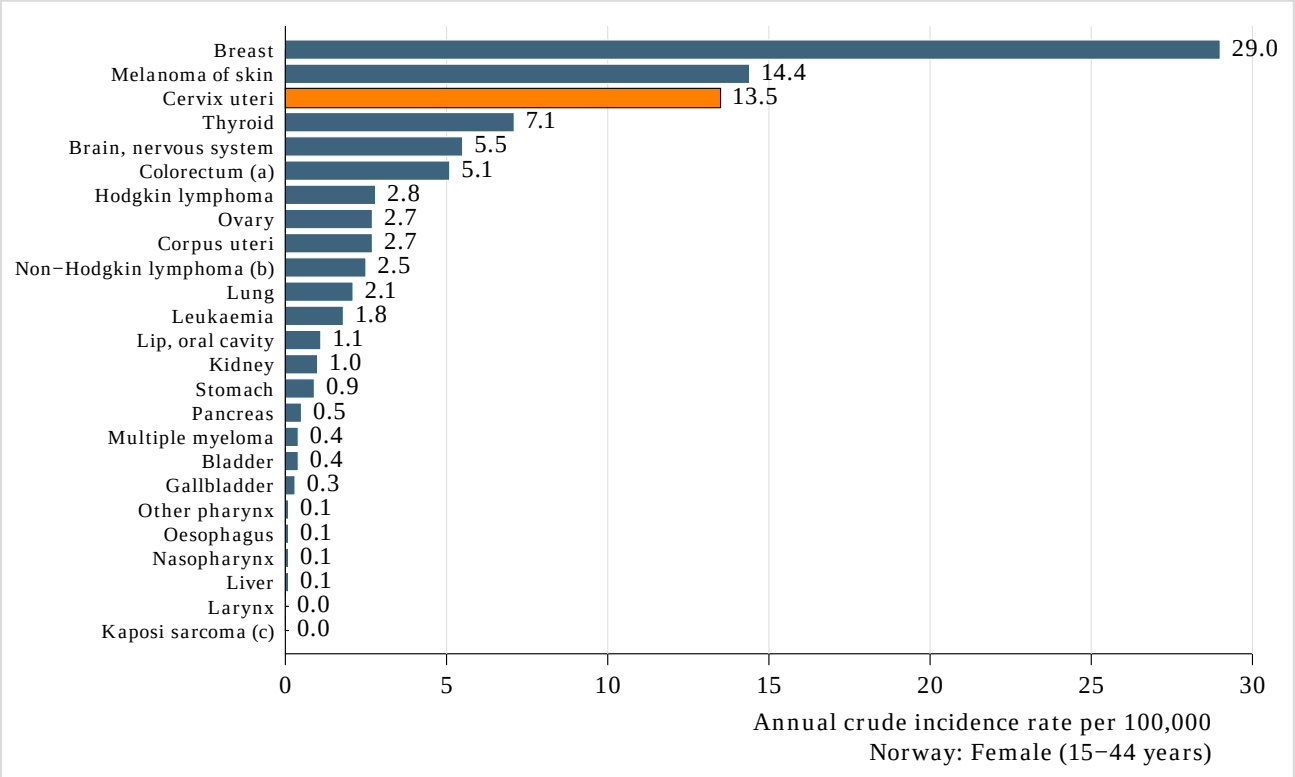
[b] Includes HIV disease resulting in malignant neoplasms (B21).

[c] Includes B21.0 (HIV disease resulting in Kaposi sarcoma).

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 6: Comparison of age-specific cervical cancer to age-specific incidence of other cancers among women 15-44 years of age in Norway (estimates for 2012)



Data accessed on 15 Nov 2015.

[a] Includes anal cancer (C21).

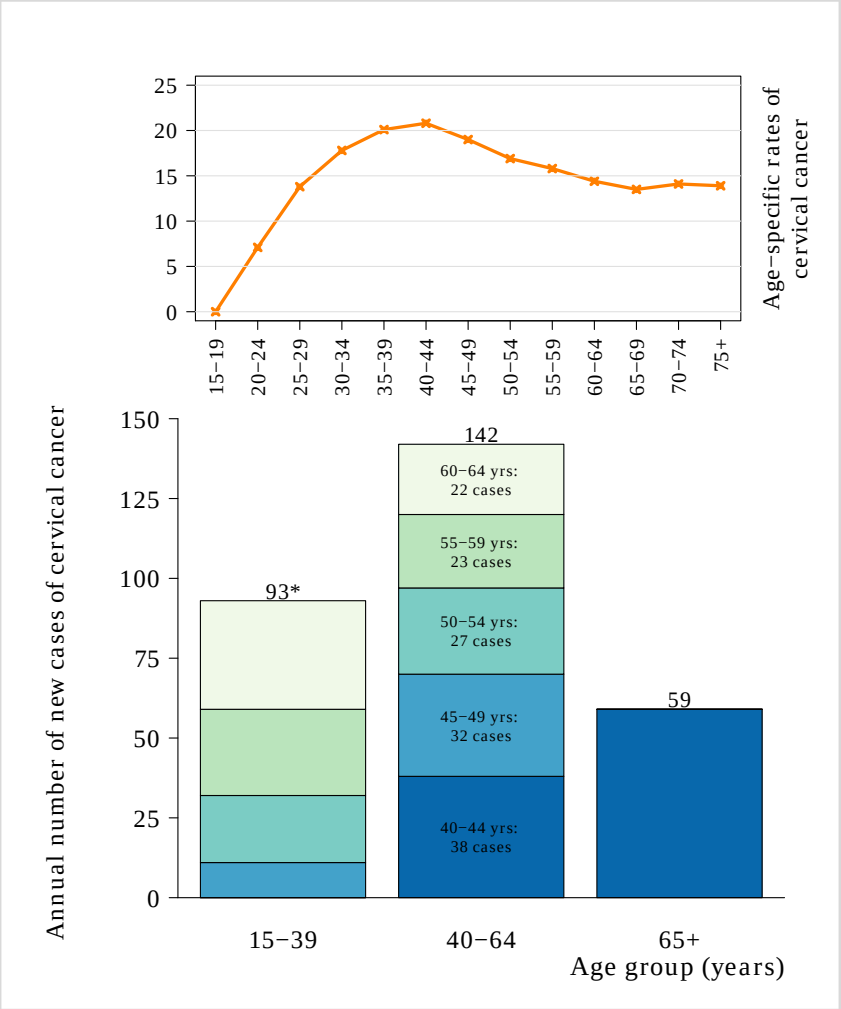
[b] Includes HIV disease resulting in malignant neoplasms (B21).

[c] Includes B21.0 (HIV disease resulting in Kaposi sarcoma).

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 7: Annual number of cases and age-specific incidence rates of cervical cancer in Norway (estimates for 2012)



*15-19 yrs: 0 cases. 20-24 yrs: 11 cases. 25-29 yrs: 21 cases. 30-34 yrs: 27 cases. 35-39 yrs: 34 cases.

Data accessed on 15 Nov 2015.

Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

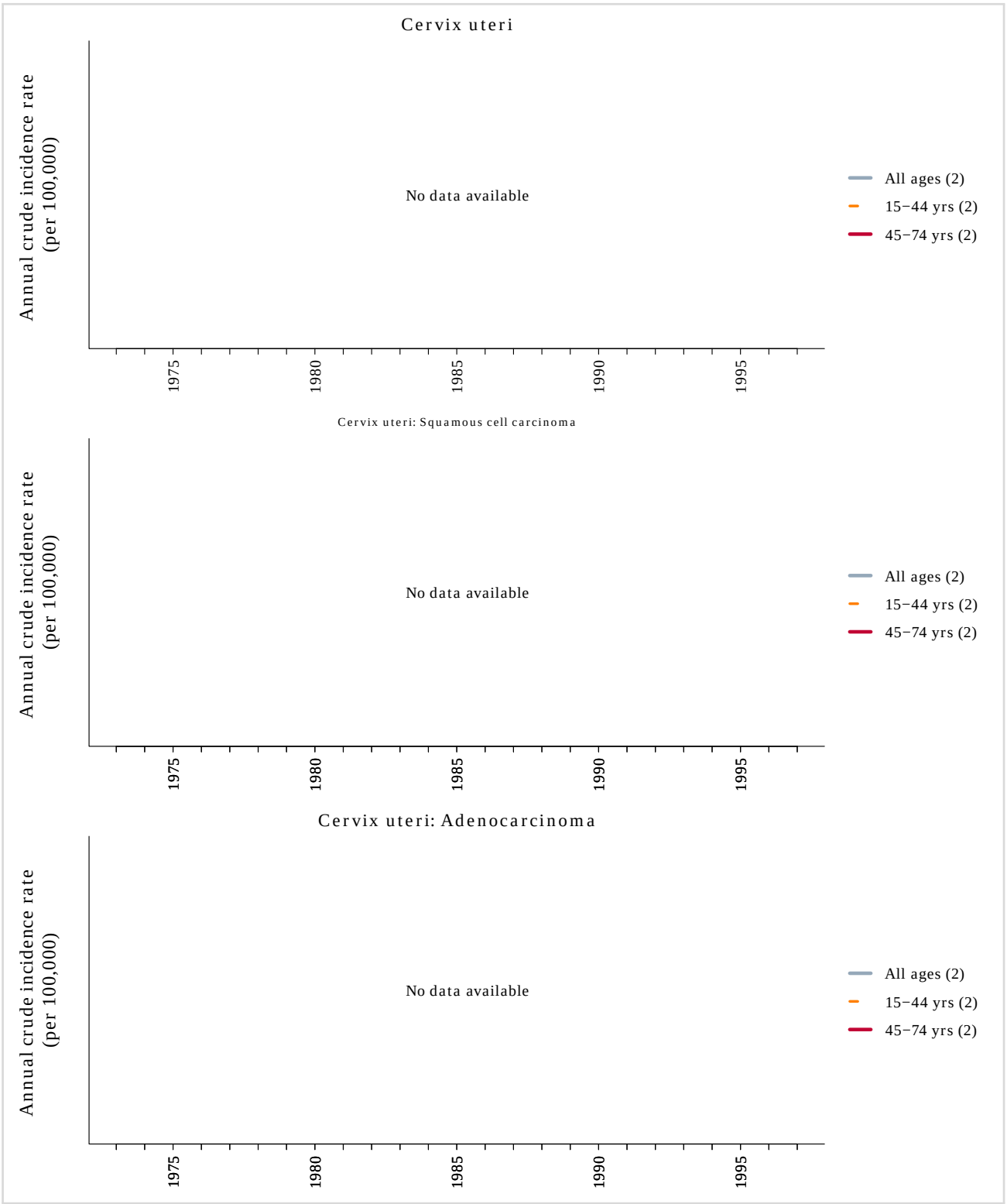
3.1.2 Cervical cancer incidence by histology in Norway

Table 5: Age-standardised incidence rates of cervical cancer in Norway by histological type and cancer registry

Cancer registry	Period	Carcinoma			
		Squamous	Adeno	Other	Unspec.
National	2003-2007	6.7	2.0	0.3	0.3

Data accessed on 24 Jul 2015.
Adeno: adenocarcinoma; Other: Other carcinoma; Squamous: Squamous cell carcinoma; Unspec: Unspecified carcinoma;
Standardised rates have been estimated using the direct method and the World population as the references.
Rates per 100,000 women per year.
Standarized rates have been estimated using the direct method and the World population as the references.
Data sources:
Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 8: Time trends in cervical cancer incidence in Norway (cancer registry data)



Data accessed on 27 Apr 2015.

[a] Estimated annual percentage change based on the trend variable from the net drift for the most recent two 5-year periods.

[b] Estimated annual percentage change based on the trend variable from the net drift for 55 years, from 1956-2010.

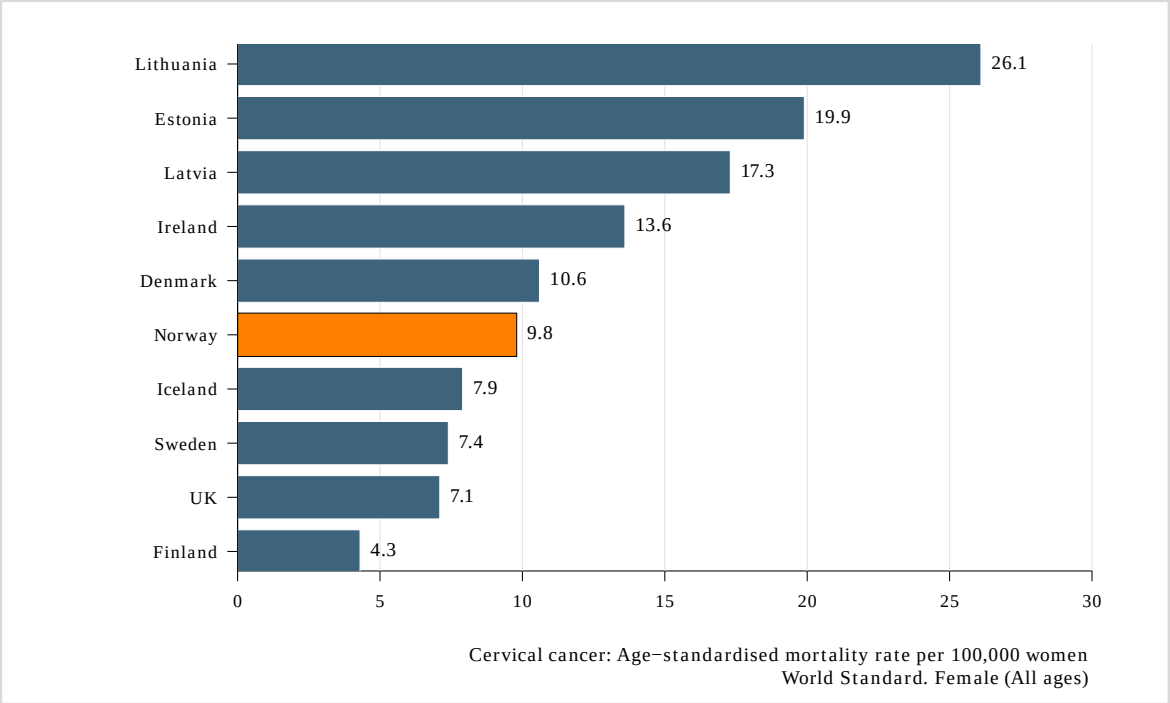
Data sources:

[1] Vaccarella S, Lortet-Tieulent J, Plummer M, Franceschi S, Bray F. Worldwide trends in cervical cancer incidence: Impact of screening against changes in disease risk factors. eur J Cancer 2013;49:3262-73.

[2] Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: http://ci5.iarc.fr

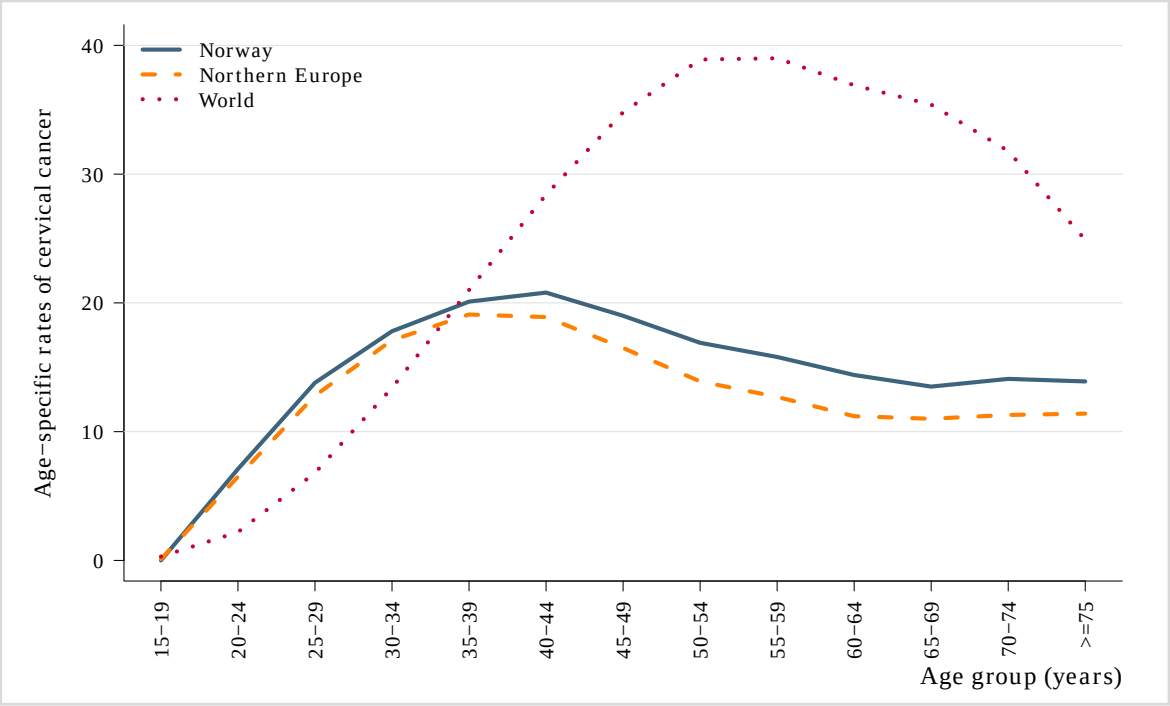
3.1.3 Cervical cancer incidence in Norway across Northern Europe

Figure 9: Age-standardised incidence rates of cervical cancer of Norway (estimates for 2012)



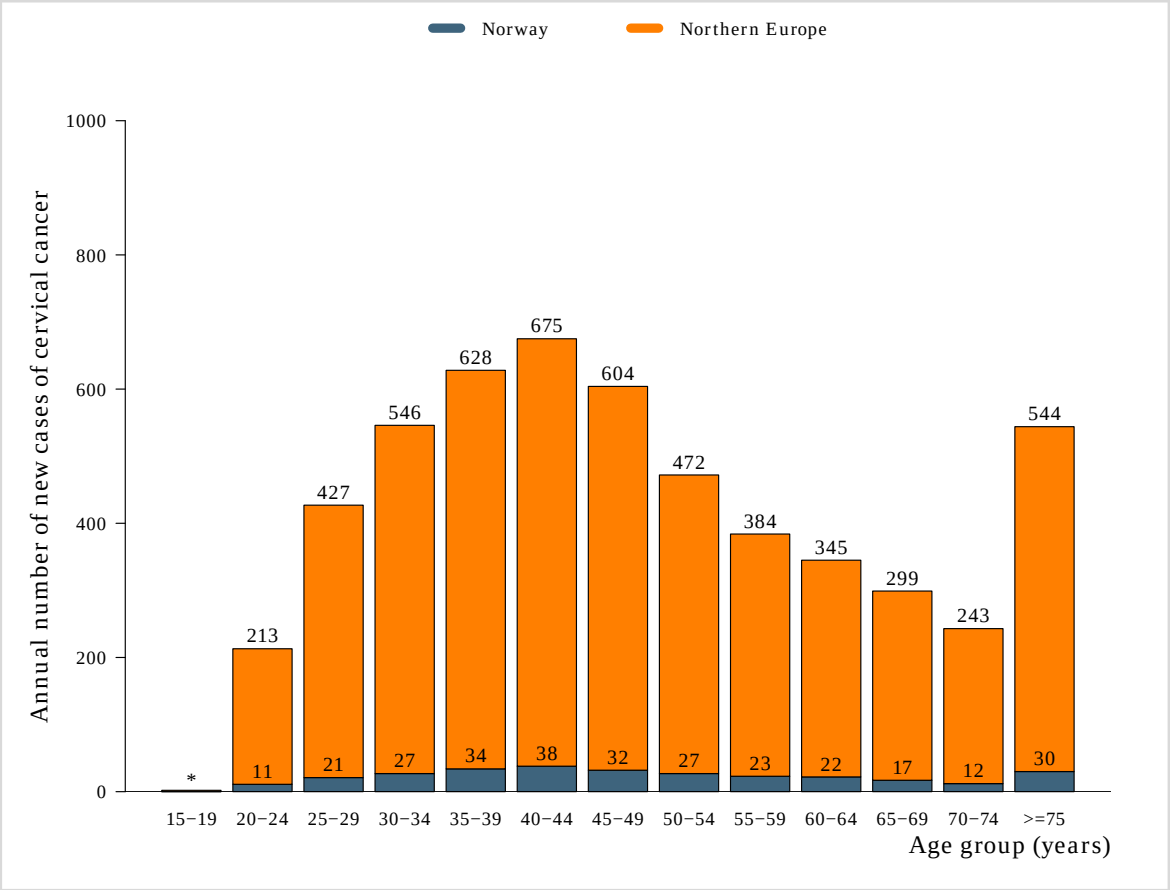
Data accessed on 15 Nov 2015.
Rates per 100,000 women per year.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 10: Comparison of age-specific cervical cancer incidence rates in Norway, within the region, and the rest of world



Data accessed on 15 Nov 2015.
Rates per 100,000 women per year.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 11: Annual number of new cases of cervical cancer by age group in Norway (estimates for 2012)



*0 cases for Norway and 2 cases for Northern Europe in the 15-19 age group.

Data accessed on 15 Nov 2015.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

3.1.4 Cervical cancer mortality in Norway

KEY STATS

About **101 cervical cancer deaths occur annually in Norway** (estimations for 2012).

Cervical cancer **ranks* as the 14^{th} leading cause** of female cancer deaths in **Norway**.

Cervical cancer is the **2^{nd} leading cause of cancer deaths** in **women aged 15 to 44 years in Norway**.

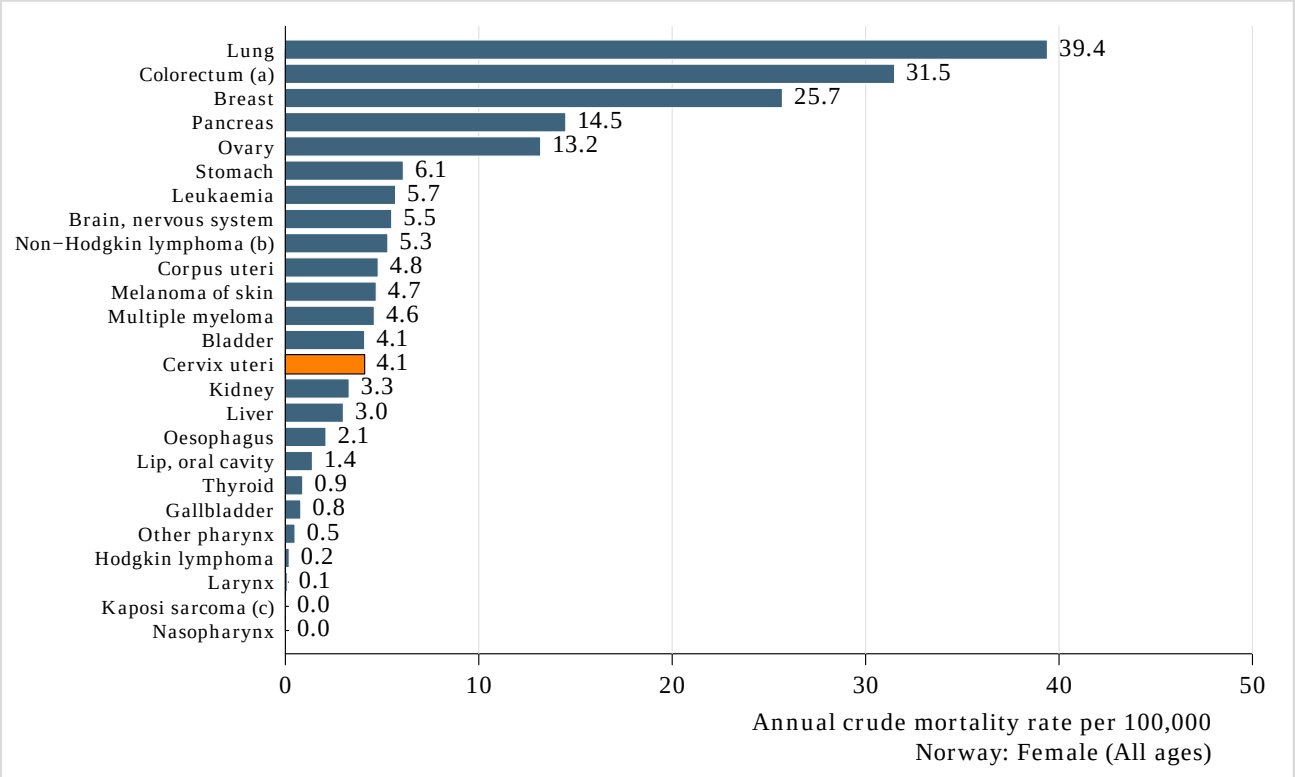
* Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st). Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.

Table 6: Cervical cancer mortality in Norway (estimates for 2012)

Indicator	Norway	Northern Europe	World
Annual number of deaths	101	1,963	265,672
Crude mortality rate[a]	4.1	3.9	7.6
Age-standardized mortality rate[a]	2.3	2.2	6.8
Cumulative risk (%) at 75 years old[b]	0.2	0.2	0.8

Data accessed on 15 Nov 2015.
Mortality data is available from medium quality (criteria defined in Mathers et al. 2005) complete vital registration sources. Mortality rates were estimated projecting rates to 2012. For more detailed methods of estimation please refer to http://globocan.iarc.fr/old/method/method.asp?country=578
[a] Rates per 100,000 women per year.
[b] Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 12: Comparison of cervical cancer mortality to other cancers in women of all ages in Norway (estimates for 2012)



Data accessed on 15 Nov 2015.

[a] Includes anal cancer (C21).

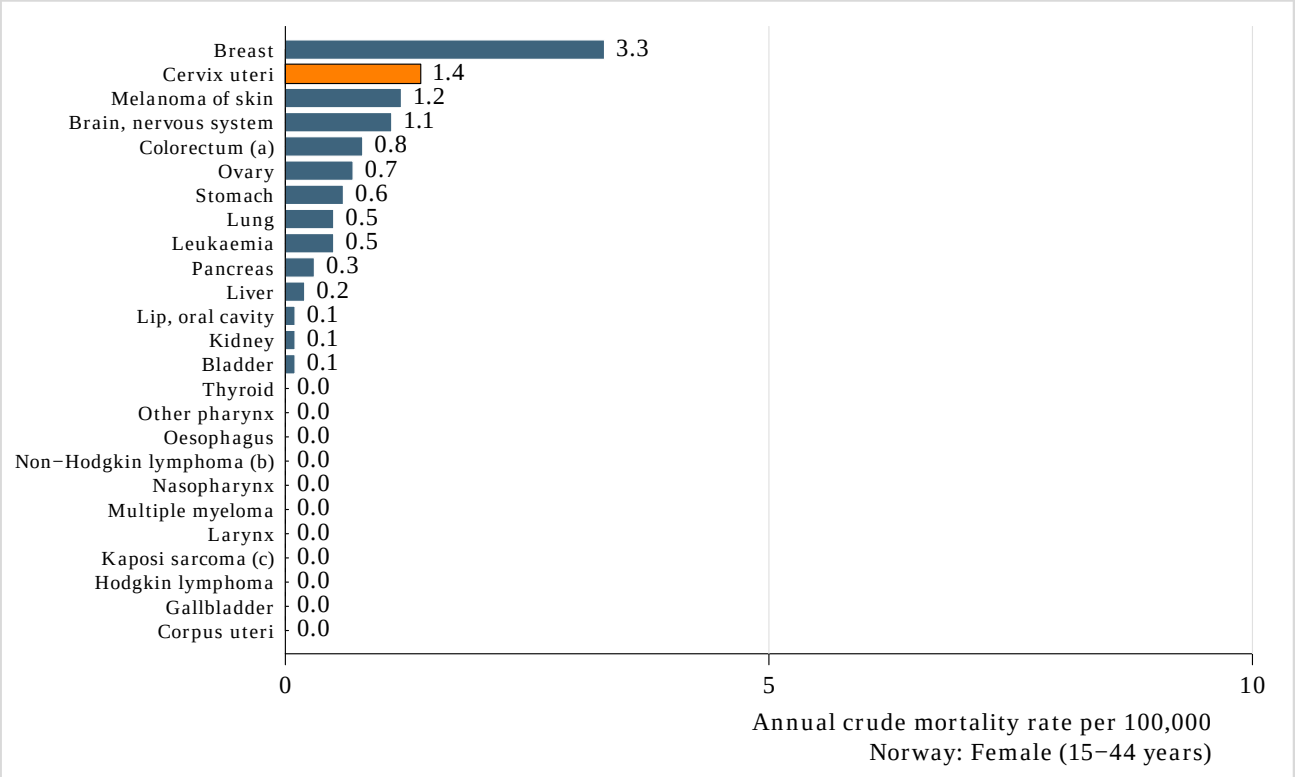
[b] Includes HIV disease resulting in malignant neoplasms (B21).

[c] Includes B21.0 (HIV disease resulting in Kaposi sarcoma).

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 13: Comparison of age-specific mortality rates of cervical cancer to other cancers among women 15-44 years of age in Norway (estimates for 2012)



Data accessed on 15 Nov 2015.

[a] Includes anal cancer (C21).

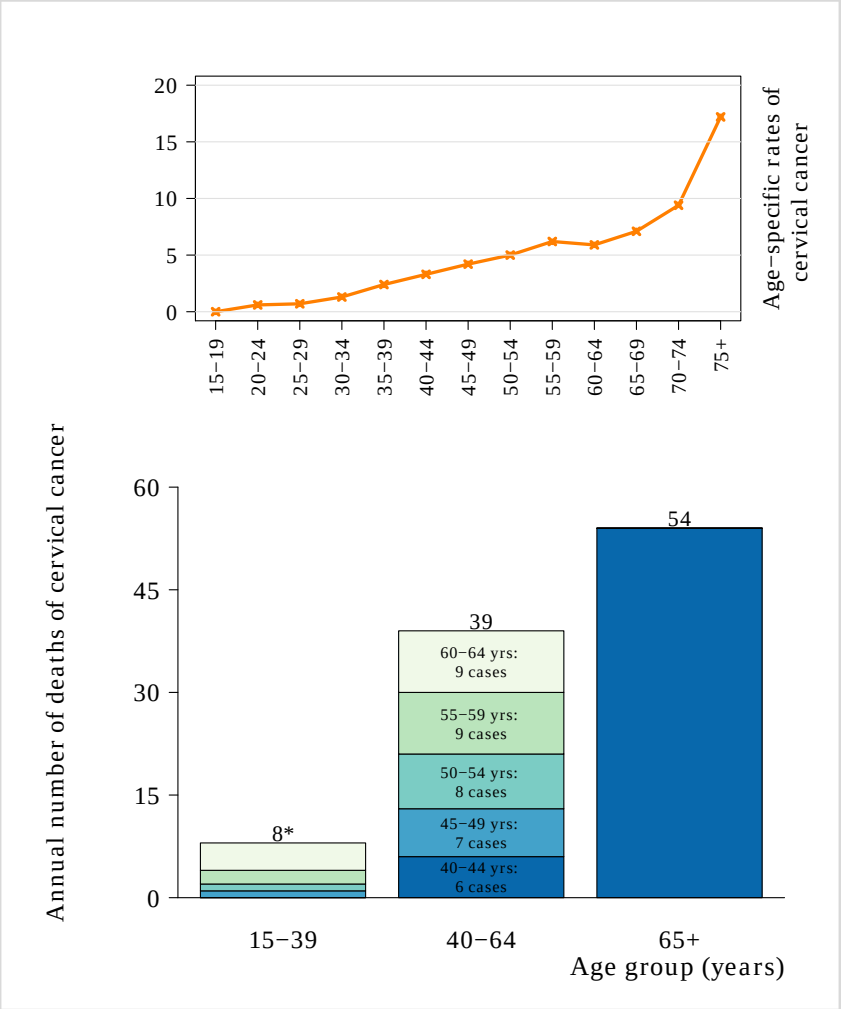
[b] Includes HIV disease resulting in malignant neoplasms (B21).

[c] Includes B21.0 (HIV disease resulting in Kaposi sarcoma).

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 14: Annual number of deaths and age-specific mortality rates of cervical cancer in Norway (estimates for 2012)



* 15-19 yrs: 0 cases. 20-24 yrs: 1 cases. 25-29 yrs: 1 cases. 30-34 yrs: 2 cases. 35-39 yrs: 4 cases.

Data accessed on 15 Nov 2015.

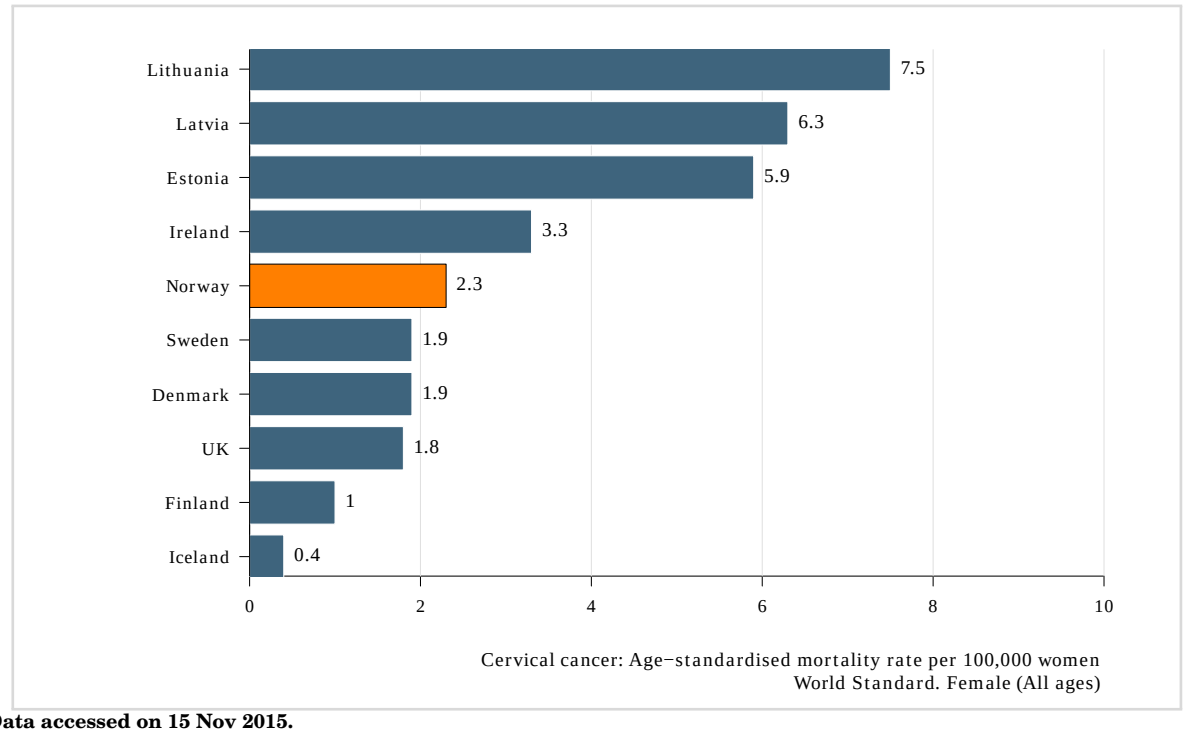
Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

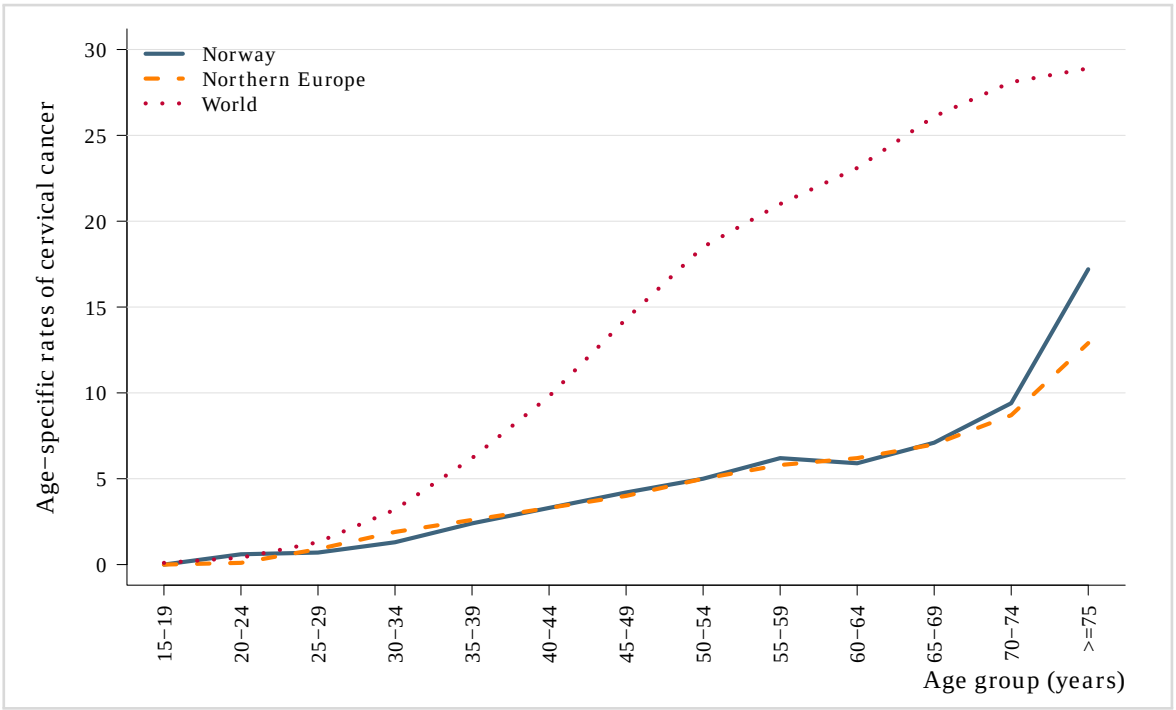
3.1.5 Cervical cancer mortality in Norway across Northern Europe

Figure 15: Comparison of age-standardised cervical cancer mortality rates in Norway and countries within the region (estimates for 2012)



Data accessed on 15 Nov 2015.
Rates per 100,000 women per year.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 16: Comparison of age-specific cervical cancer mortality rates in Norway, within its region and the rest of the world



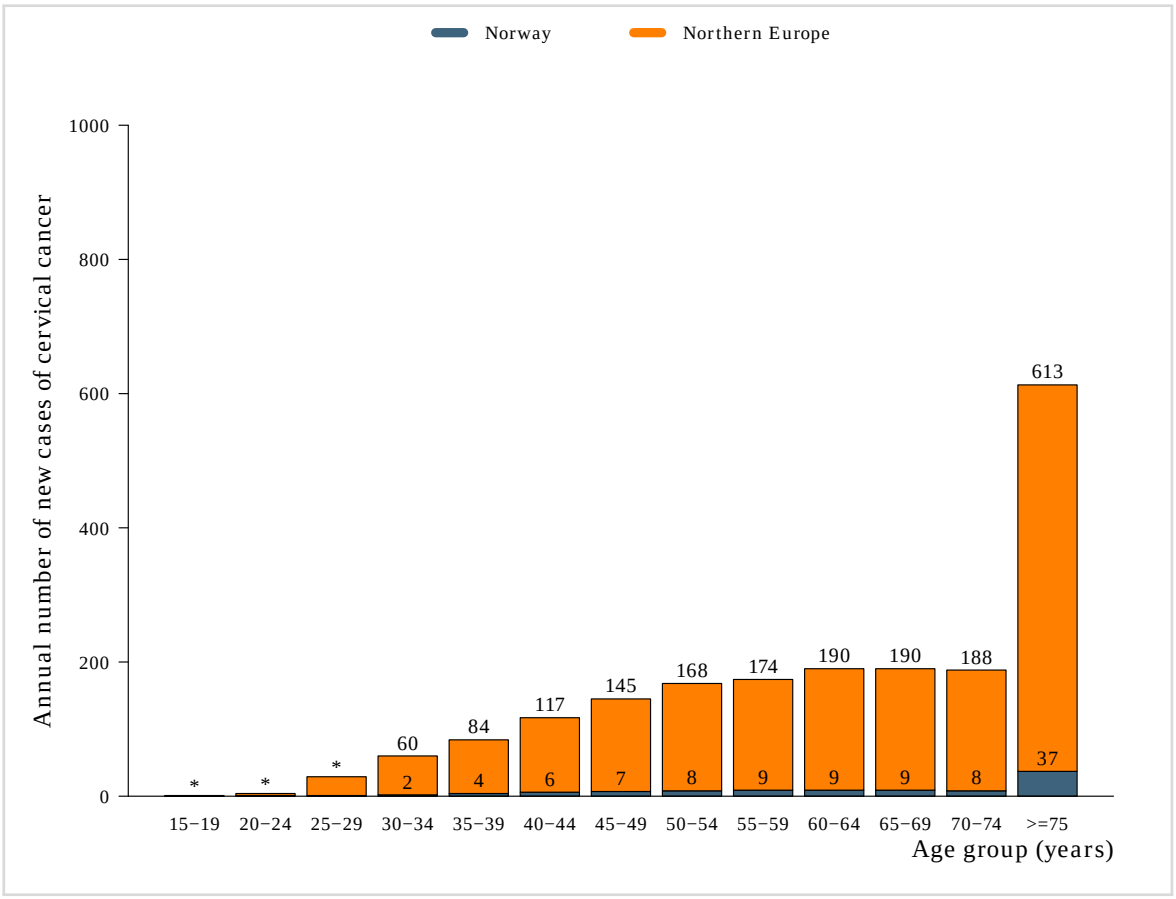
Data accessed on 15 Nov 2015.
Rates per 100,000 women per year.

(Continued on next page)

(Figure 16 – continued from previous page)

Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 17: Annual deaths number of cervical cancer by age group in Norway (estimates for 2012)



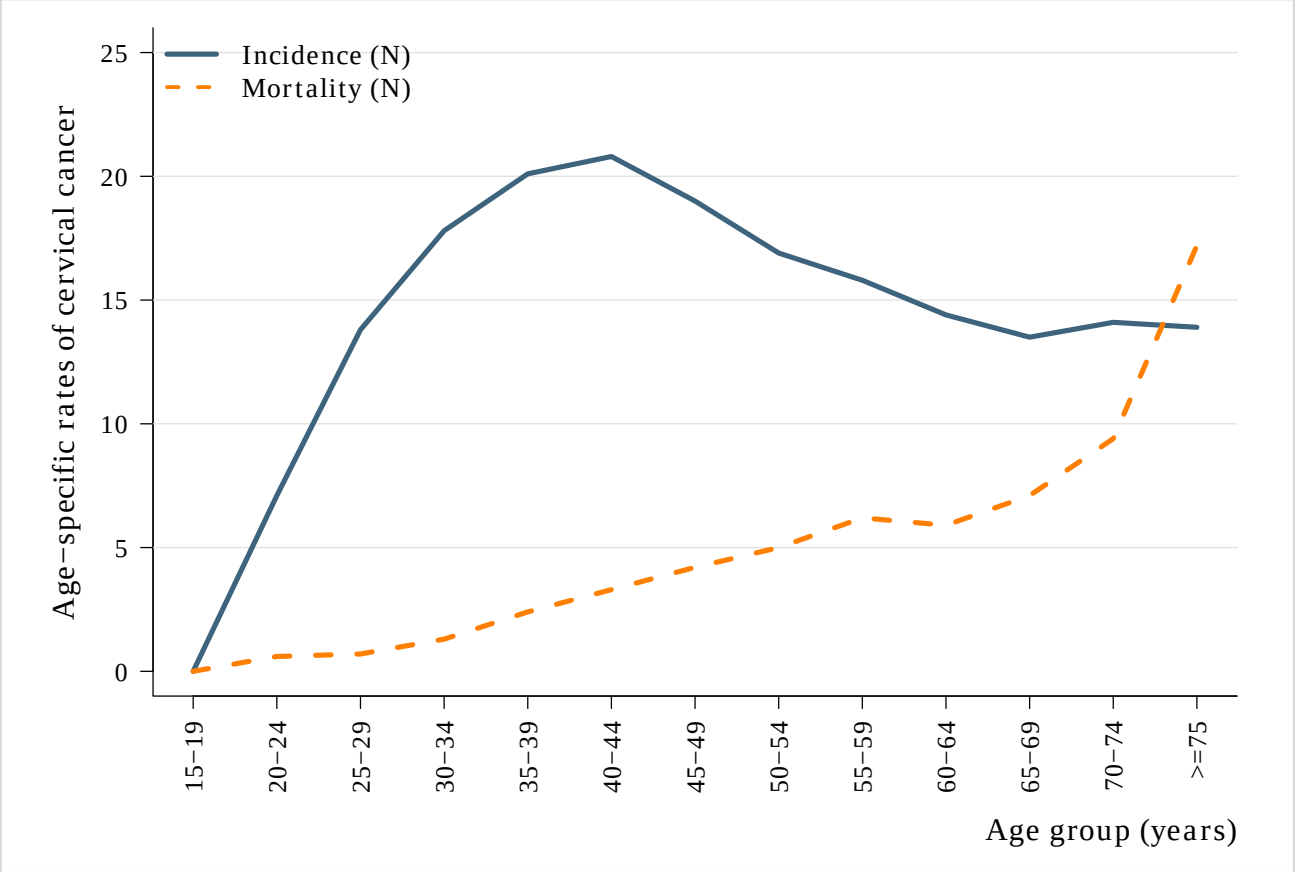
*0 cases for Norway and 1 cases for Northern Europe in the 15-19 age group. 1 cases for Norway and 4 cases for Northern Europe in the 20-24 age group. 1 cases for Norway and 29 cases for Northern Europe in the 25-29 age group.

Data accessed on 15 Nov 2015.

Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

3.1.6 Cervical cancer incidence and mortality comparison, Premature deaths and disability in Norway

Figure 18: Comparison of age-specific cervical cancer incidence and mortality rates in Norway (estimates for 2012)



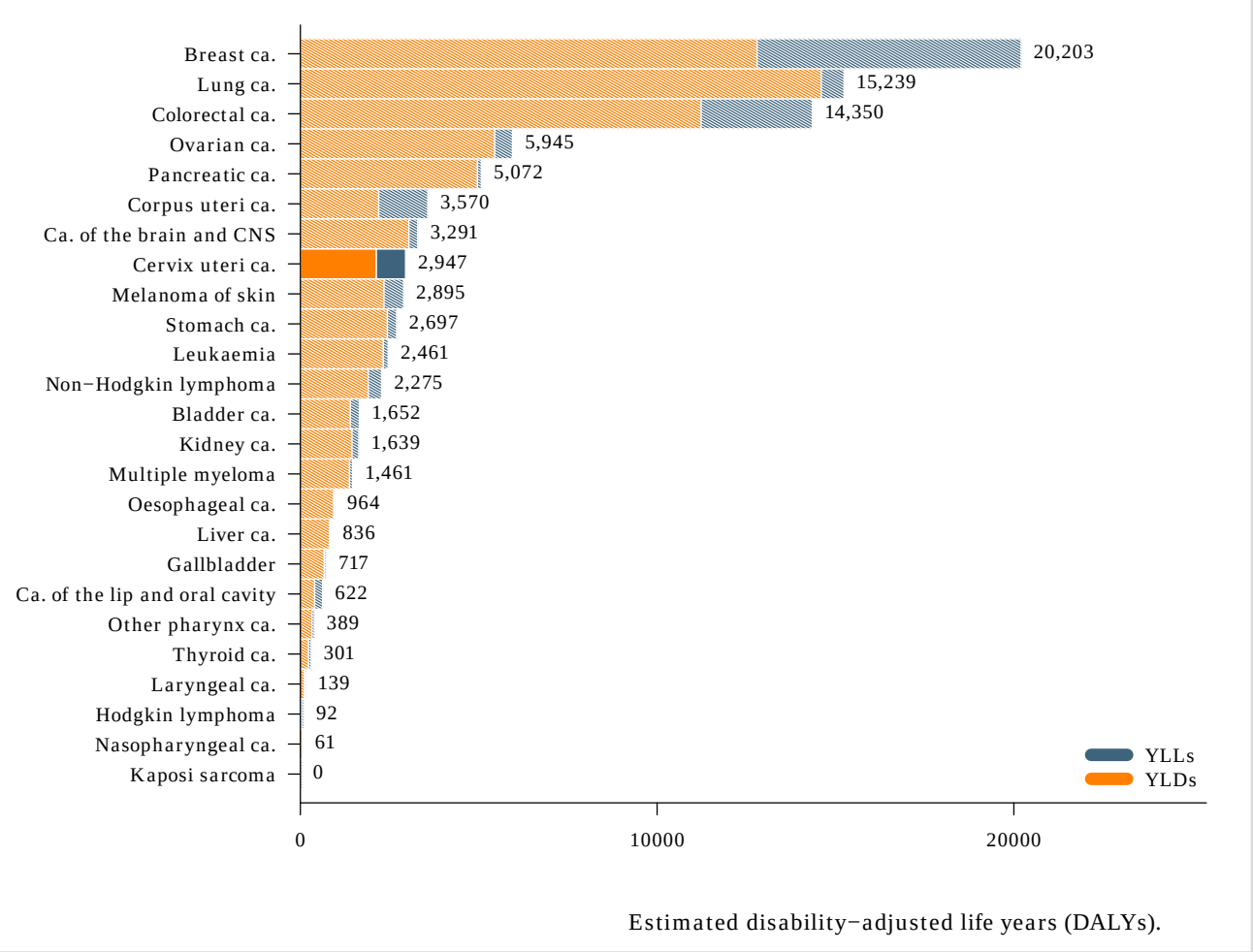
Data accessed on 15 Nov 2015.
Rates per 100,000 women per year.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Table 7: Premature deaths and disability from cervical cancer in Norway, Northern Europe and the rest of the world (estimates for 2008)

	Norway		Northern Europe		World	
Indicator	**Number**	**ASR (W)**	**Number**	**ASR (W)**	**Number**	**ASR (W)**
Estimated disability-adjusted life years (DALYs)	2,947	101	64,572	105	8,738,004	293
Years of life lost (YLLs)	2,131	67	49,639	75	7,788,282	264
Years lived with disability (YLDs)	816	35	14,933	31	949,722	28

Data accessed on 04 Nov 2013.
Data sources:
Soerjomataram I, Lortet-Tieulent J, Parkin DM, Ferlay J, Mathers C, Forman D, Bray F. Global burden of cancer in 2008: a systematic analysis of disability-adjusted life-years in 12 world regions. Lancet. 2012 Nov 24;380(9856):1840-50.

Figure 19: Comparison of annual premature deaths and disability from cervical cancer in Norway to other cancers among women (estimates for 2008)



Data accessed on 04 Nov 2013.

CNS: Central Nervous System; YLDs: years lived with disability; YLLs: Years of life lost;

Data sources:

Soerjomataram I, Lortet-Tieulent J, Parkin DM, Ferlay J, Mathers C, Forman D, Bray F. Global burden of cancer in 2008: a systematic analysis of disability-adjusted life-years in 12 world regions. Lancet. 2012 Nov 24;380(9856):1840-50.

3.2 Anogenital cancers other than the cervix

Data on HPV role in anogenital cancers other than cervix are limited, but there is an increasing body of evidence strongly linking HPV DNA with cancers of anus, vulva, vagina, and penis. Although these cancers are much less frequent compared to cervical cancer, their association with HPV make them potentially preventable and subject to similar preventative strategies as those for cervical cancer. *(Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012, Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90)*.

3.2.1 Anal cancer

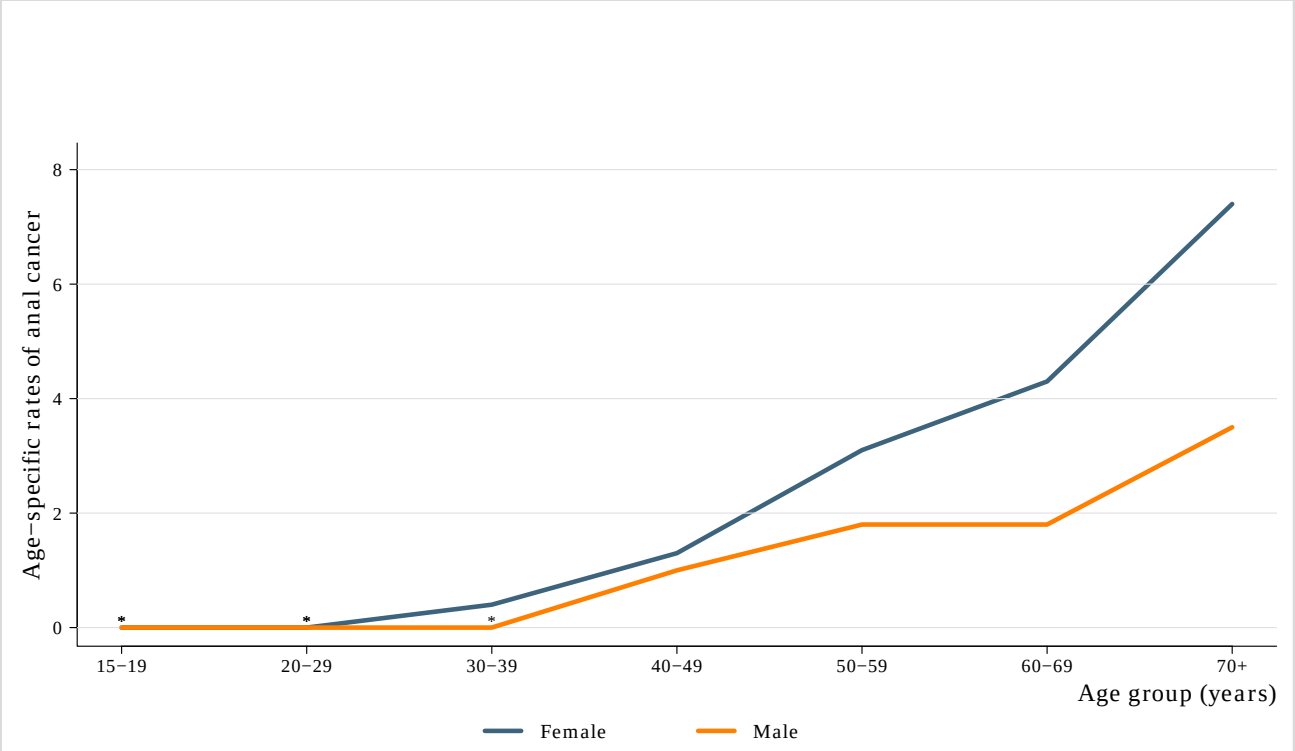
Anal cancer is rare in the general population with an average worldwide incidence of 1 per 100,000, but is reported to be increasing in more developed regions. Globally, there are an estimated 27,000 new cases every year *(de Martel C et al. Lancet Oncol 2012;13(6):607-15)*. Women have higher incidences of anal cancer than men. Incidence is particularly high among populations of men who have sex with men (MSM), women with history of cervical or vulvar cancer, and immunosuppressed populations, including those who are HIV-infected and patients with a history of organ transplantation. These cancers are predominantly squamous cell carcinoma, adenocarcinomas, or basaloid and cloacogenic carcinomas.

Table 8: Anal cancer incidence in Norway by cancer registry and sex

		MALE			FEMALE		
Cancer registry[1]	**Period**	**N cases**[a]	**Crude rate**[b]	**ASR**[b]	**N cases**[a]	**Crude rate**[c]	**ASR**[c]
National	2003-2007	97	0.8	0.5	229	2.0	1.0

Data accessed on 05 May 2015.
ASR: Age-standardized rate, Standardized rates have been estimated using the direct method and the World population as the reference;
Please refer to original source (available at http://ci5.iarc.fr/CI5i-ix/ci5i-ix.htm)
[a] Accumulated number of cases during the period in the population covered by the corresponding registry.
[b] Rates per 100,000 men per year.
[c] Rates per 100,000 women per year.
Data sources:
[1] Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 20: Anal cancer incidence rates by age group in Norway (cancer registry data)



*No cases were registered for this age group.

(Continued on next page)

(Figure 20 – continued from previous page)

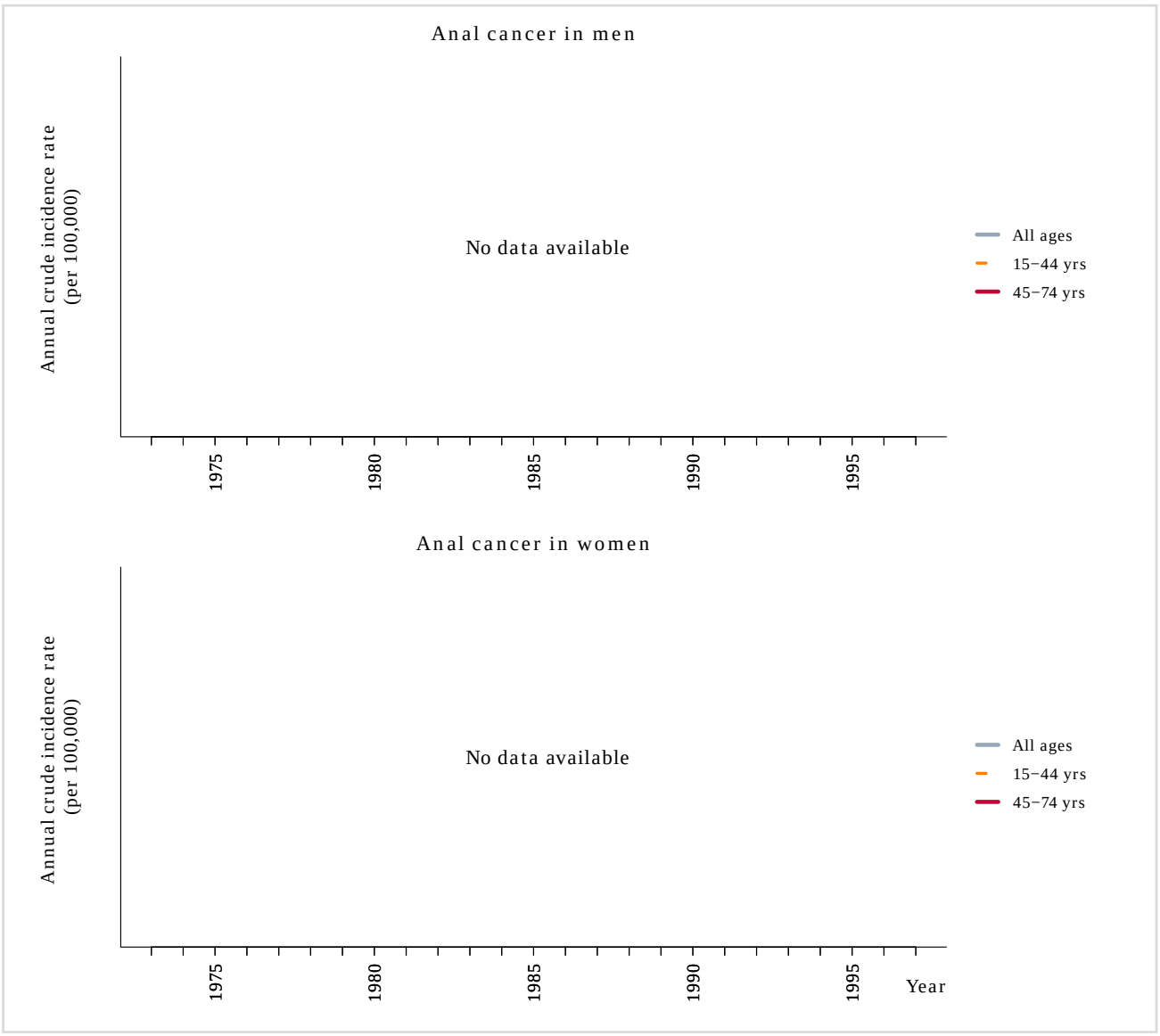
Data accessed on 05 May 2015.

Rates per 100,000 per year.

Data sources:

Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 21: Time trends in anal cancer incidence in Norway (cancer registry data)



Data accessed on 27 Apr 2015.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: http://ci5.iarc.fr

3.2.2 Vulvar cancer

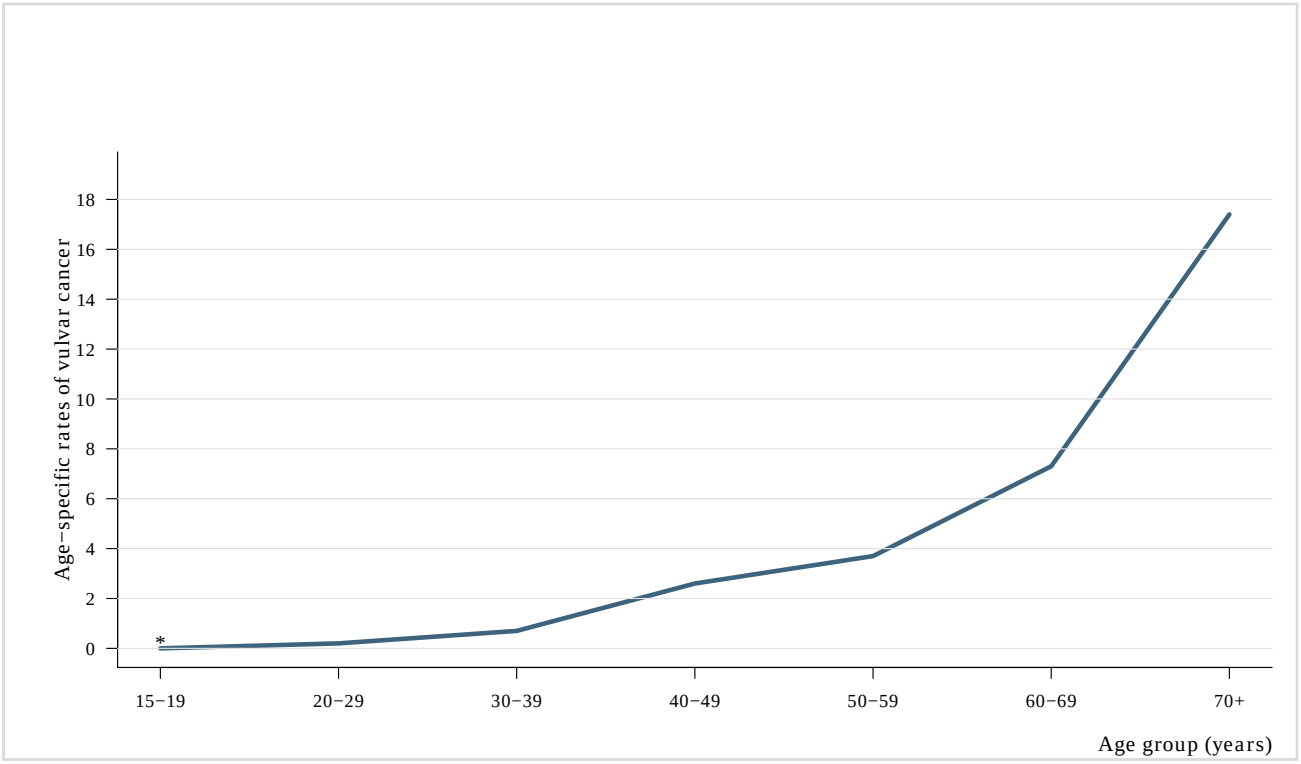
Cancer of the vulva is rare among women worldwide, with an estimated 27,000 new cases in 2008, representing 4% of all gynaecologic cancers *(de Martel C et al. Lancet Oncol 2012;13(6):607-15)*. Worldwide, about 60% of all vulvar cancer cases occur in more developed countries. Vulvar cancer has two distinct histological patterns with two different risk factor profiles: (1) basaloid/warty types (2) keratinising types. Basaloid/warty lesions are more common in young women, are very often associated with HPV DNA detection (75-100%), and have a similar risk factor profile as cervical cancer. Keratinising vulvar carcinomas represent the majority of the vulvar lesions (>60%), they occur more often in older women and are more rarely associated with HPV *(IARC Monograph Vol 100B)*.

Table 9: Vulvar cancer incidence in Norway by cancer registry

Cancer registry[1]	Period	N cases[a]	Crude rate[b]	ASR[b]
National	2003-2007	451	3.9	1.9

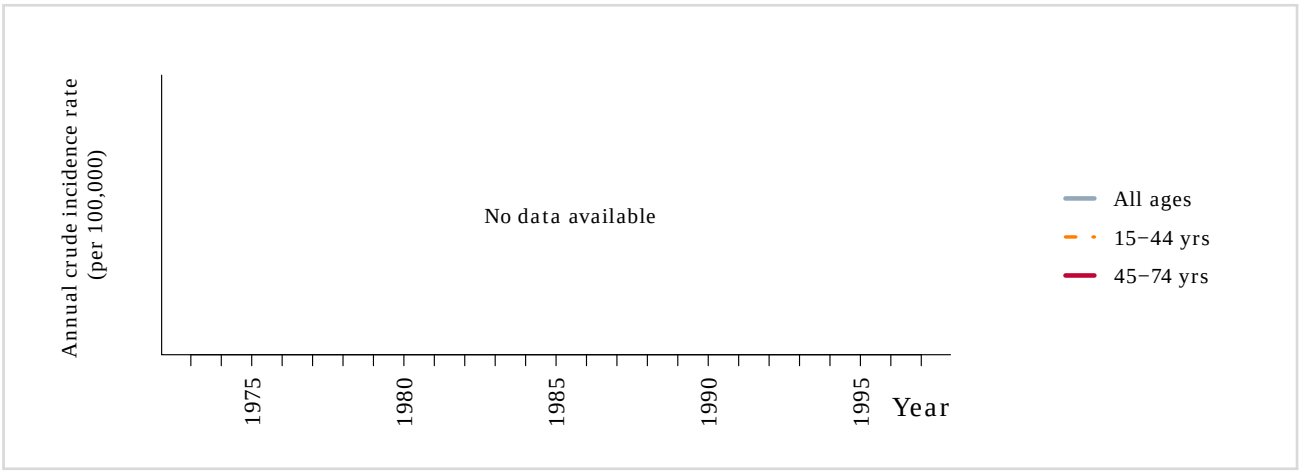
Data accessed on 05 May 2015.
ASR: Age-standardized rate, Standardized rates have been estimated using the direct method and the World population as the reference;
[a] Accumulated number of cases during the period in the population covered by the corresponding registry.
[b] Rates per 100,000 women per year.
Data sources:
[1] Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 22: Vulvar cancer incidence rates by age group in Norway



*No cases were registered for this age group.
Data accessed on 05 May 2015.
Data sources:
Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 23: Time trends in vulvar cancer incidence in Norway (cancer registry data)



Data accessed on 27 Apr 2015.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: http://ci5.iarc.fr

3.2.3 Vaginal cancer

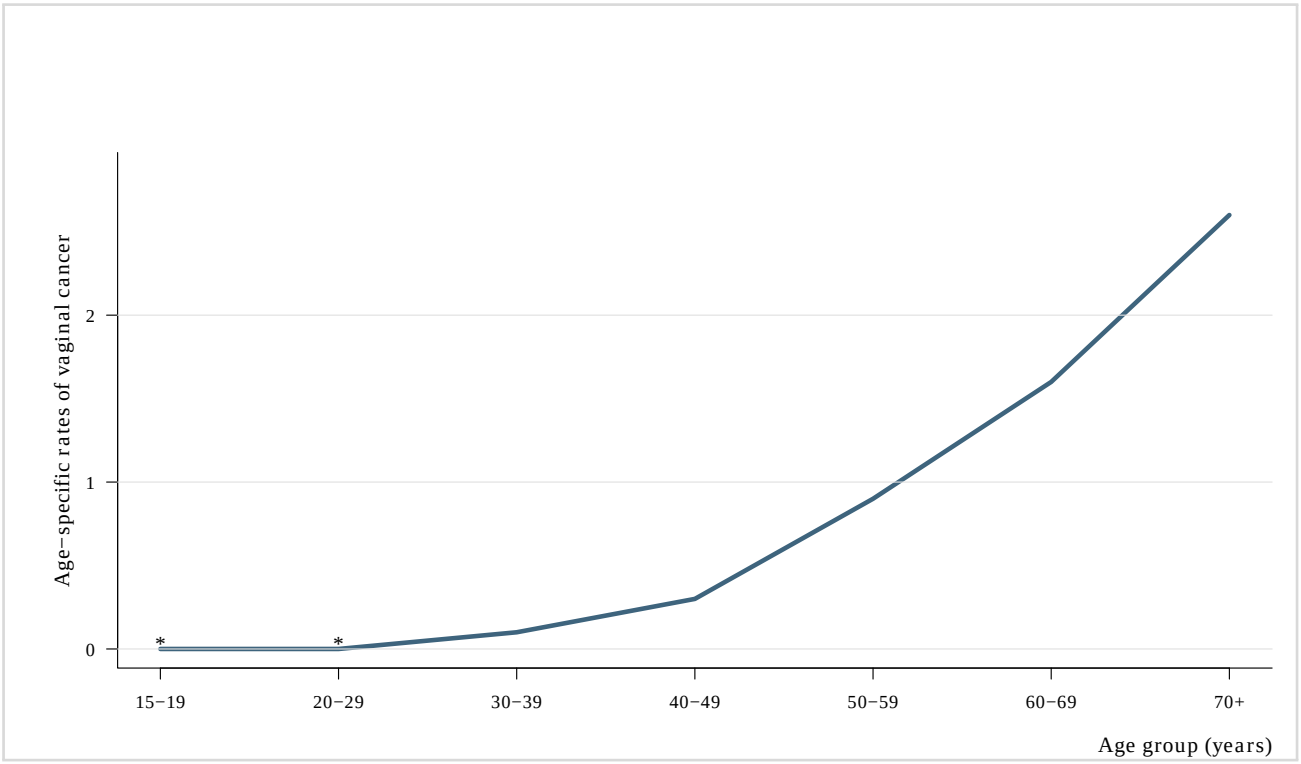
Cancer of the vagina is a rare cancer, with an estimated 13,000 new cases in 2008, representing 2% of all gynaecologic cancers *(de Martel C et al. Lancet Oncol 2012;13(6):607-15)*. Similar to cervical cancer, the majority of vaginal cancer cases (68%) occur in less developed countries. Most vaginal cancers are squamous cell carcinoma (90%) generally attributable to HPV, followed by clear cell adenocarcinomas and melanoma. Vaginal cancers are primarily reported in developed countries. Metastatic cervical cancer can be misclassified as cancer of the vagina. Invasive vaginal cancer is diagnosed primarily in old women (≥ 65 years) and the diagnosis is rare in women under 45 years whereas the peak incidence of carcinoma in situ is observed between ages 55 and 70 *(Vaccine 2008, Vol. 26, Suppl 10)*.

Table 10: Vaginal cancer incidence in Norway by cancer registry

Cancer registry[1]	Period	N cases[a]	Crude rate[b]	ASR[b]
National	2003-2007	77	0.7	0.3

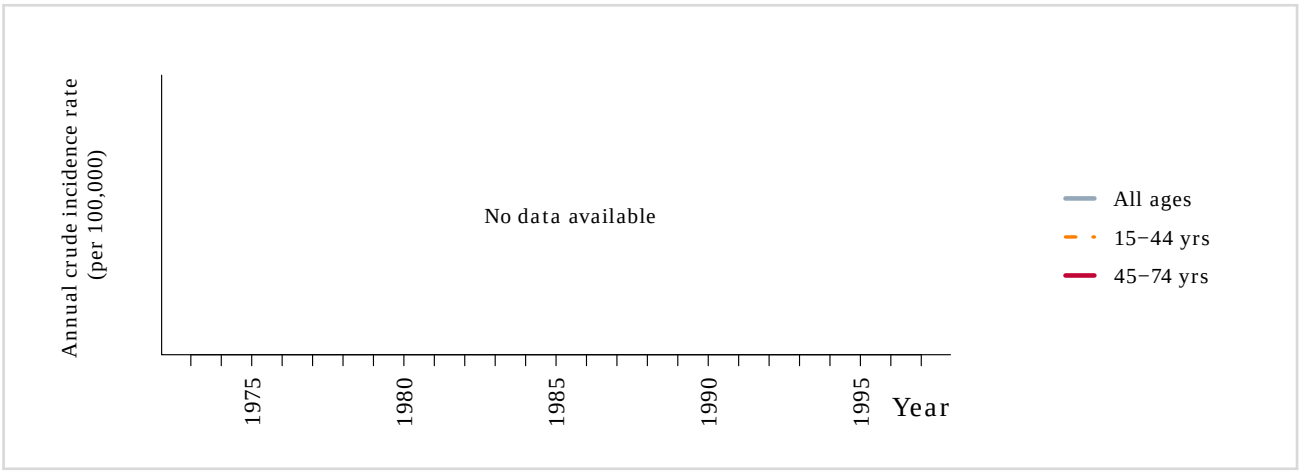
Data accessed on 05 May 2015.
ASR: Age-standardized rate, Standardized rates have been estimated using the direct method and the World population as the reference;
Please refer to original source (available at http://ci5.iarc.fr/CI5i-ix/ci5i-ix.htm)
[a] Accumulated number of cases during the period in the population covered by the corresponding registry.
[b] Rates per 100,000 women per year.
Data sources:
[1] Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 24: Incidence rates of vaginal cancer by age group in Norway



*No cases were registered for this age group.
Data accessed on 05 May 2015.
[a] Rates per 100,000 per year.
Data sources:
Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 25: Time trends in vaginal cancer incidence in Norway (cancer registry data)



Data accessed on 27 Apr 2015.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: http://ci5.iarc.fr

3.2.4 Penile cancer

The annual burden of penile cancer has been estimated to be 22,000 cases worldwide with incidence rates strongly correlating with those of cervical cancer *(de Martel C et al. Lancet Oncol 2012;13(6):607-15)*. Penile cancer is rare and most commonly affects men aged 50-70 years. Incidence rates are higher in less developed countries than in more developed countries, accounting for up to 10% of male cancers in some parts of Africa, South America and Asia. Precursor cancerous penile lesions (PeIN) are rare.

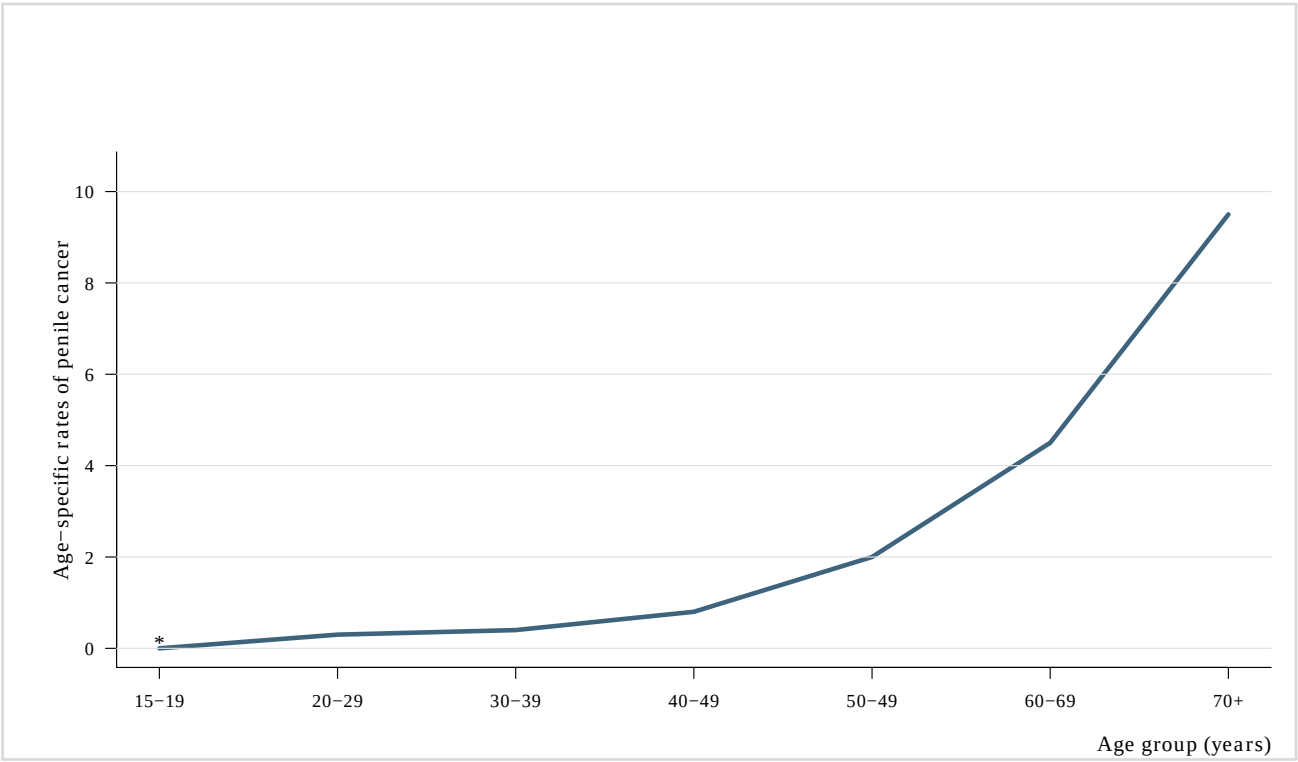
Cancers of the penis are primarily of squamous cell carcinomas (SCC) (95%) and the most common penile SCC histologic sub-types are keratinising (49%), mixed warty-basaloid (17%), verrucous (8%) warty (6%), and basaloid (4%). HPV is most commonly detected in basaloid and warty tumours but is less common in keratinising and verrucous tumours. Approximately 60-100% of PeIN lesions are HPV DNA positive.

Table 11: Penile cancer incidence in Norway by cancer registry

Cancer registry	Period	N cases[a]	Crude rate[b]	ASR[b]
National[1]	2003-2007	197	1.7	1.0
National (Rural)[2,c]	1978-1982	65	1.1	0.7
National (Urban)[2,c]	1978-1982	80	1.9	1.2

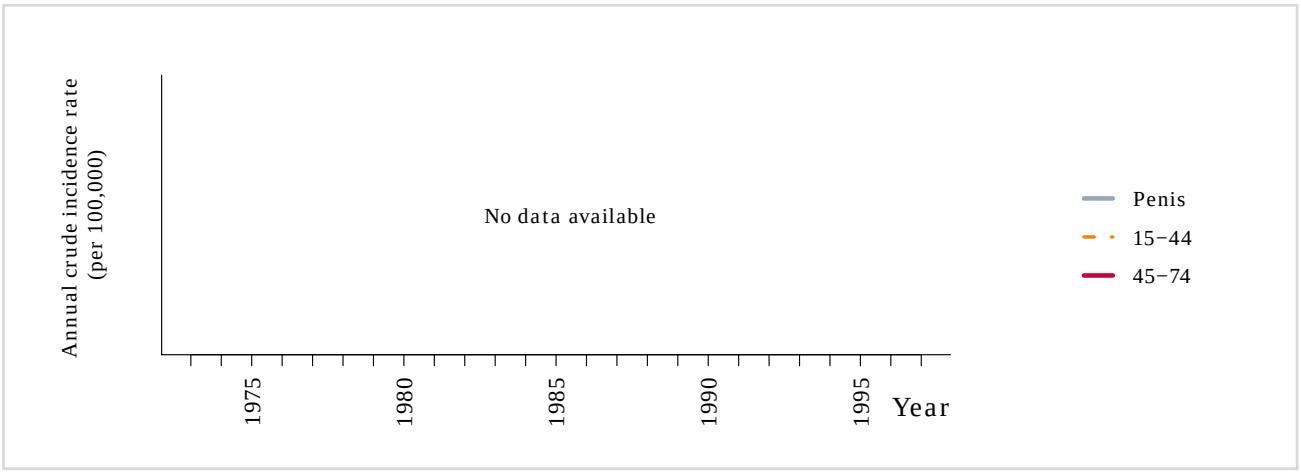
Data accessed on 05 May 2015.
ASR: Age-standardized rate, Standardized rates have been estimated using the direct method and the World population as the reference;
Please refer to original source (available at http://ci5.iarc.fr/CI5i-ix/ci5i-ix.htm)
[a] Accumulated number of cases during the period in the population covered by the corresponding registry.
[b] Rates per 100,000 men per year.
[c] Includes "Other male genital".
Data sources:
[1] Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr
[2] Muir, C.S.,Waterhouse, J.,Mack, T.,Powell, J.,Whelan, S.L., eds (1987). Cancer Incidence in Five Continents, Vol. V. IARC Scientific Publications No. 88, Lyon, IARC.

Figure 26: Incidence rates of penile cancer by age group in Norway



*No cases were registered for this age group.
Data accessed on 05 May 2015.
Rates per 100,000 per year.
Data sources:
Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

Figure 27: Time trends in penile cancer incidence in Norway (cancer registry data)



Data accessed on 27 Apr 2015.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: http://ci5.iarc.fr

3.3 Head and neck cancers

The majority of head and neck cancers are associated with high tobacco and alcohol consumption. However, increasing trends in the incidence at specific sites suggest that other aetiological factors are involved, and infection by certain high-risk types of HPV (i.e. HPV16) have been reported to be associated with head and neck cancers, in particular with oropharyngeal cancer. Current evidence suggests that HPV16 is associated with tonsil cancer (including Waldeyer ring cancer), base of tongue cancer and other oropharyngeal cancer sites. Associations with other head and neck cancer sites such as oral cancer are neither strong nor consistent when compared to molecular-epidemiological data on HPV and oropharyngeal cancer. Association with laryngeal cancer is still unclear *(IARC Monograph Vol 100B)*.

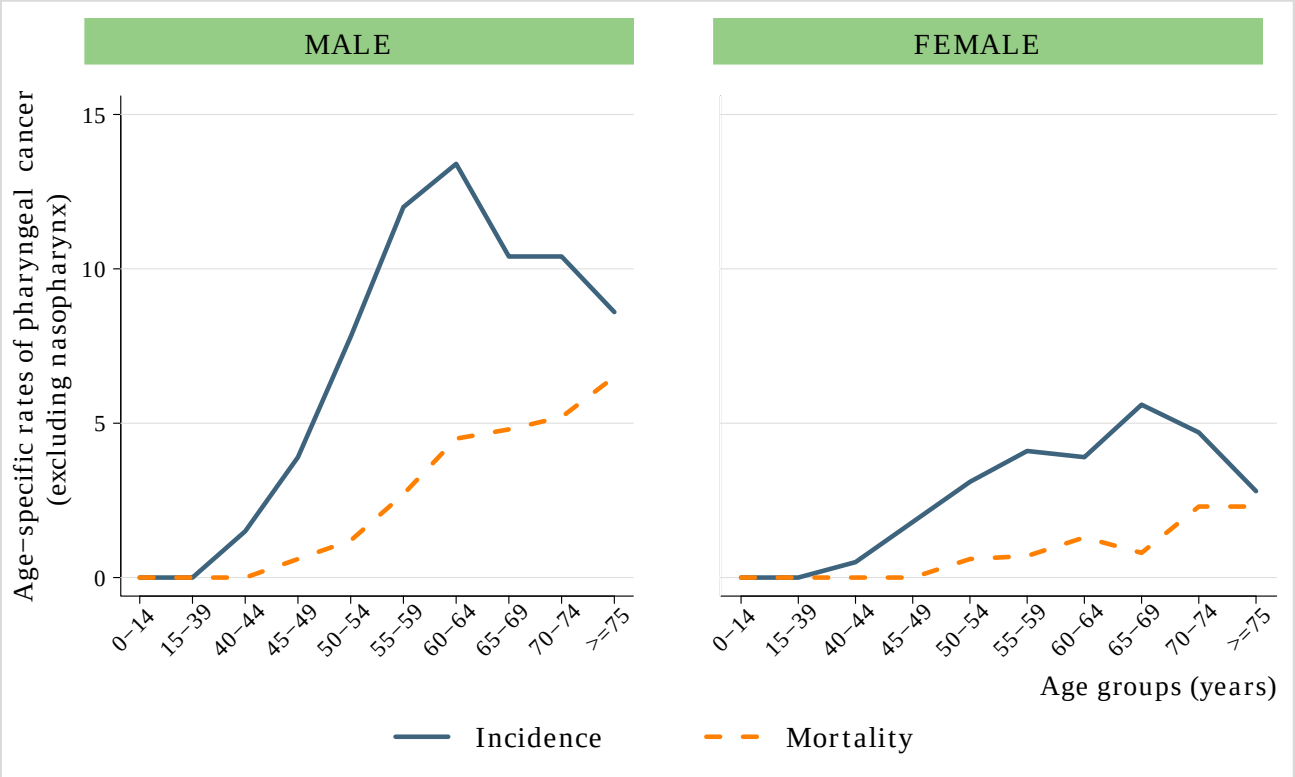
3.3.1 Pharyngeal cancer (excluding nasopharynx)

Table 12: Incidence and mortality of cancer of the pharynx (excluding nasopharynx) in Norway, Northern Europe and the rest of the world by sex (estimates for 2012). Includes ICD-10 codes: C09-10,C12-14

Indicator	MALE			FEMALE		
	Norway	Northern Europe	World	Norway	Northern Europe	World
INCIDENCE						
Annual number of new cancer cases	95	2,594	115,131	38	844	27,256
Crude incidence rate[a]	3.8	5.3	3.2	1.5	1.7	0.8
Age-standardized incidence rate[a]	2.4	3.4	3.2	0.9	1.0	0.7
Cumulative risk (%) at 75 years old[b]	0.3	0.4	0.4	0.1	0.1	0.1
MORTALITY						
Annual number of deaths	33	1,118	77,585	12	352	18,505
Crude mortality rate[a]	1.3	2.3	2.2	0.5	0.7	0.5
Age-standardized mortality rate[a]	0.8	1.4	2.2	0.2	0.3	0.5
Cumulative risk (%) at 75 years old[c]	0.1	0.2	0.3	0.0	0.0	0.1

Data accessed on 15 Nov 2015.
Incidence data is available from high quality national data or high quality regional (coverage greater than 50%) sources. Data is included in Cancer incidence in Five Continents (CI5) volume IX and/or X. Incidence rates were estimated projecting rates to 2012. For more detailed methods of estimation please refer to http://globocan.iarc.fr/old/method/method.asp?country=578
[a] Male: Rates per 100,000 men per year. Female: Rates per 100,000 women per year.
[b] Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.
[c] Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Figure 28: Comparison of incidence and mortality rates of the pharynx (excluding nasopharynx) by age group and sex in Norway (estimates for 2012). Includes ICD-10 codes: C09-10,C12-14



Data accessed on 15 Nov 2015.
Male: Rates per 100,000 men per year. Female: Rates per 100,000 women per year.
Data sources:
Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr.

Table 13: Incidence of oropharyngeal cancer in Norway by cancer registry and sex

Cancer registry[1]	Period	MALE			FEMALE		
		N cases[a]	Crude rate[b]	ASR[b]	N cases[a]	Crude rate[b]	ASR[b]
Base of tongue (ICD-10 code: C01)							
National	2003-2007	80	0.7	0.5	28	0.2	0.2
Tonsillar cancer (ICD-10 code: C09)							
National	2003-2007	221	1.9	1.4	74	0.6	0.4
Cancer of the oropharynx (excludes tonsil) (ICD-10 code: C10)							
National	2003-2007	68	0.6	0.4	21	0.2	0.1

Data accessed on 05 May 2015.

ASR: Age-standardised rate. Standardised rates have been estimated using the direct method and the World population as the reference.

Please refer to original source (available at http://ci5.iarc.fr/CI5i-ix/ci5i-ix.htm)

[a] Accumulated number of cases during the period in the population covered by the corresponding registry.

[b] Male: Rates per 100,000 men per year. Female: Rates per 100,000 women per year.

Data sources:

[1] Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. http://ci5.iarc.fr

4 HPV related statistics

HPV infection is commonly found in the anogenital tract of men and women with and without clinical lesions. The aetiological role of HPV infection among women with cervical cancer is well-established, and there is growing evidence of its central role in other anogenital sites. HPV is also responsible for other diseases such as recurrent juvenile respiratory papillomatosis and genital warts, both mainly caused by HPV types 6 and 11 *(Lacey CJ, Vaccine 2006; 24(S3):35)*. For this section, the methodologies used to compile the information on HPV burden are derived from systematic reviews and meta-analyses of the literature. Due to the limitations of HPV DNA detection methods and study designs used, these data should be interpreted with caution and used only as a guide to assess the burden of HPV infection within the population. *(Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012,Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90)*.

4.1 HPV burden in women with normal cervical cytology, cervical precancerous lesions or invasive cervical cancer

The statistics shown in this section focus on HPV infection in the cervix uteri. HPV cervical infection results in cervical morphological lesions ranging from normalcy (cytologically normal women) to different stages of precancerous lesions (CIN-1, CIN-2, CIN-3/CIS) and invasive cervical cancer. HPV infection is measured by HPV DNA detection in cervical cells (fresh tissue, paraffin embedded or exfoliated cells).

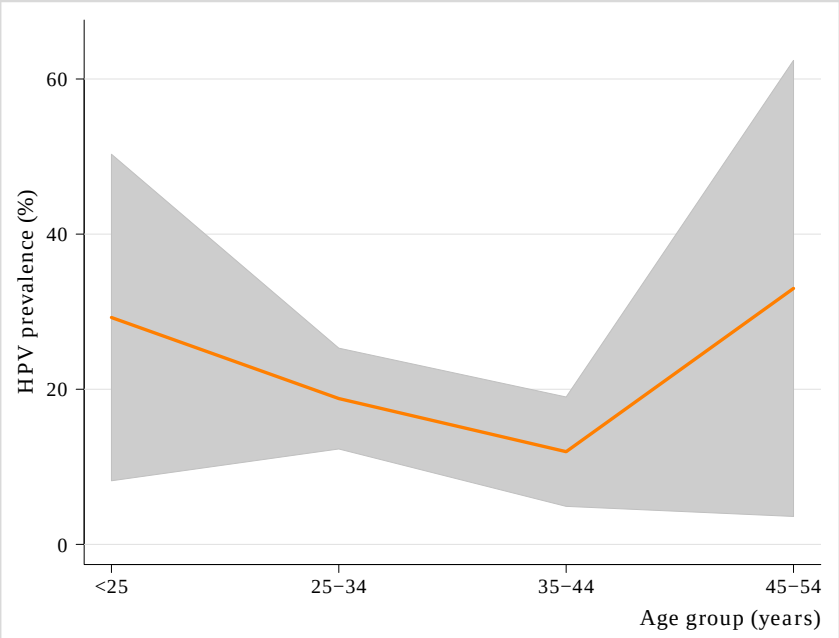
The prevalence of HPV increases with lesion severity. HPV causes virtually 100% of cervical cancer cases, and an underestimation of HPV prevalence in cervical cancer is most likely due to the limitations of study methodologies. Worldwide, HPV16 and 18 (the two vaccine-preventable types) contribute to over 70% of all cervical cancer cases, between 41% and 67% of high-grade cervical lesions and 16-32% of low-grade cervical lesions. After HPV16/18, the six most common HPV types are the same in all world regions, namely 31, 33, 35, 45, 52 and 58; these account for an additional 20% of cervical cancers worldwide (*Clifford G, Vaccine 2006;24(S3):26*).

Methods: Prevalence and type distribution of human papillomavirus in cervical carcinoma, low-grade cervical lesions, high-grade cervical lesions and normal cytology: systematic review and meta-analysis

A systematic review of the literature was conducted regarding the worldwide HPV-prevalence and type distribution for cervical carcinoma, low-grade cervical lesions, high-grade cervical lesions and normal cytology from 1990 to 'data as of' indicated in each section. The search terms for the review were 'HPV' AND cerv* using Pubmed. There were no limits in publication language. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR or HC2, a minimum of 20 cases for cervical carcinoma, 20 cases for low-grade cervical lesions, 20 cases for high-grade cervical lesions and 100 cases for normal cytology and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive extracted for each study were pooled to estimate the prevalence of HPV DNA and the HPV type distribution globally and by geographical region. Binomial 95% confidence intervals were calculated for each HPV prevalence. For more details refer to the methods document.

4.1.1 HPV prevalence in women with normal cervical cytology

Figure 29: Crude age-specific HPV prevalence (%) and 95% confidence interval in women with normal cervical cytology in Norway

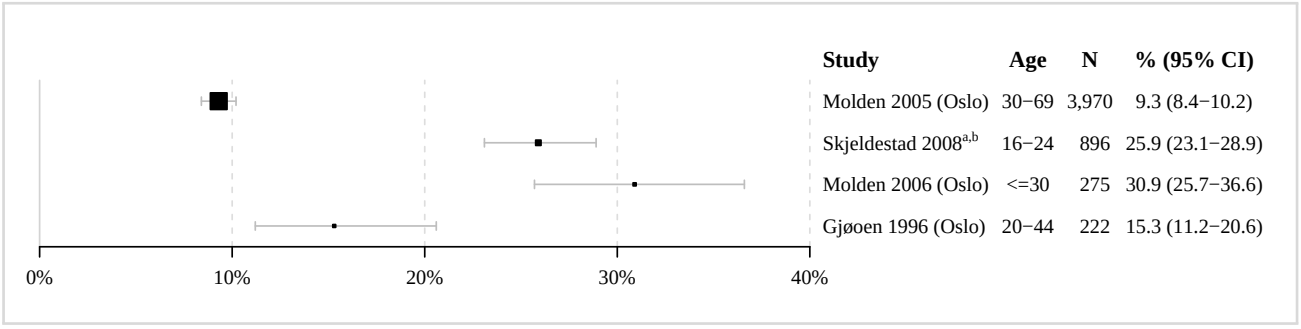


Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

Data sources:

Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453
Gjøoen K, APMIS 1996; 104: 68

Figure 30: HPV prevalence among women with normal cervical cytology in Norway, by study



Study	Age	N	% (95% CI)
Molden 2005 (Oslo)	30−69	3,970	9.3 (8.4−10.2)
Skjeldestad 2008[a,b]	16−24	896	25.9 (23.1−28.9)
Molden 2006 (Oslo)	<=30	275	30.9 (25.7−36.6)
Gjøoen 1996 (Oslo)	20−44	222	15.3 (11.2−20.6)

Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;
The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells).
[a] Oslo, Trondheim, and Levanger
[b] Women from the general population, including some with cytological cervical abnormalities

Data sources:

Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453
Gjøoen K, APMIS 1996; 104: 68 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Molden T, Gynecol Oncol 2006; 100: 95 | Skjeldestad FE, Acta Obstet Gynecol Scand 2008; 87: 81

4.1.2 HPV type distribution among women with normal cervical cytology, precancerous cervical lesions and cervical cancer

Table 14: Prevalence of HPV16 and HPV18 by cytology in Norway

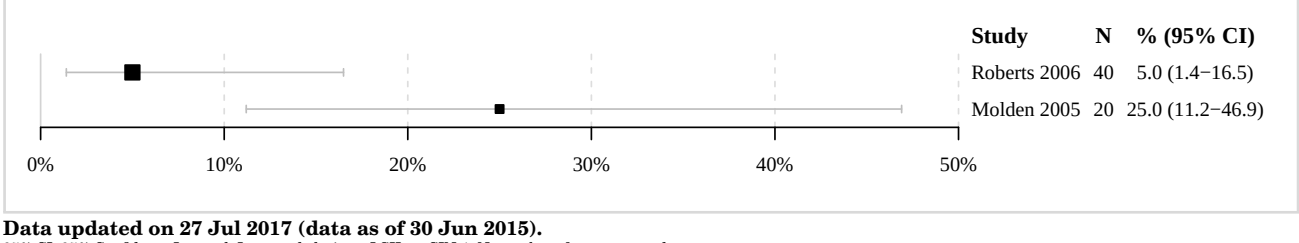
	No. tested	HPV 16/18 Prevalence % (95% CI)
Normal cytology[1,2]	4,192	2.4 (2.0-2.9)
Low-grade lesions[3,4]	60	13.3 (6.9-24.2)
High-grade lesions[5,6]	1,607	38.7 (36.4-41.1)
Cervical cancer[7,8]	450	78.2 (74.2-81.8)

Data updated on 19 May 2017 (data as of 30 Jun 2015 / 30 Jun 2015).
95% CI: 95% Confidence Interval; High-grade lesions: CIN-2, CIN-3, CIS or HSIL; Low-grade lesions: LSIL or CIN-1;
The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells)
Data sources:
[1]Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453
[2]Gjøoen K, APMIS 1996; 104: 68 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367
[3]Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157
[4]Contributing studies: Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277
[5]Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Smith JS, Int J Cancer 2007;121:621 3) Clifford GM, Br J Cancer 2003;89:101.
[6]Contributing studies: Kraus I, Br J Cancer 2004; 90: 1407 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277 | Sjoeborg KD, Gynecol Oncol 2010; 118: 29
[7]Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Li N, Int J Cancer 2011;128:927 3) Smith JS, Int J Cancer 2007;121:621 4) Clifford GM, Br J Cancer 2003;88:63 5) Clifford GM, Br J Cancer 2003;89:101.
[8]Contributing studies: Bertelsen BI, Virchows Arch 2006; 449: 141 | Karlsen F, J Clin Microbiol 1996; 34: 2095

Figure 31: HPV 16 prevalence among women with normal cervical cytology in Norway, by study

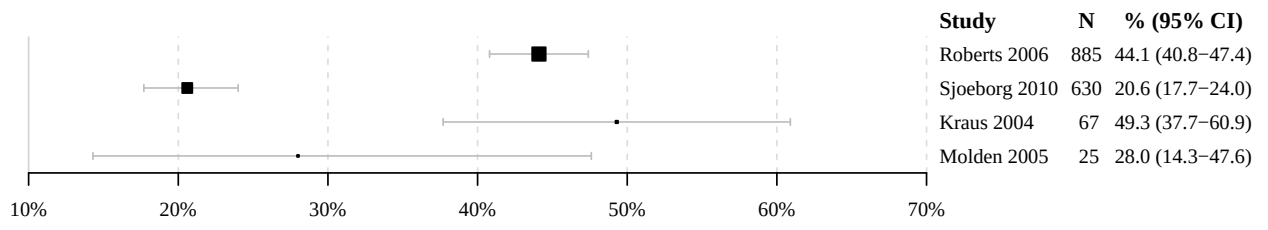
Data updated on 15 Dec 2016 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval; N: number of women tested;
The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells).
Data sources:
Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453
Gjøoen K, APMIS 1996; 104: 68 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367

Figure 32: HPV 16 prevalence among women with low-grade cervical lesions in Norway, by study



Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval; Low-grade lesions: LSIL or CIN-1; N: number of women tested;
The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells).
Data sources:
Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157
Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277

Figure 33: HPV 16 prevalence among women with high-grade cervical lesions in Norway, by study



Data updated on 27 Jul 2017 (data as of 30 Jun 2015).

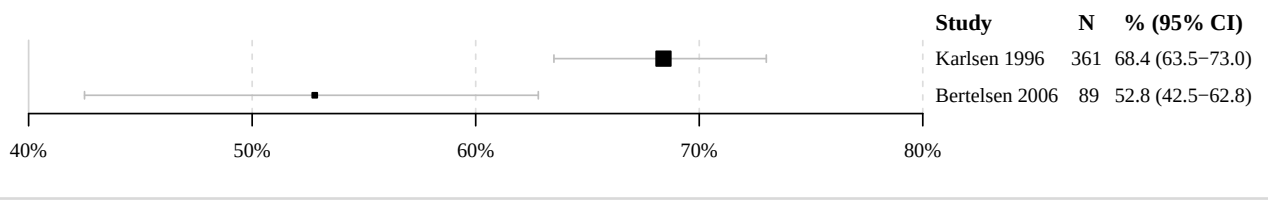
95% CI: 95% Confidence Interval; High-grade lesions: CIN-2, CIN-3, CIS or HSIL; N: number of women tested;
The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells).

Data sources:

Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Smith JS, Int J Cancer 2007;121:621 3) Clifford GM, Br J Cancer 2003;89:101.

Kraus I, Br J Cancer 2004; 90: 1407 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277 | Sjoeborg KD, Gynecol Oncol 2010; 118: 29

Figure 34: HPV 16 prevalence among women with invasive cervical cancer in Norway, by study



Data updated on 27 Jul 2017 (data as of 30 Jun 2015).

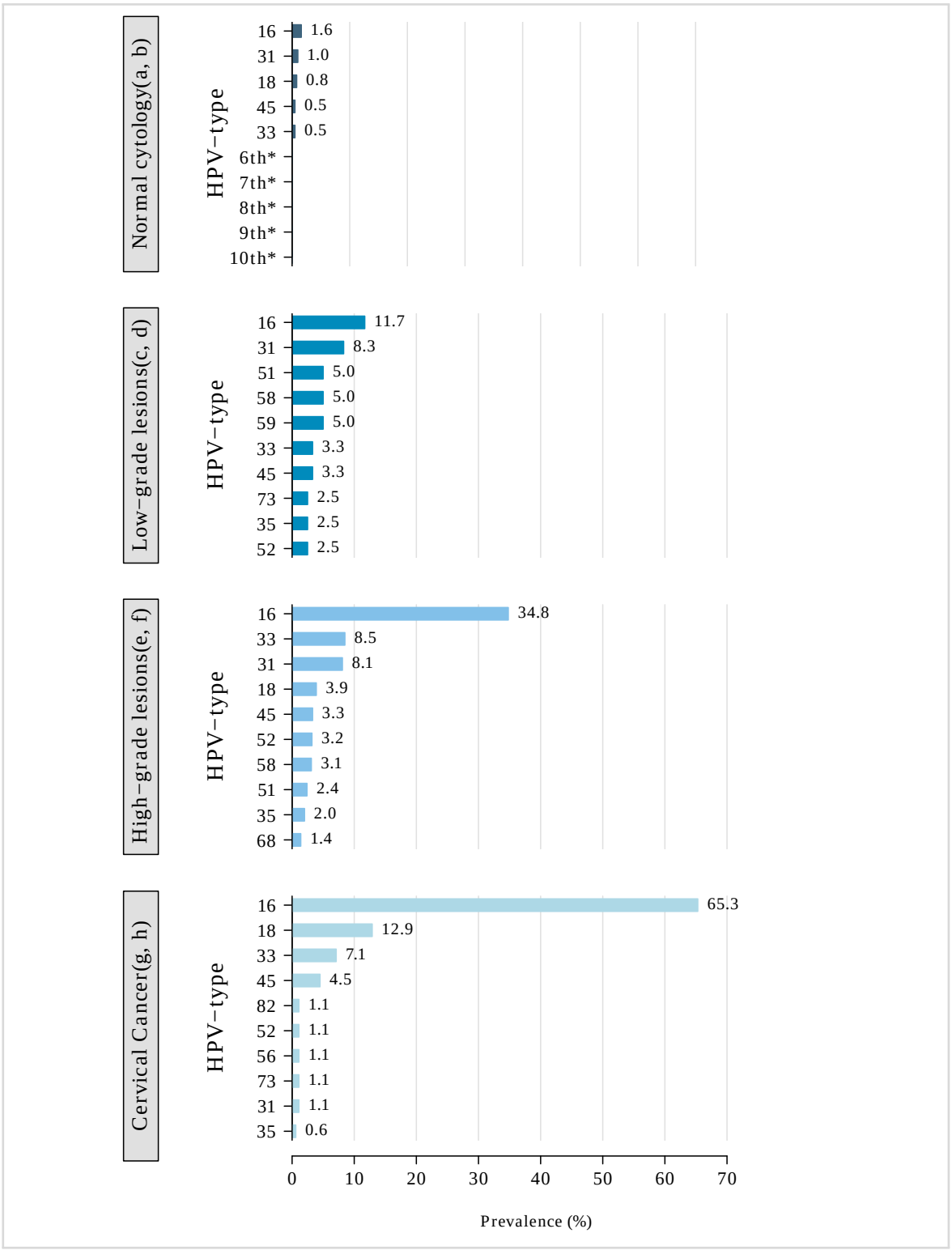
95% CI: 95% Confidence Interval; N: number of women tested;
The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells).

Data sources:

Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Li N, Int J Cancer 2011;128:927 3) Smith JS, Int J Cancer 2007;121:621 4) Clifford GM, Br J Cancer 2003;88:63 5) Clifford GM, Br J Cancer 2003;89:101.

Bertelsen BI, Virchows Arch 2006; 449: 141 | Karlsen F, J Clin Microbiol 1996; 34: 2095

Figure 35: Comparison of the ten most frequent HPV oncogenic types in Norway among women with and without cervical lesions



*No data available. No more types than shown were tested or were positive.

Data updated on 19 May 2017 (data as of 30 Jun 2015 / 30 Jun 2015).

High-grade lesions: CIN-2, CIN-3, CIS or HSIL; Low-grade lesions: LSIL or CIN-1;

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources:

[a] Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453

[b] Gjøoen K, APMIS 1996; 104: 68 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367

[c] Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157

[d] Contributing studies: Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277

[e] Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Smith JS, Int J Cancer 2007;121:621 3) Clifford GM, Br J Cancer 2003;89:101.

(Continued on next page)

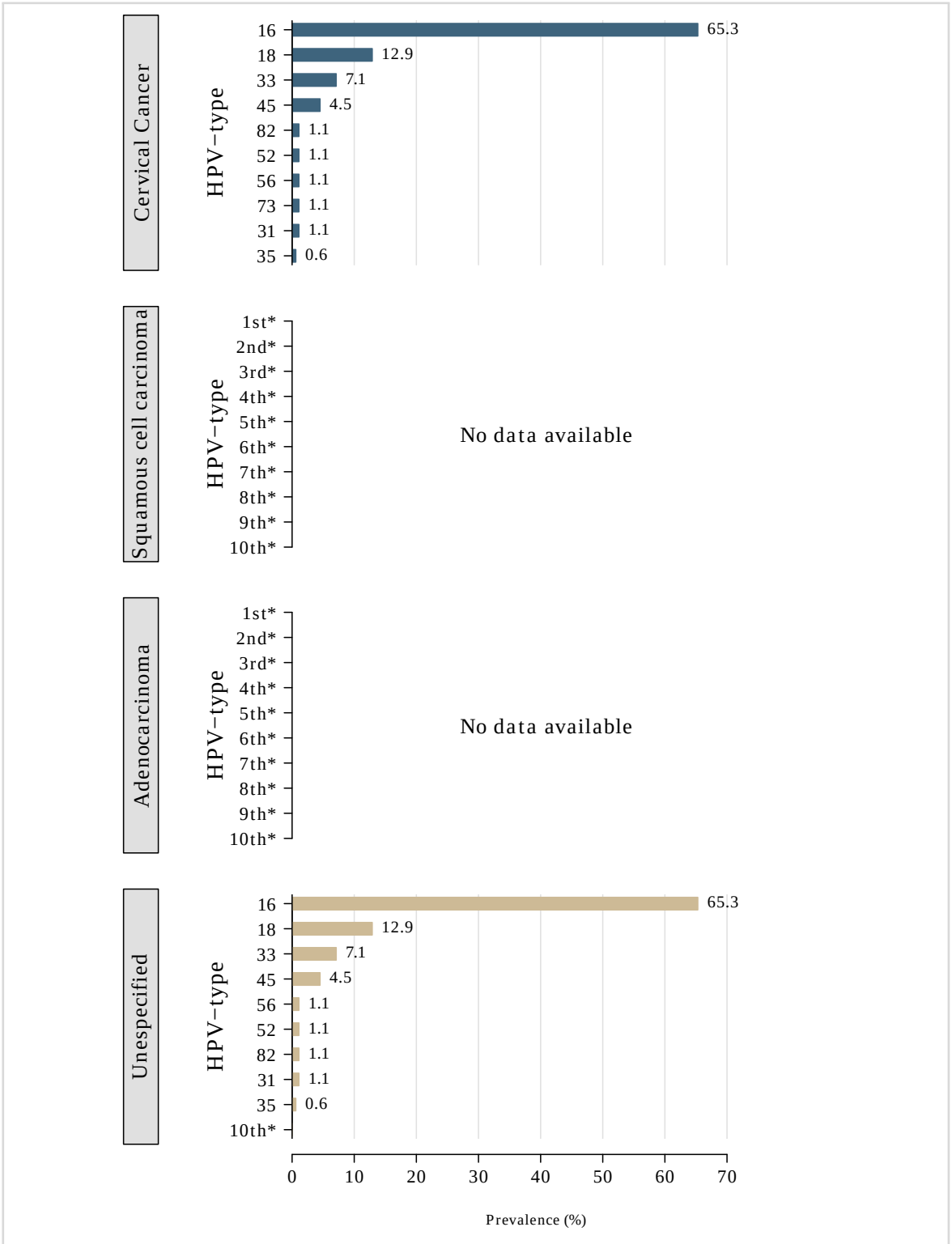
(Figure 35 – continued from previous page)

[f] Contributing studies: Kraus I, Br J Cancer 2004; 90: 1407 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277 | Sjoeborg KD, Gynecol Oncol 2010; 118: 29

[g] Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Li N, Int J Cancer 2011;128:927 3) Smith JS, Int J Cancer 2007;121:621 4) Clifford GM, Br J Cancer 2003;88:63 5) Clifford GM, Br J Cancer 2003;89:101.

[h] Contributing studies: Bertelsen BI, Virchows Arch 2006; 449: 141 | Karlsen F, J Clin Microbiol 1996; 34: 2095

Figure 36: Comparison of the ten most frequent HPV oncogenic types in Norway among women with invasive cervical cancer by histology



*No data available. No more types than shown were tested or were positive.

Data updated on 19 May 2017 (data as of 30 Jun 2015).

(Continued on next page)

(Figure 36 – continued from previous page)

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells). The ranking of the ten most frequent HPV types may present less than ten types beause only a limited number of types were tested or were HPV-positive.

Data sources:

Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Li N, Int J Cancer 2011;128:927 3) Smith JS, Int J Cancer 2007;121:621 4) Clifford GM, Br J Cancer 2003;88:63 5) Clifford GM, Br J Cancer 2003;89:101.

Contributing studies: Bertelsen BI, Virchows Arch 2006; 449: 141 | Karlsen F, J Clin Microbiol 1996; 34: 2095

Table 15: Type-specific HPV prevalence in women with normal cervical cytology, precancerous cervical lesions and invasive cervical cancer in Norway

HPV Type	Normal cytology[1,2] No. tested	HPV Prev % (95% CI)	Low-grade lesions[3,4] No. tested	HPV Prev % (95% CI)	High-grade lesions[5,6] No. tested	HPV Prev % (95% CI)	Cervical cancer[7,8] No. tested	HPV Prev % (95% CI)
ONCOGENIC HPV TYPES								
High-risk HPV types								
16	4,192	1.6 (1.3-2.0)	60	11.7 (5.8-22.2)	1,607	34.8 (32.6-37.2)	450	65.3 (60.8-69.6)
18	4,192	0.8 (0.6-1.1)	60	1.7 (0.3-8.9)	1,607	3.9 (3.1-5.0)	450	12.9 (10.1-16.3)
31	4,192	1.0 (0.8-1.4)	60	8.3 (3.6-18.1)	977	8.1 (6.5-10.0)	450	1.1 (0.5-2.6)
33	4,192	0.5 (0.4-0.8)	60	3.3 (0.9-11.4)	1,607	8.5 (7.2-9.9)	450	7.1 (5.1-9.9)
35	-	-	40	2.5 (0.4-12.9)	1,515	2.0 (1.4-2.9)	361	0.6 (0.2-2.0)
39	-	-	40	0.0 (0.0-8.8)	1,515	1.4 (0.9-2.1)	-	-
45	3,970	0.5 (0.3-0.7)	60	3.3 (0.9-11.4)	1,607	3.3 (2.5-4.3)	89	4.5 (1.8-11.0)
51	-	-	40	5.0 (1.4-16.5)	1,515	2.4 (1.8-3.3)	-	-
52	-	-	40	2.5 (0.4-12.9)	1,582	3.2 (2.4-4.1)	89	1.1 (0.2-6.1)
56	-	-	40	0.0 (0.0-8.8)	1,515	0.9 (0.6-1.5)	89	1.1 (0.2-6.1)
58	-	-	40	5.0 (1.4-16.5)	1,582	3.1 (2.4-4.1)	-	-
59	-	-	40	5.0 (1.4-16.5)	1,515	0.9 (0.6-1.5)	-	-
Probable/possible carcinogen								
26	-	-	40	0.0 (0.0-8.8)	885	0.5 (0.2-1.2)	-	-
30	-	-	-	-	-	-	-	-
34	-	-	-	-	-	-	-	-
53	-	-	40	2.5 (0.4-12.9)	885	0.3 (0.1-1.0)	-	-
66	-	-	40	2.5 (0.4-12.9)	885	0.9 (0.5-1.8)	-	-
67	-	-	-	-	-	-	-	-
68	-	-	40	0.0 (0.0-8.8)	885	1.4 (0.8-2.4)	-	-
69	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-
73	-	-	40	2.5 (0.4-12.9)	885	0.9 (0.5-1.8)	89	1.1 (0.2-6.1)
82	-	-	40	0.0 (0.0-8.8)	885	1.1 (0.6-2.1)	89	1.1 (0.2-6.1)
85	-	-	-	-	-	-	-	-
97	-	-	-	-	-	-	-	-
NON-ONCOGENIC HPV TYPES								
6	222	1.4 (0.5-3.9)	40	2.5 (0.4-12.9)	885	0.1 (0.0-0.6)	-	-
11	222	0.9 (0.2-3.2)	40	0.0 (0.0-8.8)	885	0.1 (0.0-0.6)	361	1.7 (0.8-3.6)
32	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-
86	-	-	-	-	-	-	-	-
87	-	-	-	-	-	-	-	-
89	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-
91	-	-	-	-	-	-	-	-

Data updated on 19 May 2017 (data as of 30 Jun 2015 / 30 Jun 2015).

95% CI: 95% Confidence Interval; High-grade lesions: CIN-2, CIN-3, CIS or HSIL; Low-grade lesions: LSIL or CIN-1;
The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources:

[1]Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453

[2]Gjøoen K, APMIS 1996; 104: 68 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367

[3]Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157

[4]Contributing studies: Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277

[5]Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Smith JS, Int J Cancer 2007;121:621 3) Clifford GM, Br J Cancer 2003;89:101.

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(Table 15 – continued from previous page)

[6]Contributing studies: Kraus I, Br J Cancer 2004; 90: 1407 | Molden T, Cancer Epidemiol Biomarkers Prev 2005; 14: 367 | Roberts CC, J Clin Virol 2006; 36: 277 | Sjoeborg KD, Gynecol Oncol 2010; 118: 29

[7]Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Li N, Int J Cancer 2011;128:927 3) Smith JS, Int J Cancer 2007;121:621 4) Clifford GM, Br J Cancer 2003;88:63 5) Clifford GM, Br J Cancer 2003;89:101.

[8]Contributing studies: Bertelsen BI, Virchows Arch 2006; 449: 141 | Karlsen F, J Clin Microbiol 1996; 34: 2095

Table 16: Type-specific HPV prevalence among invasive cervical cancer cases in Norway by histology

HPV Type	Any Histology		Squamous cell carcinoma		Adenocarcinoma		Unespecified	
	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)
ONCOGENIC HPV TYPES								
High-risk HPV types								
16	450	65.3 (60.8-69.6)	-	-	-	-	450	65.3 (60.8-69.6)
18	450	12.9 (10.1-16.3)	-	-	-	-	450	12.9 (10.1-16.3)
31	450	1.1 (0.5-2.6)	-	-	-	-	450	1.1 (0.5-2.6)
33	450	7.1 (5.1-9.9)	-	-	-	-	450	7.1 (5.1-9.9)
35	361	0.6 (0.2-2.0)	-	-	-	-	361	0.6 (0.2-2.0)
39	-	-	-	-	-	-	-	-
45	89	4.5 (1.8-11.0)	-	-	-	-	89	4.5 (1.8-11.0)
51	-	-	-	-	-	-	-	-
52	89	1.1 (0.2-6.1)	-	-	-	-	89	1.1 (0.2-6.1)
56	89	1.1 (0.2-6.1)	-	-	-	-	89	1.1 (0.2-6.1)
58	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-
Probable/possible carcinogen								
26	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-
34	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-
73	89	1.1 (0.2-6.1)	-	-	-	-	-	-
82	89	1.1 (0.2-6.1)	-	-	-	-	89	1.1 (0.2-6.1)
85	-	-	-	-	-	-	-	-
97	-	-	-	-	-	-	-	-
NON-ONCOGENIC HPV TYPES								
6	-	-	-	-	-	-	-	-
11	361	1.7 (0.8-3.6)	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-
86	-	-	-	-	-	-	-	-
87	-	-	-	-	-	-	-	-
89	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-
91	-	-	-	-	-	-	-	-
No Data Available	-	- -	-	- -	-	- -	-	- -

Data updated on 19 May 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval;

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources:

Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Li N, Int J Cancer 2011;128:927 3) Smith JS, Int J Cancer 2007;121:621 4) Clifford GM, Br J Cancer 2003;88:63 5) Clifford GM, Br J Cancer 2003;89:101.

Contributing studies: Bertelsen BI, Virchows Arch 2006; 449: 141 | Karlsen F, J Clin Microbiol 1996; 34: 2095

4.1.3 HPV type distribution among HIV+ women with normal cervical cytology

Table 17: Studies on HPV prevalence among HIV women with normal cytology in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

Data updated on 31 Jul 2013 (data as of 31 Dec 2011). Only for European countries.
95% CI: 95% Confidence Interval;
Data sources:
Systematic review and meta-analysis were performed by the ICO HPV Information Centre up to December 2011. Selected studies had to include at least 20 HIV positive women who had both normal cervical cytology and HPV test results (PCR or HC2).

4.1.4 Terminology

Cytologically normal women

No abnormal cells are observed on the surface of their cervix upon cytology.

Cervical Intraepithelial Neoplasia (CIN) / Squamous Intraepithelial Lesions (SIL)

SIL and CIN are two commonly used terms to describe precancerous lesions or the abnormal growth of squamous cells observed in the cervix. SIL is an abnormal result derived from cervical cytological screening or Pap smear testing. CIN is a histological diagnosis made upon analysis of cervical tissue obtained by biopsy or surgical excision. The condition is graded as CIN 1, 2 or 3, according to the thickness of the abnormal epithelium (1/3, 2/3 or the entire thickness).

Low-grade cervical lesions (LSIL/CIN-1)

Low-grade cervical lesions are defined by early changes in size, shape, and number of abnormal cells formed on the surface of the cervix and may be referred to as mild dysplasia, LSIL, or CIN-1.

High-grade cervical lesions (HSIL/ CIN-2 / CIN-3 / CIS)

High-grade cervical lesions are defined by a large number of precancerous cells on the surface of the cervix that are distinctly different from normal cells. They have the potential to become cancerous cells and invade deeper tissues of the cervix. These lesions may be referred to as moderate or severe dysplasia, HSIL, CIN-2, CIN-3 or cervical carcinoma in situ (CIS).

Carcinoma in situ (CIS)

Preinvasive malignancy limited to the epithelium without invasion of the basement membrane. CIN 3 encompasses the squamous carcinoma in situ.

Invasive cervical cancer (ICC) / Cervical cancer

If the high-grade precancerous cells invade the basement membrane is called ICC. ICC stages range from stage I (cancer is in the cervix or uterus only) to stage IV (the cancer has spread to distant organs, such as the liver).

Invasive squamous cell carcinoma

Invasive carcinoma composed of cells resembling those of squamous epithelium.

Adenocarcinoma

Invasive tumour with glandular and squamous elements intermingled.

4.2 HPV burden in anogenital cancers other than cervix

Methods: Prevalence and type distribution of human papillomavirus in carcinoma of the vulva, vagina, anus and penis: systematic review and meta-analysis

A systematic review of the literature was conducted on the worldwide HPV-prevalence and type distribution for anogenital carcinomas other than cervix from January 1986 to 'data as of' indicated in each section. The search terms for the review were 'HPV' AND (anus OR anal) OR (penile) OR vagin* OR vulv* using Pubmed. There were no limits in publication language. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR, a minimum of 10 cases by lesion and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive cases were extracted for each study to estimate the prevalence of HPV DNA and the HPV type distribution. Binomial 95% confidence intervals were calculated for each HPV prevalence.

4.2.1 Anal cancer and precancerous anal lesions

Anal cancer is similar to cervical cancer with respect to overall HPV DNA positivity, with approximately 88% of cases associated with HPV infection worldwide *(de Martel C et al. Lancet Oncol 2012;13(6):607-15)*. HPV16 is the most common type detected, representing 73% of all HPV-positive tumours. HPV18 is the second most common type detected and is found in approximately 5% of cases. HPV DNA is also detected in the majority of precancerous anal lesions (AIN) (91.5% in AIN1 and 93.9% in AIN2/3) *(De Vuyst H et al. Int J Cancer 2009; 124: 1626-36)*. In this section, the burden of HPV among cases of anal cancers and precancerous anal lesions in Norway are presented.

Table 18: Studies on HPV prevalence among anal cancer cases in Norway (male and female)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

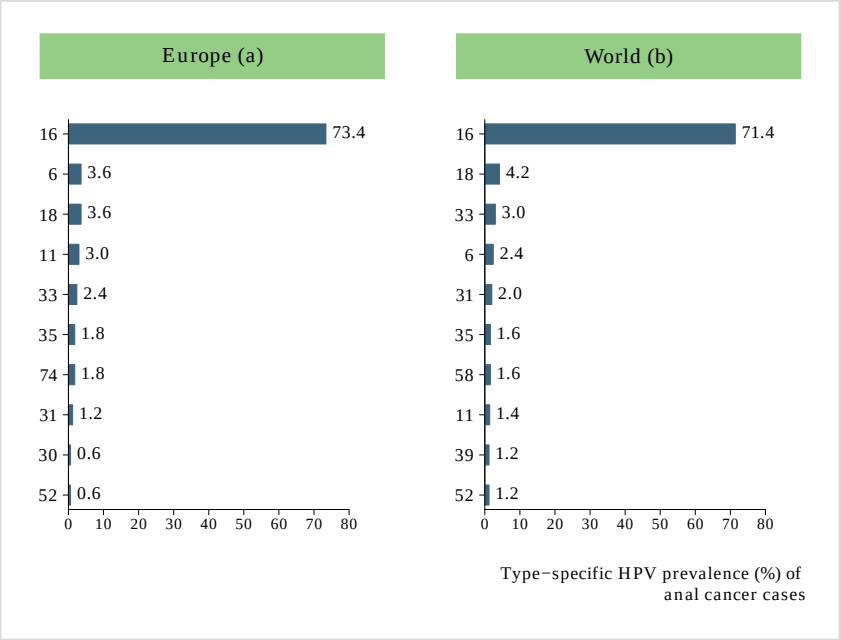
Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval;
Data sources:
Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626

Table 19: Studies on HPV prevalence among cases of AIN2/3 in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval; AIN 2/3: Anal intraepithelial neoplasia of grade 2/3;
Data sources:
Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626

Figure 37: Comparison of the ten most frequent HPV types in anal cancer cases in Europe and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

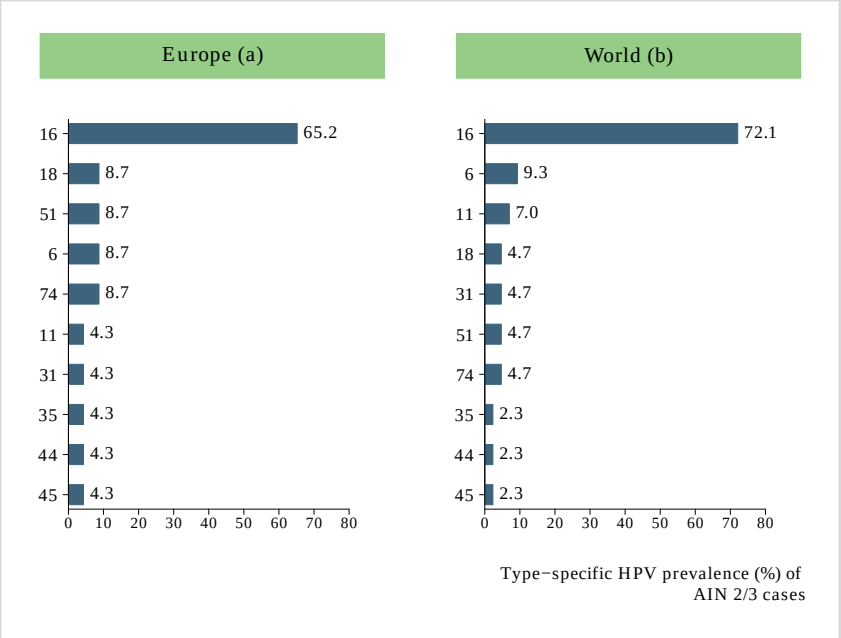
[a] Includes cases from Bosnia-Herzegovina, Czech Republic, France, Germany, Poland, Portugal, Slovenia, Spain and United Kingdom.

[b] Includes cases from Europe (Bosnia-Herzegovina, Czech Republic, France, Germany, Poland, Portugal, Slovenia, Spain and United Kingdom); America (Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay and United States); Africa (Mali, Nigeria and Senegal); Asia (Bangladesh,India and South Korea)

Data sources:

Data from Alemany L, Int J Cancer 2015; 136: 98. This study has gathered the largest international series of anal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

Figure 38: Comparison of the ten most frequent HPV types in AIN 2/3 cases in Europe and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

AIN 2/3: Anal intraepithelial neoplasia of grade 2/3;

[a] Includes cases from Bosnia-Herzegovina, Czech Republic, France, Germany, Poland, Portugal, Slovenia, Spain and United Kingdom

[b] Includes cases from Europe (Bosnia-Herzegovina, Czech Republic, France, Germany, Poland, Portugal, Slovenia, Spain and United Kingdom); America (Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay)

Data sources:

Data from Alemany L, Int J Cancer 2015; 136: 98. This study has gathered the largest international series of anal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

4.2.2 Vulvar cancer and precancerous vulvar lesions

HPV attribution for vulvar cancer is 43% worldwide *(de Martel C et al. Lancet Oncol 2012;13(6):607-15)*. Vulvar cancer has two distinct histological patterns with two different risk factor profiles: (1) basaloid/warty types (2) keratinising types. Basaloid/warty lesions are more common in young women, are frequently found adjacent to VIN, are very often associated with HPV DNA detection (86%), and have a similar risk factor profile as cervical cancer. Keratinising vulvar carcinomas represent the majority of the vulvar lesions (>60%). These lesions develop from non HPV-related chronic vulvar dermatoses, especially lichen sclerosus and/or squamous hyperplasia, their immediate cancer precursor lesion is differentiated VIN, they occur more often in older women, and are rarely associated with HPV (6%) or with any of the other risk factors typical of cervical cancer. HPV prevalence is frequently detected among cases of high-grade VIN (VIN2/3) (85.3%). HPV 16 is the most common type detected followed by HPV 33 *(De Vuyst H et al. Int J Cancer 2009; 124: 1626-36)*.In this section, the HPV burden among cases of vulvar cancer cases and precancerous vulvar lesions in Norway are presented.

Table 20: Studies on HPV prevalence among vulvar cancer cases in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

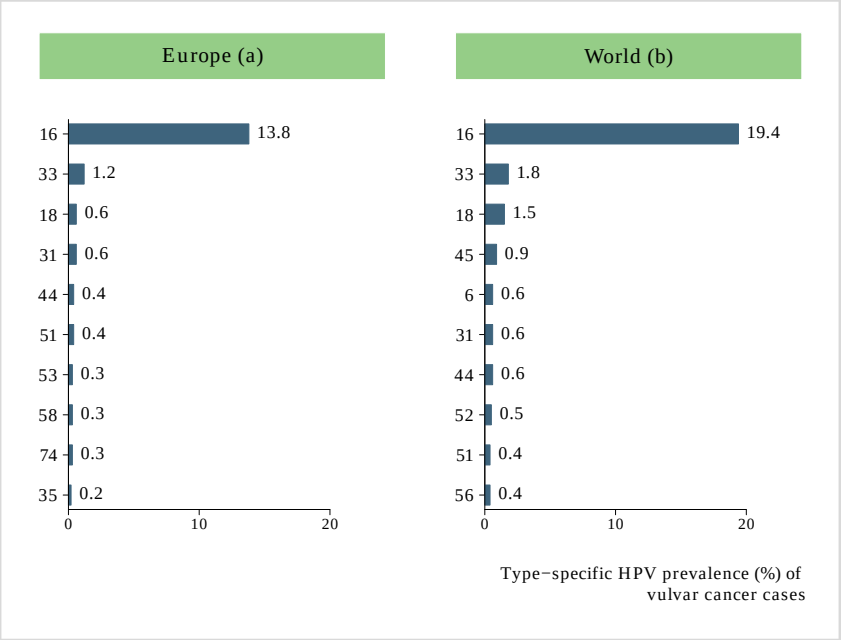
Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval;
Data sources:
Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626

Table 21: Studies on HPV prevalence among VIN 2/3 cases in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval; VIN 2/3: Vulvar intraepithelial neoplasia of grade 2/3;
Data sources:
Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626

Figure 39: Comparison of the ten most frequent HPV types in cases of vulvar cancer in Europe and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

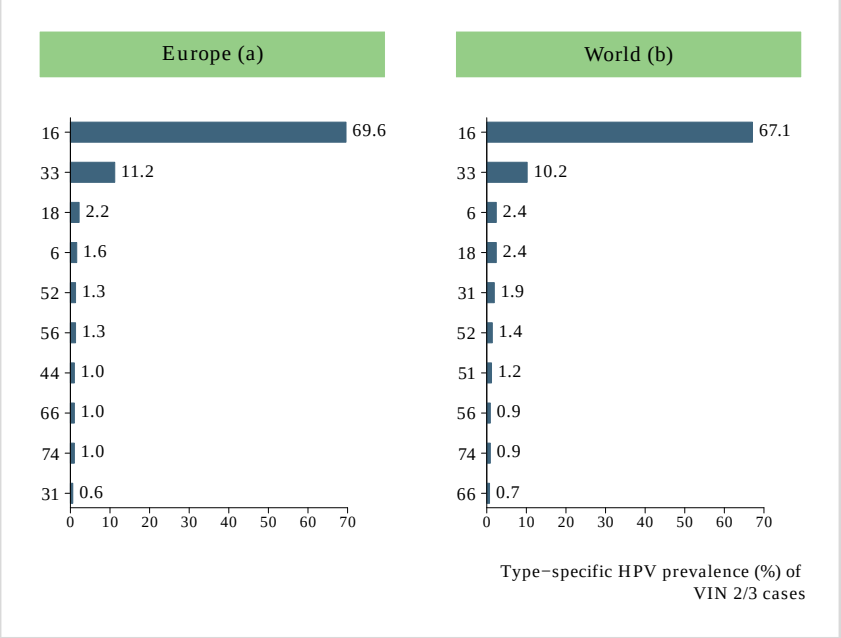
[a] Includes cases from Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom.

[b] Includes cases from America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay, United States of America and Venezuela); Africa (Mali, Mozambique, Nigeria, and Senegal); Oceania (Australia and New Zealand); Europe (Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom); and in Asia (Bangladesh, India, Israel, South Korea, Kuwait, Lebanon, Philippines, Taiwan and Turkey)

Data sources:

Data from de Sanjosé S, Eur J Cancer 2013; 49: 3450. This study has gathered the largest international series of vulva cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

Figure 40: Comparison of the ten most frequent HPV types in VIN 2/3 cases in Europe and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

[a] Includes cases from Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom.

[b] Includes cases from America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay and Venezuela); Oceania (Australia and New Zealand); Europe (Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom); and in Asia (Bangladesh, India, Israel, South Korea, Kuwait, Lebanon, Philippines, Taiwan and Turkey)

Data sources:

Data from de Sanjosé S, Eur J Cancer 2013; 49: 3450. This study has gathered the largest international series of vulva cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

4.2.3 Vaginal cancer and precancerous vaginal lesions

Vaginal and cervical cancers share similar risk factors and it is generally accepted that both carcinomas share the same aetiology of HPV infection although there is limited evidence available. Women with vaginal cancer are more likely to have a history of other ano-genital cancers, particularly of the cervix, and these two carcinomas are frequently diagnosed simultaneously. HPV DNA is detected among 70% of invasive vaginal carcinomas and 91% of high-grade vaginal neoplasias (VaIN2/3). HPV16 is the most common type in high-grade vaginal neoplasias and it is detected in at least 70% of HPV-positive carcinomas *(de Martel C et al. Lancet Oncol 2012;13(6):607-15; De Vuyst H et al. Int J Cancer 2009; 124:1626-36)*. In this section, the HPV burden among cases of vaginal cancer cases and precancerous vaginal lesions in Norway are presented.

Table 22: Studies on HPV prevalence among vaginal cancer cases in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

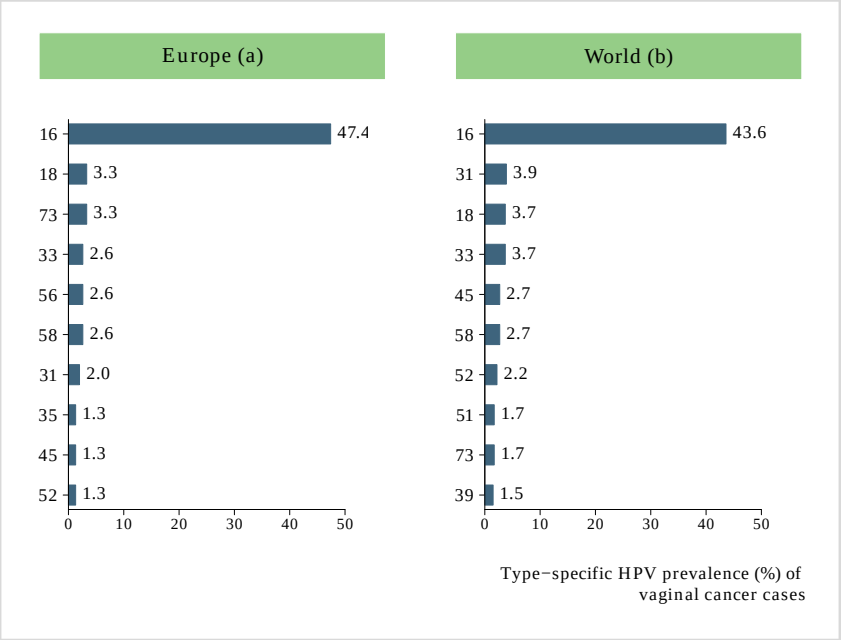
Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval;
Data sources:
Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626

Table 23: Studies on HPV prevalence among VaIN 2/3 cases in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval; VAIN 2/3: Vaginal intraepithelial neoplasia of grade 2/3;
Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626
Data sources:
Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626

Figure 41: Comparison of the ten most frequent HPV types in cases of vaginal cancer in Europe and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

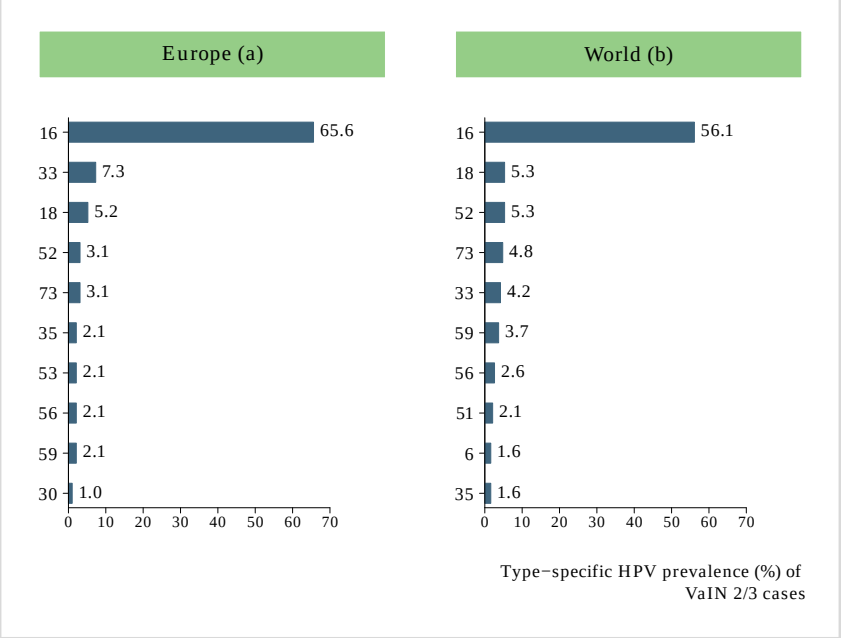
[a] Includes cases from Austria, Belarus, Czech Republic, France, Germany, Greece, Poland, Spain and United Kingdom.

[b] Includes cases from Europe (Austria, Belarus, Czech Republic, France, Germany, Greece, Poland, Spain and United Kingdom); America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United states of America and Venezuela); Africa (Mozambique, Nigeria); Asia (Bangladesh, India, Israel, South Korea, Kuwait, Philippines, Taiwan and Turkey); and Oceania (Australia)

Data sources:

Data from Alemany L, Eur J Cancer 2014; 50: 2846. This study has gathered the largest international series of vaginal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

Figure 42: Comparison of the ten most frequent HPV types in VaIN 2/3 cases in Europe and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

VAIN 2/3: Vaginal intraepithelial neoplasia of grade 2/3;

[a] Includes cases from Austria, Belarus, Czech Republic, France, Germany, Greece, Poland, Spain and United Kingdom.

[b] Includes cases from Europe (Austria, Belarus, Czech Republic, France, Germany, Greece, Poland, Spain and United Kingdom); America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United states of America and Venezuela); Asia (Bangladesh, India, Israel, South Korea, Kuwait, Philippines, Taiwan and Turkey); and Oceania (Australia)

Data sources:

Data from Alemany L, Eur J Cancer 2014; 50: 2846. This study has gathered the largest international series of vaginal cancer cases and precancerous lesions worldwide using a standard protocol with a highly sensitive HPV DNA detection assay.

4.2.4 Penile cancer and precancerous penile lesions

HPV DNA is detectable in approximately 50% of all penile cancers *(de Martel C et al. Lancet Oncol 2012;13(6):607-15)*. Among HPV-related penile tumours, HPV16 is the most common type detected, followed by HPV18 and HPV types 6/11 *(Miralles C et al. J Clin Pathol 2009;62:870-8)*. Over 95% of invasive penile cancers are SCC and the most common penile SCC histologic sub-types are keratinising (49%), mixed warty-basaloid (17%), verrucous (8%), warty (6%), and basaloid (4%). HPV is commonly detected in basaloid and warty tumours but is less common in keratinising and verrucous tumours. In this section, the HPV burden among cases of penile cancer cases and precancerous penile lesions in Norway are presented.

Table 24: Studies on HPV prevalence among penile cancer cases in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

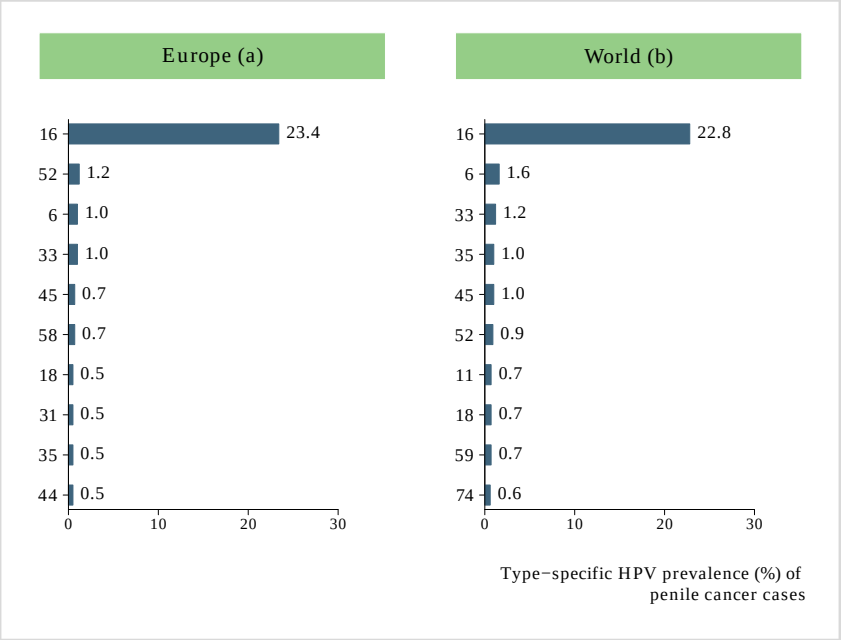
Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval;
Data sources:
The ICO HPV Information Centre has updated data until June 2015. Reference publications (up to 2008): 1) Bouvard V, Lancet Oncol 2009;10:321 2) Miralles-Guri C,J Clin Pathol 2009;62:870

Table 25: Studies on HPV prevalence among PeIN 2/3 cases in Norway

Study	HPV detection method and targeted Method	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
No Data Available	-	-	-	-	-

Data updated on 27 Jul 2017 (data as of 30 Jun 2015).
95% CI: 95% Confidence Interval; PeIN 2/3: Penile intraepithelial neoplasia of grade 2/3;
Data sources:
The ICO HPV Information Centre has updated data until June 2014. Reference publication (up to 2008): Bouvard V, Lancet Oncol 2009;10:321

Figure 43: Comparison of the ten most frequent HPV types in cases of penile cancer in Europe and the World



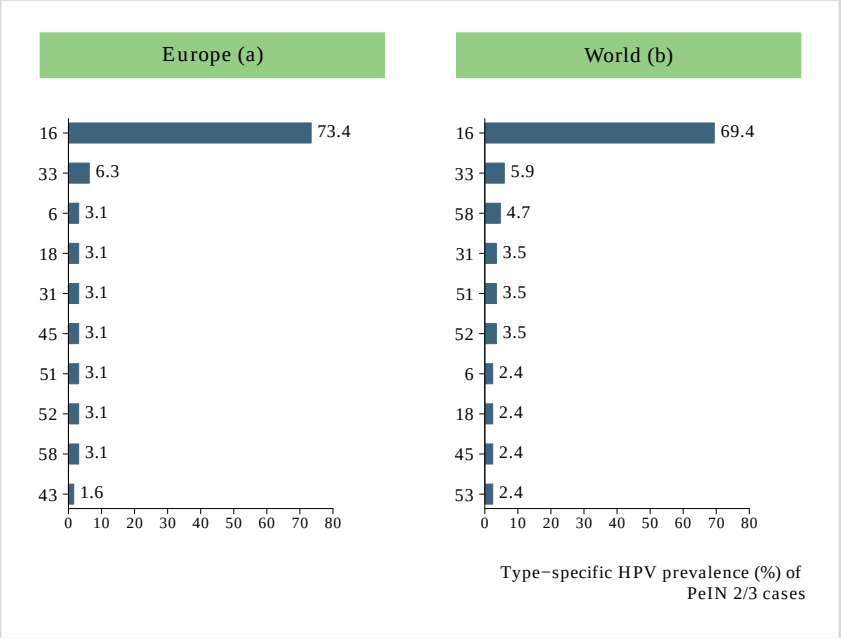
Data updated on 09 Feb 2017 (data as of 30 Jun 2015).

[a] Includes cases from Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom

[b] Includes cases from Australia, Bangladesh, India, South Korea, Lebanon, Philippines, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela and United States, Mozambique, Nigeria, Senegal, Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom.

Data sources:
Alemany L, Eur Urol 2016; 69: 953

Figure 44: Comparison of the ten most frequent HPV types in PeIN 2/3 cases in Europe and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2015).

[a] Includes cases from Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom

[b] Includes cases from Australia, Bangladesh, India, South Korea, Lebanon, Philippines, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela, Mozambique, Nigeria, Senegal, Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom.

Data sources:
Alemany L, Eur Urol 2016; 69: 953

4.3 HPV burden in men

The information to date regarding anogenital HPV infection is primarily derived from cross-sectional studies of selected populations such as general population, university students, military recruits, and studies that examined husbands of control women, as well as from prospective studies. Special subgroups include mainly studies that examined STD (sexually transmitted diseases) clinic attendees, MSM (men who have sex with men), HIV positive men, and partners of women with HPV lesions, CIN (cervical intraepithelial neoplasia), cervical cancer or cervical carcinoma in situ. Globally, prevalence of external genital HPV infection in men is higher than cervical HPV infection in women, but persistence is less likely. As with genital HPV prevalence, high numbers of sexual partners increase the acquisition of oncogenic HPV infections (Vaccine 2012, Vol. 30, Suppl 5). In this section, the HPV burden among men in Norway is presented.

Methods

HPV burden in men was based on published systematic reviews and meta-analyses (Dunne EF, J Infect Dis 2006; 194: 1044, Smith JS, J Adolesc Health 2011; 48: 540, Olesen TB, Sex Transm Infect 2014; 90: 455, and Hebnes JB, J Sex Med 2014; 11: 2630) up to October 31, 2015. The search terms for the review were human papillomavirus, men, polymerase chain reaction (PCR), hybrid capture (HC), and viral DNA. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR or HC (ISH if data are not available for the country), and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive cases were extracted for each study to estimate the anogenital prevalence of HPV DNA. Binomial 95% confidence intervals were calculated for each anogenital HPV prevalence.

Table 26: Studies on HPV prevalence among men in Norway

Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
					No	%	(95% CI)
No Data Available	-	-	-	-	-	- -	

Data updated on 27 Jul 2017 (data as of 31 Oct 2015).
95% CI: 95% Confidence Interval;
Data sources:
Based on published systematic reviews, the ICO HPV Information Centre has updated data until October 2015. Reference publications: 1) Dunne EF, J Infect Dis 2006; 194: 1044 2) Smith JS, J Adolesc Health 2011; 48: 540 3) Olesen TB, Sex Transm Infect 2014; 90: 455 4) Hebnes JB, J Sex Med 2014; 11: 2630.

Table 27: Studies on HPV prevalence among men from special subgroups in Norway

Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
					No	%	(95% CI)
No Data Available	-	-	-	-	-	- -	

Data updated on 27 Jul 2017 (data as of 31 Oct 2015).
95% CI: 95% Confidence Interval;
Data sources:
Based on published systematic reviews, the ICO HPV Information Centre has updated data until October 2015. Reference publications: 1) Dunne EF, J Infect Dis 2006; 194: 1044 2) Smith JS, J Adolesc Health 2011; 48: 540 3) Olesen TB, Sex Transm Infect 2014; 90: 455 4) Hebnes JB, J Sex Med 2014; 11: 2630.

4.4 HPV burden in the head and neck

The last evaluation of the International Agency for Research in Cancer (IARC) on the carcinogenicity of HPV in humans concluded that (a) there is enough evidence for the carcinogenicity of HPV type 16 in the oral cavity, oropharynx (including tonsil cancer, base of tongue cancer and other oropharyngeal cancer sites), and (b) limited evidence for laryngeal cancer *(IARC Monograph Vol 100B)*. There is increasing evidence that HPV-related oropharyngeal cancers constitute an epidemiological, molecular and clinical distinct form as compared to non HPV-related ones. Some studies indicate that the most likely explanation for the origin of this distinct form of head and neck cancers associated with HPV is a sexually acquired oral HPV infection that is not cleared, persists and evolves into a neoplastic lesion. The most recent figures estimate that 25.6% of all oropharyngeal cancers are attributable to HPV infection with HPV16 being the most frequent type *(de Martel C. Lancet Oncol. 2012;13(6):607). In this section, the HPV burden in the head and neck in Norway is presented..*

4.4.1 Burden of oral HPV infection in healthy population

Table 28: Studies on oral HPV prevalence among healthy in Norway

Study	Method specimen collection and anatomic site	HPV detection method and targeted HPV types	Population	Age (years)	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prev. of 5 most frequent HPVs HPV type (%)
MEN								
No Data Available	-	-	-	-	-	-	-	-
WOMEN								
No Data Available	-	-	-	-	-	-	-	-
BOTH OR UNSPECIFIED								
No Data Available	-	-	-	-	-	-	-	-

Data as of 29 feb. 2012. Only for European countries.
95% CI: 95% Confidence Interval;
Data sources:
Systematic review and meta-analysis was performed by ICO HPV Information Centre until July 2012. Pubmed was searched using the keywords oral and papillomavirus. Inclusion criteria: studies reporting oral HPV prevalence in healthy population in Europe; n > 50. Exclusion criteria: focused only in children or immunosuppressed population; not written in English; case-control studies; commentaries and systematic reviews and studies that did not use HPV DNA detection methods.

4.4.2 HPV burden in head and neck cancers

Table 29: Studies on HPV prevalence among cases of oral cavity cancer in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	HPV prevalence (95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
MEN					
No Data Available	-	-	-	-	-
WOMEN					
No Data Available	-	-	-	-	-
BOTH OR UNSPECIFIED					
Matzow 1998	GP5+/GP6+ (L1). CPI/CPIIG (E1) and TS-PCR for 6/16/18/31/33 Amplification with TS primers (6. 16. 18. 31. 33)	30	0.0	-	-
Mork 2001	GP5+/GP6+ (L1) and CPI/CPII (L1) Amplification with TS primers (6. 11. 16. 18. 33)	91	7.7	(3.8-15.0)	HPV 16 (4.4%) HPV 6 (1.1%) HPV 11 (1.1%) HPV 33 (1.1%)

Data as of 31 dic. 2015. Only for European countries.
95% CI: 95% Confidence Interval;
PCR: Polymerase Chain Reaction; TS: Type Specific;

(Continued on next page)

(Table 29 – continued from previous page)

[a] Includes cases from Norway, Sweden and Finland

Data sources:

Based on systematic reviews and meta-analysis performed by ICO. Reference publications: 1) Ndiaye C, Lancet Oncol 2014; 15: 1319 2) Kreimer AR, Cancer Epidemiol Biomarkers Prev 2005; 14: 467

Matzow T, Acta Oncol 1998; 37: 73 | Mork J, N Engl J Med 2001; 344: 1125

Table 30: Studies on HPV prevalence among cases of oropharyngeal cancer in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	(95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
MEN					
Hannisdal 2010	GP5+/GP6+ (L1) Sequencing	99	56.6	(46.7-65.9)	-
WOMEN					
Hannisdal 2010	GP5+/GP6+ (L1) Sequencing	38	39.5	(25.6-55.3)	-
BOTH OR UNSPECIFIED					
Hannisdal 2010	GP5+/GP6+ (L1) Sequencing	137	51.8	(43.5-60.0)	HPV 16 (48.9%) HPV 31 (2.9%) HPV 18 (2.2%) HPV 33 (0.7%) HPV 67 (0.7%)

Data as of 31 dic. 2015. Only for European countries.

95% CI: 95% Confidence Interval;

Data sources:

Based on systematic reviews and meta-analysis performed by ICO. Reference publications: 1) Ndiaye C, Lancet Oncol 2014; 15: 1319 2) Kreimer AR, Cancer Epidemiol Biomarkers Prev 2005; 14: 467

Hannisdal K, Acta Otolaryngol 2010; 130: 293

Table 31: Studies on HPV prevalence among cases of hypopharyngeal or laryngeal cancer in Norway

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence %	(95% CI)	Prevalence of 5 most frequent HPVs HPV type (%)
MEN					
Lie 1996	CP (E1). MY09/MY11 (L1) and GP5+/GP6+ (L1) Amplification with TS primers (6.11.16.18.31.33.35)	38	7.9	(2.7-20.8)	HPV 16 (2.6%)
WOMEN					
Lie 1996	CP (E1). MY09/MY11 (L1) and GP5+/GP6+ (L1) Amplification with TS primers (6.11.16.18.31.33.35)	10	0.0	-	-
BOTH OR UNSPECIFIED					
Koskinen 2007	MY09/MY11 (L1). GP5+/GP6+ (L1) and SPF10 (L1) LiPA 25	69	4.3	(1.5-12.0)	HPV 16 (1.4%)
Lie 1996	CP (E1). MY09/MY11 (L1) and GP5+/GP6+ (L1) Amplification with TS primers (6.11.16.18.31.33.35)	39	7.7	(2.7-20.3)	HPV 16 (2.6%)
Mork 2001	GP5+/GP6+ (L1) and CPI/CPII (L1) Amplification with TS primers (6. 11. 16. 18. 33)	40	2.5	(0.4-12.9)	HPV 16 (2.5%)

Data as of 31 dic. 2015. Only for European countries.

95% CI: 95% Confidence Interval;

LiPA: Line Probe Assay; SPF: Short Primer Fragment; TS: Type Specific;

[a] Includes cases from Norway, Sweden and Finland

Data sources:

Based on systematic reviews and meta-analysis performed by ICO. Reference publications: 1) Ndiaye C, Lancet Oncol 2014; 15: 1319 2) Kreimer AR, Cancer Epidemiol Biomarkers Prev 2005; 14: 467

Koskinen WJ, J Cancer Res Clin Oncol 2007; 133: 673 | Lie ES, Acta Otolaryngol 1996; 116: 900 | Mork J, N Engl J Med 2001; 344: 1125

5 Factors contributing to cervical cancer

HPV is a necessary cause of cervical cancer, but it is not a sufficient cause. Other cofactors are necessary for progression from cervical HPV infection to cancer. Tobacco smoking, high parity, long-term hormonal contraceptive use, and co-infection with HIV have been identified as established cofactors. Co-infection with Chlamydia trachomatis and herpes simplex virus type-2, immunosuppression, and certain dietary deficiencies are other probable cofactors. Genetic and immunological host factors and viral factors other than type, such as variants of type, viral load and viral integration, are likely to be important but have not been clearly identified. *(Muñoz N, Vaccine 2006; 24(S3): 1-10)*. In this section, the prevalence of smoking, parity (fertility), oral contraceptive use, and HIV in Norway are presented.

Table 32: Factors contributing to cervical carcinogenesis (cofactors) in Norway

INDICATOR[a]		MALE	FEMALE	TOTAL
Smoking				
Smoking of any tobacco adjusted prevalence (%) [95% CI]	Current[1,b,c,±]	24.3 [20.6-28.4]	23.9 [19.4-28.2]	24.1 [20.0-28.3]
	Daily[1,b,d,±]	17.2 [14.6-20.8]	17.2 [14.1-20.2]	17.2 [14.3-20.5]
Cigarette smoking adjusted prevalence (%) [95% CI]	Current[1,b,c,±]	18.9 [11.4-25.0]	18.9 [11.8-25.4]	18.9 [11.6-25.2]
	Daily[1,b,d,±]	14.5 [9.7-18.7]	15.0 [10.8-19.1]	14.7 [10.2-18.9]
Parity				
Total fertility rate per woman[2,∓]		-	1.8	-
Age-specific fertility rate (per 1000 women)	15-19 years[3,*]	-	5.0	-
	20-24 years[3,*]	-	44.9	-
	25-29 years[3,*]	-	110.3	-
	30-34 years[3,*]	-	120.5	-
	35-39 years[3,*]	-	58.4	-
	40-44 years[3,*]	-	11.1	-
	45-49 years[3,*]	-	0.7	-
Hormonal contraception				
Oral contraceptive use (%) among women20-44yrs who are married or in union[4,e,⋆]		-	31.0	-
Hormonal contraception use (%) (pill, injectable or implant), among women20-44yrs who are married or in union[4,e,f,⋆]		-	34.3	-
HIV				
Estimated percent of adults aged 15-49 who are living with HIV [low estimate - high estimate][5,g]		-	-	-
Estimated percent of young adults aged 15-24 who are living with HIV [low estimate - high estimate][5,g]		-	-	-
HIV prevalence (%) among female sex workers in the capital city[5,h]		-	-	-
HIV prevalence (%) among men who have sex with men in the capital city[5]		-	-	-
Estimated number of adults (15+ years) living with HIV [low estimate - high estimate][5,i]		-	-	-
Estimated number of adults and children living with HIV [low estimate - high estimate][5,i]		-	-	-
Estimated number of AIDS deaths in adults and children [low estimate - high estimate][5,j]		-	-	-

Data accessed on 22 Mar 2017.

[a] Please refer to original source for methods of estimation of the following indicators.

[b] Adjusted and age-standardized prevalence estimates of tobacco use by country, for the year 2013. These rates are constructed solely for the purpose of comparing tobacco use prevalence estimates across countries, and should not be used to estimate the number of smokers in the population.

[c] "Current" means smoking at the time of the survey, including daily and non-daily smoking. "Tobacco smoking" means smoking any form of tobacco, including cigarettes, cigars, pipes, hookah, shisha, water-pipe, etc. and excluding smokeless tobacco.

[d] "Daily" means smoking every day at the time of the survey. "Tobacco smoking" means smoking any form of tobacco, including cigarettes, cigars, pipes, hookah, shisha, water-pipe, etc. and excluding smokeless tobacco.

[e] Data pertain to women who were sexually active during the three months prior to the interview.

[f] Proportion (%) of women using hormonal contraception (pill, injectable or implant), among those of reproductive age who are married or in union.

[g] Estimates include all people with HIV infection, regardless of whether they have developed symptoms of AIDS.

[h] Data on key populations at higher risk from country progress reports typically derive from surveys in capital cities and are not representative of the entire country. In particular, surveys in capital cities are likely to overestimate national HIV prevalence and service coverage.

[i] The number of people with HIV infection, whether or not they have developed symptoms of AIDS, estimated to be alive at the end of a specific year.

[j] The estimated number of adults and children that have died due to HIV/AIDS in a specific year.

Year of estimate: [±] 2013; [∓] 2015; [*] 2014; [⋆] 2005;

Data sources:

[1] WHO report on the global tobacco epidemic, 2015: The MPOWER package. Geneva, World Health Organization, 2015. Available at http://www.who.int/tobacco/global_report/2015/en/index.html

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(Table 32 – continued from previous page)

[2]Eurostat - Statistical office of the European Comission [web site]. Luxembourg: European Commission; 2015. Available at: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tsdde220&plugin=1. [Accessed on March 22, 2017].

[3]United Nations, Department of Economic and Social Affairs, Population Division (2015). World Fertility Data 2015 (POP/DB/Fert/Rev2015). Available at: http://www.un.org/en/development/desa/population/publications/dataset/fertility/wfd2015.shtml. [Accessed on March 22, 2017].

[4]United Nations, Department of Economic and Social Affairs, Population Division (2016). World Contraceptive Use 2016 (POP/DB/CP/Rev2016). http://www.un.org/en/development/desa/population/publications/dataset/contraception/wcu2016.shtml. Available at: [Accessed on March 22, 2017].

[5]UNAIDS database [internet]. Available at: http://aidsinfo.unaids.org/ [Accessed on March 22, 2017]

6 Sexual and reproductive health behaviour indicators

Sexual intercourse is the primary route of transmission of genital HPV infection. Information about sexual and reproductive health behaviours is essential to the design of effective preventive strategies against anogenital cancers. In this section, we describe sexual and reproductive health indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers. Several studies have reported that earlier sexual debut is a risk factor for HPV infection, although the reason for this relationship is still unclear. In this section, information on sexual and reproductive health behaviour in Norway are presented.

Table 33: Percentage of 15-year-olds who have had sexual intercourse in Norway

Indicator	Male	Female
Percentage of 15-year-old subjects who report sexual intercourse	-	-

Data accessed on 16 Mar 2017.
Please refer to original source for methods of estimation

Table 34: Median age at first sex in Norway

			MALE		FEMALE		TOTAL	
Study	Year/period	Birth cohort	N	Median age at first sex	N	Median age at first sex	N	Median age at first sex
Bakken 2007[1]	2005	1975-1987[a,b]	1,032	17.5	-	-	-	-
Hubert 1998[2]	1992	1932-1941[c]	256	19.3	271	19.5	-	-
		1942-1951[c]	442	18.8	536	18.8	-	-
		1952-1961[c]	548	18.3	714	17.7	-	-
		1962-1966[c]	308	18.4	392	17.5	-	-
		1967-1971[c]	311	18.3	396	17.6	-	-
		1972-1973[c]	125	18.1	143	17.5	-	-
Jensen 2011[3]	2005	1959-1963[d]	-	-	-	17.0	-	-
		1964-1968[d]	-	-	-	17.0	-	-
		1969-1973[d]	-	-	-	17.0	-	-
		1974-1978[d]	-	-	-	17.0	-	-
		1979-1982[d]	-	-	-	17.0	-	-
		1983-1986[d]	-	-	-	16.0	-	-
Pedersen 2003[4]	1992	1976-1980[e,b]	646	17.9	753	17.3	-	-
Trfen 2003	1987	1965-1969	-	18.2	-	17.2	-	-
	1997	1975-1979	-	18.2	-	17.4	-	-
	2002	1980-1984	-	17.5	-	17.1	-	-

Data accessed on 16 Mar 2017.
N: number of subjects;
[a] Data pertain to men recruited at student health services.
[b] Mean age at first sex.
[c] Not especified if estimations are among sexually active or surveyed.
[d] Number of subjects refers to the number of surveyed men/women (not all sexually active).
[e] Data pertain to schools students.
Data sources:
[1] Bakken IJ, Skjeldestad FE, Halvorsen TF, Thomassen T, Størvold G, Nordbø SA. Chlamydia trachomatis among young Norwegian men: sexual behavior and genitourinary symptoms. Sex Transm Dis. 2007 Apr;34(4):245-9.
[2] Hubert M, Bajos N, Sandfort T. Sexual behaviour and HIV/AIDS in Europe: comparisons of national surveys. London: UCL Press; 1998.
[3] Jensen KE, Munk C, Sparen P, Tryggvadottir L, Liaw K-L, Dasbach E, et al. Women's sexual behavior. Population-based study among 65 000 women from four Nordic countries before introduction of human papillomavirus vaccination. Acta Obstet Gynecol Scand. 2011 May;90(5):459-467.
[4] Pedersen W, Samuelsen SO, Wichstrom L. Intercourse debut age: poor resources, problem behavior, or romantic appeal? a population-based longitudinal study. J Sex Res. 2003 Nov;40(4):333-45.

Table 35: Marriage patterns in Norway

Indicator		Male	Female
Average age at first marriage[1]		33.8	31.8
Age-specific % of ever married[2]	15-19 years	0.02	0.13
	20-24 years	1.9	5.57
	25-29 years	14.7	25.8
	30-34 years	35.6	48.6
	35-39 years	52.1	61.9

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(Table 35 – continued from previous page)

Indicator		Male	Female
	40-44 years	62.1	69.5
	45-49 years	69.4	75.6

Data accessed on 16 Mar 2017.
Year of estimate: 2014;
Please refer to original source for methods of estimation.
Data sources:
[1]The world bank: health nutrition and population statistics. Updated 16-Dec-2016. Accessed on March 16 2017. Available at http://data.worldbank.org/data-catalog/health-nutrition-and-population-statistics
[2]United Nations, Department of Economic and Social Affairs, Population Division (2015). World Marriage Data 2015 (POP/DB/Marr/Rev2015). Available at: http://www.un.org/en/development/desa/population/theme/marriage-unions/WMD2015.shtml Accessed on April 3, 2017.

Table 36: Average number of sexual partners in Norway

Study	Period of estimate	Year/Period	Birth cohort	Male	Female	Total
				Mean(N)	Mean(N)	Mean(N)
Bakken 2007[1,a]	Last year	2005	(1975-1987)	2.0(1,032)	-(-)	-(-)
	Last 6 months	2005	(1975-1987)	1.0(973)	-(-)	-(-)
Hubert 1998[2,b]	Lifetime	1992	(1943-1974)	11.7(1,684)	5.5(2,116)	-(-)
	Last year	1992	(1943-1974)	1.5(1,454)	1.2(1,944)	-(-)
Kjaer 2007[3,b]	Lifetime	2004-2005	(1959-1987)	-(-)	7.4(16,575)	-(-)
Træen 2003[4,d]	Lifetime	1997	(1975-1979)	7.0(-)	6.0(-)	-(-)
	Lifetime	1997	(1975-1979)	6.0(-)	6.0(-)	-(-)
	Lifetime	2002	(1980-1984)	7.0(-)	6.0(-)	-(-)
	Lifetime	2002	(1980-1984)	6.0(-)	7.0(-)	-(-)

Data accessed on 08 Aug 2013.
N: number of subjects sexually active;
[a]Median number of sexual partners.
[b]Number of surveyed people (not all sexually active).
[c]Data among responders who ever had a heterosexual partner.
[d]Data pertain to heterosexuals not living with a partner.
[e]Data pertain to heterosexuals married or living with a partner.
Data sources:
[1]Bakken IJ, Skjeldestad FE, Halvorsen TF, Thomassen T, Størvold G, Nordbø SA. Chlamydia trachomatis among young Norwegian men: sexual behavior and genitourinary symptoms. Sex Transm Dis. 2007 Apr;34(4):245-9.
[2]Hubert M, Bajos N, Sandfort T. Sexual behaviour and HIV/AIDS in Europe: comparisons of national surveys. London: UCL Press; 1998.
[3]Kjaer SK, Tran TN, Sparen P, Tryggvadottir L, Munk C, Dasbach E, et al. The burden of genital warts: a study of nearly 70,000 women from the general female population in the 4 Nordic countries. J. Infect. Dis. 2007 nov 15;196(10):1447-54.
[4]Træen B, Stigum H, Magnus P. Rapport fra seksualvaneundersökelsene i 1987, 1992, 1987 og 2002. Nydalen, Folkehelseinstitutt, Divisjon Nasjonalt for epidemiologi 2003. Ref Type: Report

Table 37: Lifetime prevalence of anal intercourse among women in Norway

Study	Year/Period	Birth cohort	FEMALE		
			N surveyed	N sexual active	% among sexually active
No Data Available	-	-	-	-	-

Data accessed on 08 Aug 2013.
N: number of subjects.

7 HPV preventive strategies

It is established that well-organised cervical screening programmes or widespread good quality cytology can reduce cervical cancer incidence and mortality. The introduction of HPV vaccination could also effectively reduce the burden of cervical cancer in the coming decades. This section presents indicators on basic characteristics and performance of cervical cancer screening, status of HPV vaccine licensure and introduction in Norway.

7.1 Cervical cancer screening practices

Screening strategies differ between countries. Some countries have population-based programmes, where in each round of screening women in the target population are individually identified and invited to attend screening. This type of programme can be implemented nationwide or only in specific regions of the country. In opportunistic screening, invitations depend on the individual's decision or on encounters with health-care providers. The most frequent method for cervical cancer screening is cytology, and there are alternative methods such as HPV DNA tests and visual inspection with acetic acid (VIA). VIA is an alternative to cytology-based screening in low-resource settings (the 'see and treat' approach). HPV DNA testing is being introduced into some countries as an adjunct to cytology screening ('co-testing') or as the primary screening test to be followed by a secondary, more specific test, such as cytology.

Table 38: Main characteristics of cervical cancer screening in Norway

Availability of a cervical cancer screening programme[α]	Yes
Quality assurance structure and mandate to supervise and to monitor the screening process[β]	Yes
Active invitation to screening[γ]	Yes
Main screening test used for primary screening	Cytology
Undergoing demonstration projects	
Screening ages (years)	25-69
Screening interval or frequency of screenings	3 years

Data accessed on 31 Dec 2016.

[α] Public national cervical cancer screening program in place (Cytology/VIA/HPV testing). Countries may have clinical guidelines or protocols, and cervical cancer screening services in a private sector but without a public national program. Publicly mandated programmes have a law, official regulation, decision, directive or recommendation that provides the public mandate to implement the programme with an authorised screening test, examination interval, target group and funding and co-payment determined.

[β] Self-reported quality assurance: Organised programmes provide for a national or regional team responsible for implementation and require providers to follow guidelines, rules, or standard operating procedures. They also define a quality assurance structure and mandate supervision and monitoring of the screening process. To evaluate impact, organised programmes also require ascertainment of the population disease burden. Quality assurance consists of the management and coordination of the programme throughout all levels of the screening process (invitation, testing, diagnosis and follow-up of screen-positives) to assure that the programme performs adequately and provides services that are effective and in-line with programme standards. The quality assurance structure is self-reported as part of the national cancer programs or plans.

[γ] Self-reported active invitation or recruitment, as organised population-based programmes, identify and personally invite each eligible person in the target population to attend a given round of screening.

Data sources:

Cervical cancer screening in Europe: Quality assurance and organisation of programmes. Elfström KM, Arnheim-Dahlström L, von Karsa L, Dillner J. Eur J Cancer. 2015 May;51(8):950-68. doi: 10.1016/j.ejca.2015.03.008. Epub 2015 Mar 25. PMID: 25817010

Table 39: Estimated coverage of cervical cancer screening in Norway

Reference	Year	Population	Urban vs rural or both (all)	N Women	Age range	Within the last year(s)	Coverage (%)[b]
Anual Report Screening 2012 Norway[1,a]	2003-2012	National screening programme	All	325,260	25-34	10y	74 .4
				1,434,810	25-69	10y	84 .2
				1,109,550	35-69	10y	87 .2
	2008-2012	National screening programme	All	325,260	25-34	5y	67 .4
				1,434,810	25-69	5y	74 .9
				1,109,550	35-69	5y	77 .2
	2010-2012	National screening programme	All	325,260	25-34	3.5y	61 .1
	2010-2013	National screening programme	All	1,109,550	35-69	3.5y	69 .3
	2010-2014	National screening programme	All	1,434,810	25-69	3.5y	67 .4
	2012	National screening programme	All	1,434,810	25-69	1y	24
Anual Report Screening 2013-2014 Norway[2,a]	2004-2013	National screening programme	All	-	25-34	10y	72 .1
					25-69	10y	83
					35-69	10y	86 .4
	2005-2014	National screening programme	All	-	25-34	10y	72 .7
					25-69	10y	83
					35-69	10y	86 .3
	2009-2013	National screening programme	All	-	25-34	5y	65 .9
					25-69	5y	73 .8
					35-69	5y	76 .3
	2010-2014	National screening programme	All	-	25-34	5y	66 .9
					25-69	5y	73 .9
					35-69	5y	76 .1
	2011-2013	National screening programme	All	-	25-34	3.5y	59 .5
					25-69	3.5y	66 .3
					35-69	3.5y	68 .4
	2012-2014	National screening programme	All	-	25-34	3.5y	60 .8
					25-69	3.5y	66 .5
					35-69	3.5y	68 .3
Cancer in Norway 2007[3,α,c]	2007	National screening programme	All	-	25-69	3y	76
OECD Health Data 2007[4,β,d]	2000	National screening programme	All	-	25-67	3y	70 .3
	2004	National screening programme	All	-	25-67	3y	72 .5

Data accessed on 31 Dec 2016.

[a] Women who had a cervical cancer screening through the organised screening programme (which in Norway include all PAP tests taken), excluding those women who do not need to participate in the screening because of the prior diagnosis of cervical cancer or hysterectomy do to benign lesions.

[b] Proportion of women in the total sample of the mentioned age range in the country or region that reported having a Pap smear during a given time period (e.g., last year, last 2, 3, 5 years or ever).

[c] Data from Norwegian Cervical Screening Programme.

[d] Data from the Scientific Institute of Public Health. Data for 2000 is real coverage; coverage for 2001-2004 are extrapolations.

[α] Data from Norwegian Cervical Screening Programme. Cancer in Norway 2007 - Cancer Incidence, mortality, survival and prevalence in Norway. Oslo: Cancer Registry of Norway; 2008.

[β] Data from the Scientific Institute of Public Health. Data for 2000 is real coverage; coverage for 2001-2004 are extrapolations. Garcia Armesto S., Gil Lapetra M.L., Wei L., Kelleyand E., and the Members of the HCQI Expert Group. Health Care Quality Indicators Project 2006 Data Collection Update Report. Paris; France: Organisation for Economic Co-operation and Development (OECD); 2007. Report No.: DELSA/HEA/WD/HWP(2007)4; OECD HEALTH WORKING PAPERS NO. 29.

Data sources:

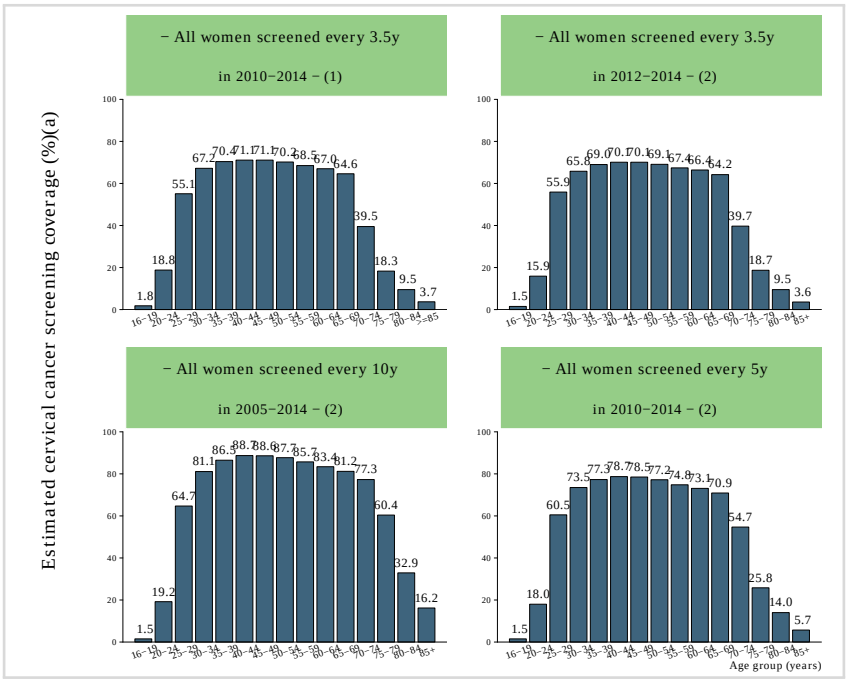
[1] Cancer Registry of Norway. Årsrapport 2012: Masseundersøkelsen mot livmorhalskreft [Annual Report 2012: Mass screening for cervical cancer]. Oslo. Norway (2015).

[2] Cancer Registry of Norway. Årsrapport 2013-2014: Masseundersøkelsen mot livmorhalskreft [Annual Report 2013-2014: Mass screening for cervical cancer]. Oslo. Norway (2015).

[3] Cancer in Norway 2007 - Cancer Incidence, mortality, survival and prevalence in Norway. Oslo: Cancer Registry of Norway; 2008.

[4] Garcia Armesto S., Gil Lapetra M.L., Wei L., Kelleyand E., and the Members of the HCQI Expert Group. Health Care Quality Indicators Project 2006 Data Collection Update Report. Paris; France: Organisation for Economic Co-operation and Development (OECD); 2007. Report No.: DELSA/HEA/WD/HWP(2007)4; OECD HEALTH WORKING PAPERS NO. 29.

Figure 45: Estimated coverage of cervical cancer screening in Norway, by age and study



Data accessed on 31 Dec 2016.

[a] Proportion of women in the total sample of the mentioned age range in the country or region that reported having a Pap smear during a given time period (e.g., last year, last 2, 3, 5 years or ever).

[b] Women who had a cervical cancer screening through the organised screening programme (which in Norway include all PAP tests taken), excluding those women who do not need to participate in the screening because of the prior diagnosis of cervical cancer or hysterectomy do to benign lesions.

Data sources:

ICO Information Centre on HPV and Cancer. Country-specific references identified in each country-specific report as general recommendation from relevant scientific organizations and/or publications.

[1] Cancer Registry of Norway. Årsrapport 2012: Masseundersøkelsen mot livmorhalskreft [Annual Report 2012: Mass screening for cervical cancer]. Oslo. Norway (2015).

[2] Cancer Registry of Norway. Årsrapport 2013-2014: Masseundersøkelsen mot livmorhalskreft [Annual Report 2013-2014: Mass screening for cervical cancer]. Oslo. Norway (2015).

Table 40: Estimated coverage of cervical cancer screening in Norway , by region

Region	N Women	Age range	LY[a]	Population	Coverage (%)[b]	Year(s) studied	Reference
Akershus	-	25-69	1y	National screening programme	27.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	70.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	86.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	68.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	74.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	67.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Aust-Agder	-	25-69	1y	National screening programme	25.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	68.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	84.0	2003-2012	Anual Report Screening 2012 Norway[1]

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(Table 40 – continued from previous page)

Region	N Women	Age range	LY[a]	Population	Coverage (%)[b]	Year(s) studied	Reference
	-	25-69	3.5y	National screening programme	67.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	71.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	63.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Buskerud	-	25-69	1y	National screening programme	27.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	68.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	84.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	72.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	63.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Finnmark	-	25-69	1y	National screening programme	21.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	62.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	81.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	61.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	68.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	58.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Hedmark	-	25-69	1y	National screening programme	22.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	85.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	65.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	73.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	62.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]

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(Table 40 – continued from previous page)

Region	N Women	Age range	LY[a]	Population	Coverage (%)[b]	Year(s) studied	Reference
Hordaland	-	25-69	1y	National screening programme	22.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	67.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	83.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	73.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	65.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Mxre and Romsdal	-	25-69	1y	National screening programme	21.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	83.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	65.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	72.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	63.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Nordland	-	25-69	1y	National screening programme	26.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	69.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	87.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	67.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	75.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	65.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
North Trxndelag	-	25-69	1y	National screening programme	21.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	86.0	2003-2012	Anual Report Screening 2012 Norway[1]

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(Table 40 – continued from previous page)

Region	N Women	Age range	LY[a]	Population	Coverage (%)[b]	Year(s) studied	Reference
	-	25-69	3.5y	National screening programme	66.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	73.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	64.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Oppland	-	25-69	1y	National screening programme	24.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	68.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	85.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	67.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	72.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	60.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Oslo	-	25-69	1y	National screening programme	27.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	64.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	80.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	64.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	67.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	61.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Ostfold	-	25-69	1y	National screening programme	25.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	68.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	85.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	73.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	63.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]

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(Table 40 – continued from previous page)

Region	N Women	Age range	LY[a]	Population	Coverage (%)[b]	Year(s) studied	Reference
Rogaland	-	25-69	1y	National screening programme	26.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	70.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	84.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	68.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	74.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	67.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Sogn og Fjordane	-	25-69	1y	National screening programme	21.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	65.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	83.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	64.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	72.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	62.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Sor-Trondelag	-	25-69	1y	National screening programme	21.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	85.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	74.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	72.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Telemark	-	25-69	1y	National screening programme	27.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	69.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	86.0	2003-2012	Anual Report Screening 2012 Norway[1]

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(Table 40 – continued from previous page)

Region	N Women	Age range	LY[a]	Population	Coverage (%)[b]	Year(s) studied	Reference
	-	25-69	3.5y	National screening programme	67.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	74.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	63.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Troms	-	25-69	1y	National screening programme	22.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	85.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	73.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	64.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Vest-Agder	-	25-69	1y	National screening programme	25.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	70.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	87.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	69.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	76.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	67.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]
Vestfold	-	25-69	1y	National screening programme	23.0	2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	67.0	2010-2014	Anual Report Screening 2012 Norway[1]
	-	25-69	10y	National screening programme	85.0	2003-2012	Anual Report Screening 2012 Norway[1]
	-	25-69	3.5y	National screening programme	66.0	2012-2014	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	73.0	2002-2004	Anual Report Screening 2013-2014 Norway[2]
	-	25-69	3.5y	National screening programme	71.0	1992-1994	Anual Report Screening 2013-2014 Norway[2]

Data accessed on 31 Dec 2016.
[a] LY: Within the last year(s).

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(Table 40 – continued from previous page)

[b] Proportion of women in the total sample of the mentioned age range in the country or region that reported having a Pap smear during a given time period (e.g., last year, last 2, 3, 5 years or ever).

Data sources:

[1] Cancer Registry of Norway. Årsrapport 2012: Masseundersøkelsen mot livmorhalskreft [Annual Report 2012: Mass screening for cervical cancer]. Oslo. Norway (2015).

[2] Cancer Registry of Norway. Årsrapport 2013-2014: Masseundersøkelsen mot livmorhalskreft [Annual Report 2013-2014: Mass screening for cervical cancer]. Oslo. Norway (2015).

7.2 HPV vaccination

Table 41: National HPV Immunization programme in Norway

	Female	Male
Year of introduction	2009	-
Primary target age (years)	12	-
Organized catch-up age (years)	-	-
Opportunistic catch-up age (years)	-	-
Strategy	Sch. (Grade 7)	-
Schedule[a,b]	3 doses standard	-

Data updated on 11 Jul 2017 (data as of 31 Dec 2016)

[a] 2 doses: 0-6m if not otherwise stated. Since 2014, based on clinical trials results several agencies responsible for the scientific evaluation of medicines, like the European Medicines Agency, aproved a two-dose schedule for girls aged less than 15 or 14 depending on the vaccine (Cervarix or Gardasil).

[b] 3-doses standard: administration of three doses following the standard vaccination schedule as 0-2-6 months for the quadrivalent vaccine or 0-1-6 months for the bivalent vaccine.

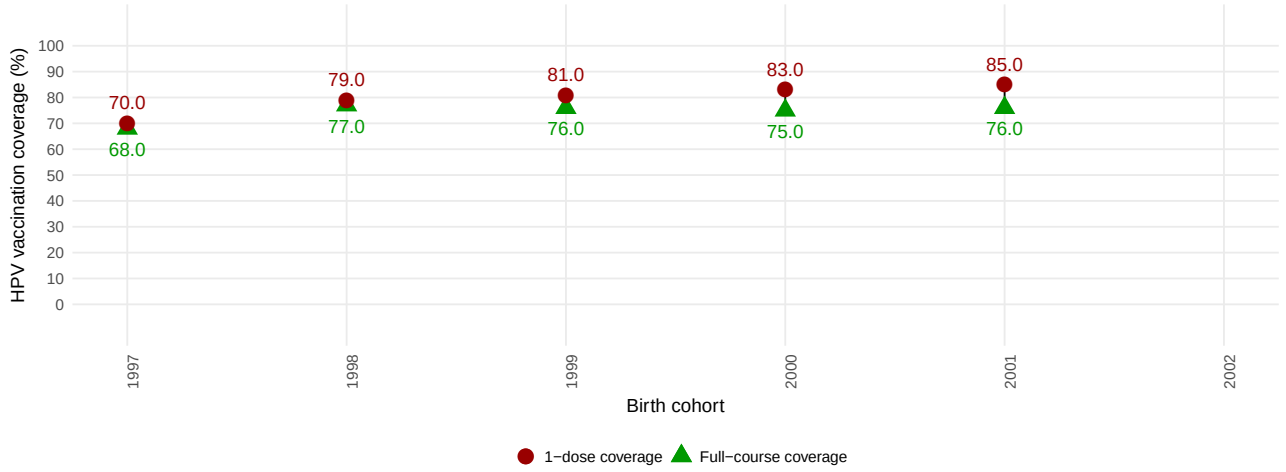
Data sources:

[1] Adapted from Bruni et al 2016 Lancet Global Health (data up to October 2014).

Specifically, data from Norway was extracted from:

[2] Public Health Institute - Folkehelseinstituttet. Vaccine against cervical cancer (HPV vaccine) [Internet]. Available from: http://www.fhi.no/artikler/?id=90946

Figure 46: Reported HPV vaccination coverage in females by birth cohort in National HPV Immunization programme in Norway



Data updated on 11 Jul 2017 (data as of 31 Oct 2014)

Data sources:

[1] Adapted from Bruni et al 2016 Lancet Global Health (data up to October 2014).

[2] Public Health Institute - Folkehelseinstituttet. Vaksinasjonsstatistikk for HPV-vaksinasjon [Internet]. Available from: http://www.fhi.no/artikler/?id=94510

8 Protective factors for cervical cancer

Male circumcision and the use of condoms have shown a significant protective effect against HPV transmission.

Table 42: Prevalence of male circumcision in Norway

Reference	Prevalence % (95% CI)	Methods
WHO 2007	<20	Data from Demographic and Health Surveys (DHS) and other publications to categorize the country-wide prevalence of male circumcision as <20%, 20-80%, or >80%.

Data accessed on 31 Aug 2015.
95% CI: 95% Confidence Interval;
Please refer to country-specific reference(s) for full methodologies.
Data sources:
Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until August 2015. Reference publication: Albero G, Sex Transm Dis. 2012 Feb;39(2):104-13.
WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability

Table 43: Prevalence of condom use in Norway

Indicator	Year of estimate	Prevalence %[a]
Condom use	2005	12.8

Data accessed on 21 Mar 2017.
Please refer to original source for methods of estimation.
[a] Condom use: Proportion of male partners who are using condoms with their female partners of reproductive age (15-49 years) to whom they are married or in union by country.
Data sources:
United Nations, Department of Economic and Social Affairs, Population Division (2016). World Contraceptive Use 2016 (POP/DB/CP/Rev2016). http://www.un.org/en/development/desa/population/publications/dataset/contraception/wcu2016.shtml. Available at: [Accessed on March 22, 2017].
Norway 2005 Survey on Contraceptive Use

9 Indicators related to immunisation practices other than HPV vaccines

This section presents data on immunisation coverage and practices for selected vaccines. This information will be relevant for assessing the country's capacity to introduce and implement the new HPV vaccines. The data are periodically updated and posted on the WHO Immunisation surveillance, assessment and monitoring website at http://who.int/immunization_monitoring/en/.

9.1 Immunisation schedule

Table 44: General immunization schedule in Norway

Vaccine	Schedule	Coverage[a]	Comment
Bacille Calmette-Guérin vaccine	6 weeks;	entire	Defined risk
Diphtheria and tetanus toxoid with acellular pertussis, Hib and IPV vaccine	3, 5, 12 months;	entire	-
Diphtheria and tetanus toxoid with acellular pertussis, and IPV vaccine	7 years;	entire	-
Hepatitis B adult dose vaccine	-	entire	defined risk groups
Hepatitis B pediatric dose vaccine	birth; 1, 6 months;	entire	defined risk groups
Human Papillomavirus vaccine	12 years (x3);	entire	girls
Influenza adult dose vaccine	>= 65 years;	entire	pregnant women, health care workers, and people suffering from chronic illness
Influenza pediatric dose vaccine	-	entire	Children with chronic diseases
Measles mumps and rubella vaccine	15 months; 11 years;	entire	-
Pneumococcal conjugate vaccine	3, 5, 12 months;	entire	-
Rotavirus vaccine	6 weeks; 3 months;	entire	-
Tetanus and diphtheria toxoid for older children / adults with inactivated Polio vaccine	15 years;	entire	-

Data accessed on 27 Jan 2017.
The shedules are the country official reported figures
[a] Entire:introduced in the entire country. Part:partially introduced.
Data sources:
Annual WHO/UNICEF Joint Reporting Form (Update of 2015/July/15). Geneva, Immunization, Vaccines and Biologicals (IVB), World Health Organization. Available at: http://www.who.int/immunization/monitoring_surveillance/en/

9.2 Immunisation coverage estimates

Table 45: Immunization coverage estimates in Norway

Indicator	Year of estimation	Coverage (%)
Third dose of diphtheria toxoid, tetanus toxoid and pertussis vaccine	2015	95
Third dose of hepatitis B vaccine administered to infants	2015	-
Third dose of Haemophilus influenzae type B vaccine	2015	95
Measles-containing vaccine	2015	95
Third dose of polio vaccine	2015	95

Data accessed on 27 Jan 2017.
The coverage figures (%) are the country official reported figures. Immunization coverage levels are presented as a percentage of a target population that has been vaccinated.
Data sources:
Annual WHO/UNICEF Joint Reporting Form and WHO Regional offices reports (Update of 2015/July/16). Geneva, Immunization, Vaccines and Biologicals (IVB),World Health Organization. Available at: http://www.who.int/immunization/monitoring_surveillance/en/

10 Glossary

Table 46: Glossary

Term	Definition
Incidence	Incidence is the number of new cases arising in a given period in a specified population. This information is collected routinely by cancer registries. It can be expressed as an absolute number of cases per year or as a rate per 100,000 persons per year (see Crude rate and ASR below). The rate provides an approximation of the average risk of developing a cancer.
Mortality	Mortality is the number of deaths occurring in a given period in a specified population. It can be expressed as an absolute number of deaths per year or as a rate per 100,000 persons per year.
Prevalence	The prevalence of a particular cancer can be defined as the number of persons in a defined population who have been diagnosed with that type of cancer, and who are still alive at the end of a given year, the survivors. Complete prevalence represents the number of persons alive at certain point in time who previously had a diagnosis of the disease, regardless of how long ago the diagnosis was, or if the patient is still under treatment or is considered cured. Partial prevalence , which limits the number of patients to those diagnosed during a fixed time in the past, is a particularly useful measure of cancer burden. Prevalence of cancers based on cases diagnosed within one, three and five are presented as they are likely to be of relevance to the different stages of cancer therapy, namely, initial treatment (one year), clinical follow-up (three years) and cure (five years). Patients who are still alive five years after diagnosis are usually considered cured since the death rates of such patients are similar to those in the general population. There are exceptions, particularly breast cancer. Prevalence is presented for the adult population only (ages 15 and over), and is available both as numbers and as proportions per 100,000 persons.
Crude rate	Data on incidence or mortality are often presented as rates. For a specific tumour and population, a crude rate is calculated simply by dividing the number of new cancers or cancer deaths observed during a given time period by the corresponding number of person years in the population at risk. For cancer, the result is usually expressed as an annual rate per 100,000 persons at risk.
ASR (age-standardised rate)	An age-standardised rate (ASR) is a summary measure of the rate that a population would have if it had a standard age structure. Standardization is necessary when comparing several populations that differ with respect to age because age has a powerful influence on the risk of cancer. The ASR is a weighted mean of the age-specific rates; the weights are taken from population distribution of the standard population. The most frequently used standard population is the World Standard Population. The calculated incidence or mortality rate is then called age-standardised incidence or mortality rate (world). It is also expressed per 100,000. The world standard population used in GLOBOCAN is as proposed by Segi [1] and modified by Doll and al. [2]. The age-standardised rate is calculated using 10 age-groups. The result may be slightly different from that computed using the same data categorised using the traditional 5 year age bands.
Cumulative risk	Cumulative incidence/mortality is the probability or risk of individuals getting/dying from the disease during a specified period. For cancer, it is expressed as the number of new born children (out of 100, or 1000) who would be expected to develop/die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.
Cytologically normal women	No abnormal cells are observed on the surface of their cervix upon cytology.

(Continued)

Table 46 – Continued

Term	Definition
Cervical Intraepithelial Neoplasia (CIN) / Squamous Intraepithelial Lesions (SIL)	SIL and CIN are two commonly used terms to describe precancerous lesions or the abnormal growth of squamous cells observed in the cervix. SIL is an abnormal result derived from cervical cytological screening or Pap smear testing. CIN is a histological diagnosis made upon analysis of cervical tissue obtained by biopsy or surgical excision. The condition is graded as CIN 1, 2 or 3, according to the thickness of the abnormal epithelium (1/3, 2/3 or the entire thickness).
Low-grade cervical lesions (LSIL/CIN-1)	Low-grade cervical lesions are defined by early changes in size, shape, and number of ab-normal cells formed on the surface of the cervix and may be referred to as mild dysplasia, LSIL, or CIN-1.
High-grade cervical lesions (HSIL / CIN-2 / CIN-3 / CIS)	High-grade cervical lesions are defined by a large number of precancerous cells on the sur-face of the cervix that are distinctly different from normal cells. They have the potential to become cancerous cells and invade deeper tissues of the cervix. These lesions may be referred to as moderate or severe dysplasia, HSIL, CIN-2, CIN-3 or cervical carcinoma in situ (CIS).
Carcinoma in situ (CIS)	Preinvasive malignancy limited to the epithelium without invasion of the basement membrane. CIN 3 encompasses the squamous carcinoma in situ.
Invasive cervical cancer (ICC) / Cervical cancer	If the high-grade precancerous cells invade the basement membrane is called ICC. ICC stages range from stage I (cancer is in the cervix or uterus only) to stage IV (the cancer has spread to distant organs, such as the liver).
Invasive squamous cell carcinoma	Invasive carcinoma composed of cells resembling those of squamous epithelium
Adenocarcinoma	Invasive tumour with glandular and squamous elements intermingled.
Eastern Europe	References included in Belarus, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, and Ukraine.
Northern Europe	References included in Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, and United Kingdom of Great Britain and Northern Ireland.
Southern Europe	References included in Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Malta, Montenegro, Portugal, Serbia, Slovenia, Spain, The former Yugoslav Republic of Macedonia.
Western Europe	References included in Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Netherlands, and Switzerland.
Europe PREHDICT	References included in Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, Ukraine, and United Kingdom of Great Britain and Northern Ireland.

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Institut Català d'Oncologia (ICO), in alphabetic order
Albero G, Barrionuevo-Rosas L, Bosch FX, Bruni L, de Sanjosé S, Gómez D, Mena M, Muñoz J, Serrano B.

7th Framework Programme grant PREHDICT project: health-economic modelling of PREvention strategies for Hpv-related Diseases in European CounTries. Coordinated by Drs. Johannes Berkhof and Chris Meijer at VUMC, Vereniging Voor Christelijk Hoger Onderwijs Wetenschappelijk Onderzoek En Patientenzorg, the Netherlands.
(http://cordis.europa.eu/projects/rcn/94423_en.html)

7th Framework Programme grant HPV AHEAD project: Role of human papillomavirus infection and other co-factors in the aetiology of head and neck cancer in India and Europe. Coordinated by Dr. Massimo Tommasino at IARC, International Agency of Research on Cancer, Lyon, France.
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International Agency for Research on Cancer (IARC)

Note to the reader

Anyone who is aware of relevant published data that may not have been included in the present report is encouraged to contact the HPV Information Centre for potential contributions.

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