



iPAAC
INNOVATIVE PARTNERSHIP
FOR ACTION AGAINST CANCER

HPV vaccination in the Czech Republic

Annex No. 3: Epidemiology of HPV-related cancers in the Czech population



Co-funded by
the Health Programme
of the European Union



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Annex No. 3: Epidemiology of HPV-related cancers in the Czech population, **3.1: Summary overview**



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Epidemiological overview of HPV-related cancers

Absolute numbers

	Incidence Mean annual number of newly diagnosed cases in the period 2012–2016			Prevalence Number of persons living with a HPV-related cancer or its history on 31 December 2016		
	Total	Men	Women	Total	Men	Women
Malignant neoplasm of cervix uteri (C53)	871	-	871	17,787	-	17,787
Malignant neoplasms of vulva and vagina (C51, C52)	298	-	298	2,246	-	2,246
Malignant neoplasm of anus and anal canal (C21)	162	56	106	1,068	308	760
Malignant neoplasm of penis (C60)	106	106	-	829	829	-
Malignant neoplasms of tongue and oropharynx (C01, C02, C04–C06, C09)	1,003	721	282	5,636	3,762	1,874
Total	2,440	883	1,557	27,566	4,899	22,667

Source: Czech National Cancer Registry, IHIS

Epidemiological overview of HPV-related cancers

Numbers per 100,000 population

	Incidence Number of newly diagnosed cases per 100,000 population in the period 2012–2016			Prevalence Number of persons living with a HPV-related cancer or its history on 31 December 2016 per 100,000 population		
	Total	Men	Women	Total	Men	Women
Malignant neoplasm of cervix uteri (C53)	8.27	-	16.26	168.4	-	331.1
Malignant neoplasms of vulva and vagina (C51, C52)	2.83	-	5.55	21.3	-	41.8
Malignant neoplasm of anus and anal canal (C21)	1.54	1.09	1.98	10.1	5.9	14.1
Malignant neoplasm of penis (C60)	1.00	2.04	-	7.8	16.0	-
Malignant neoplasms of tongue and oropharynx (C01, C02, C04–C06, C09)	9.53	13.94	5.27	53.3	72.4	34.9
Total	23.17	17.07	29.07	260.9	94.3	421.9

Source: Czech National Cancer Registry, IHIS

Summary

- Human papillomavirus (HPV) infection can lead to the development of serious types of cancer in both men and women. The incidence of HPV-related cancers has been growing steadily in recent years; some authors even refer to an epidemic of HPV-related cancers.
- Incidence and prevalence rates of HPV-positive oropharyngeal cancer have been growing steadily, and the number of men with HPV-positive cancers has been growing, too.
- The development of a large part of these cancers – both in women and men – could be efficiently prevented because their cause is known and effective HPV vaccines are available.



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HPV vaccination in the Czech Republic

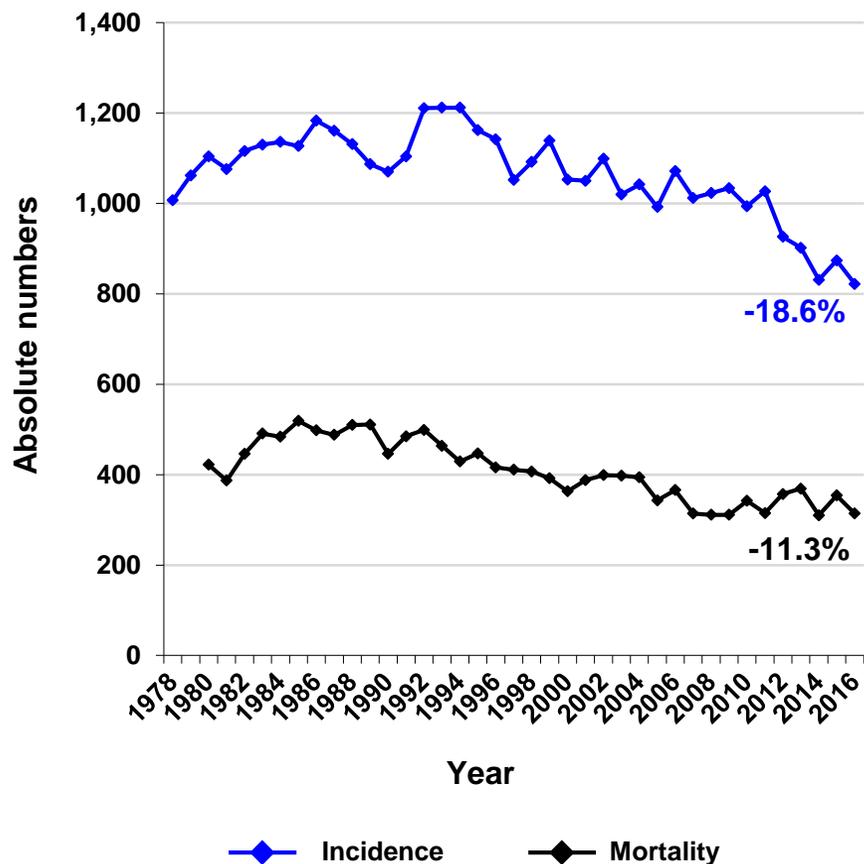
Annex No. 3: Epidemiology of HPV-related cancers in the Czech population, **3.2: Tabular and graphical summaries for individual cancer types**



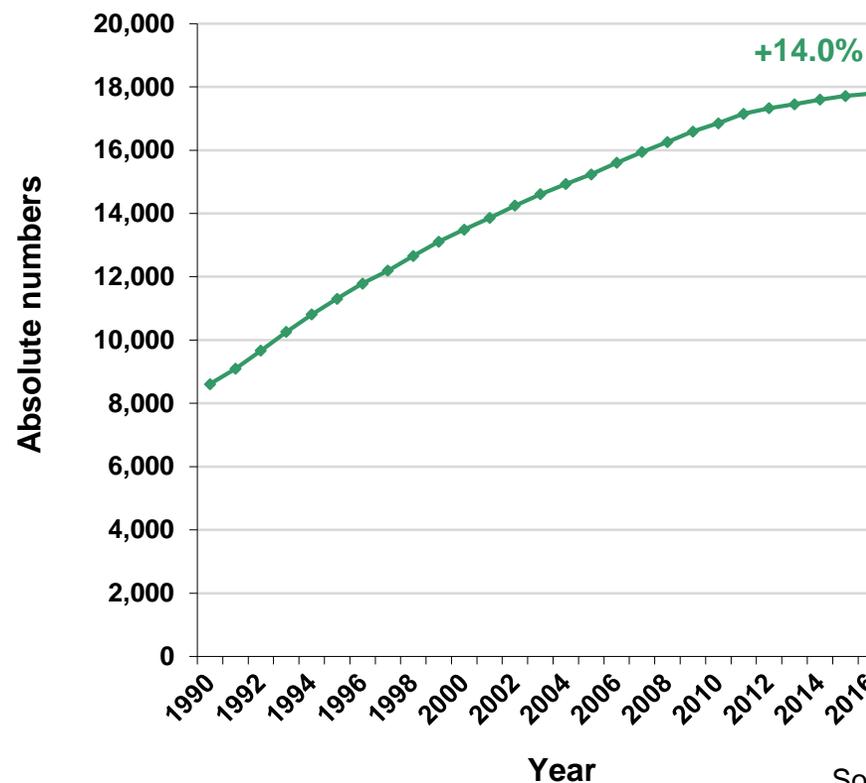
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Epidemiological trends for cervical cancer (C53) in the Czech Republic

Incidence and mortality trends



Prevalence trend

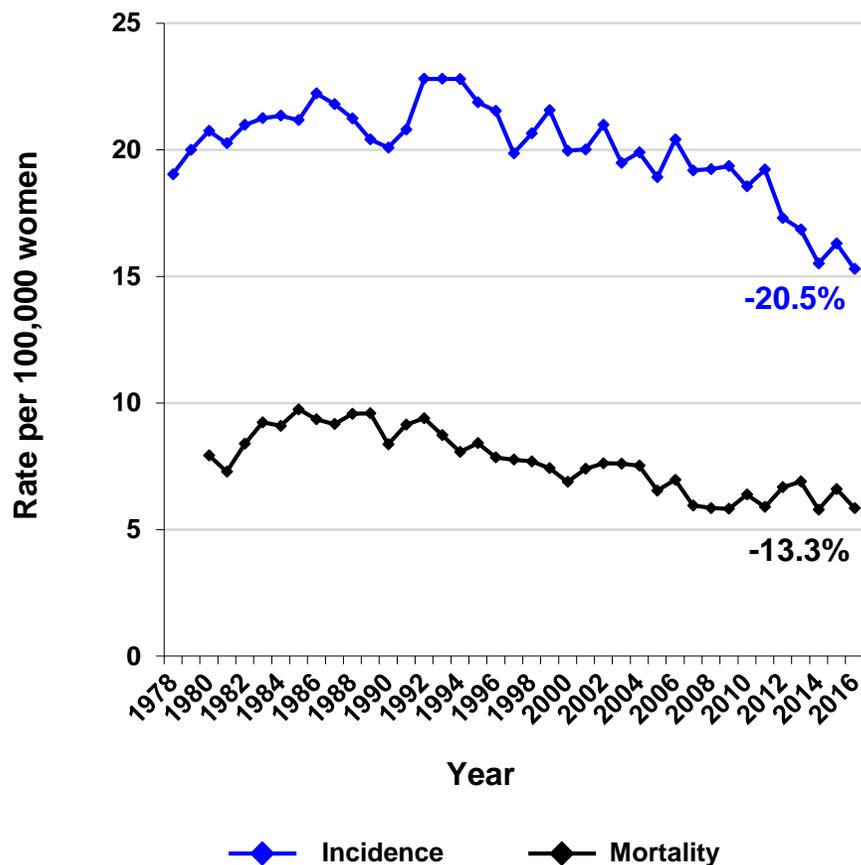


#: growth trend in the period 2006–2016

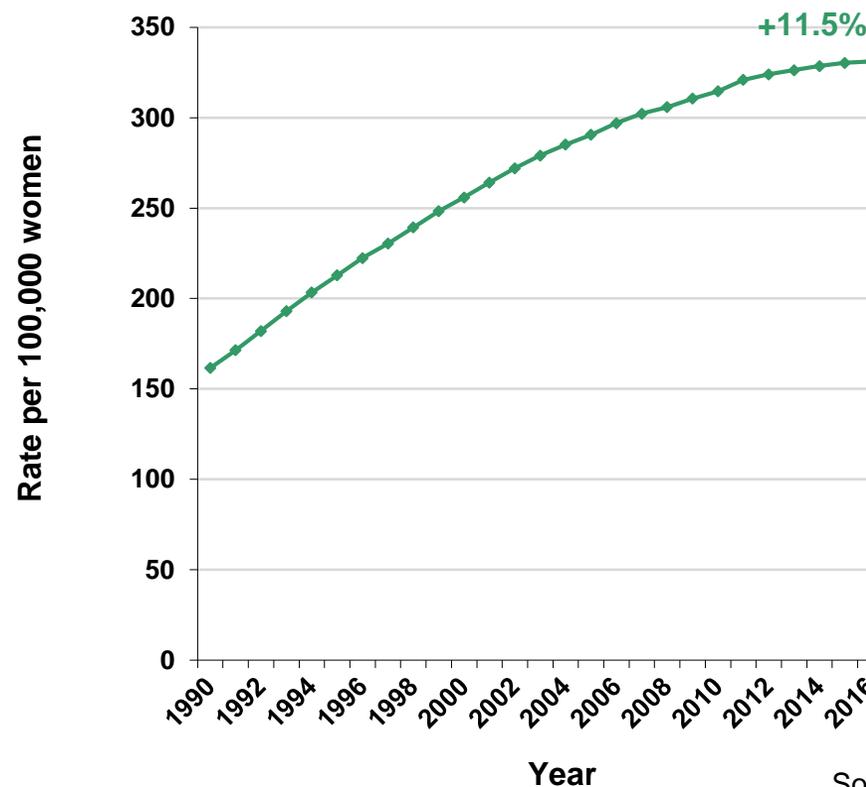
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for cervical cancer (C53) in the Czech Republic

Incidence and mortality trends



Prevalence trend



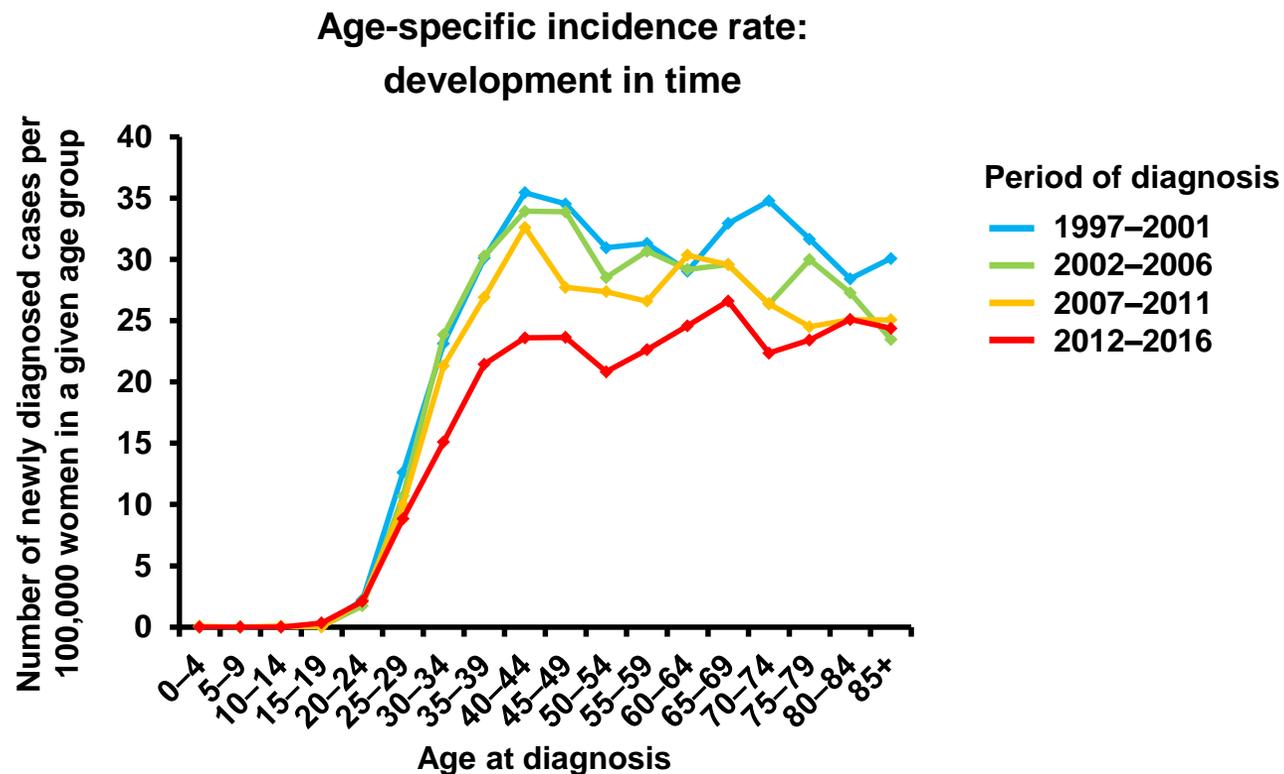
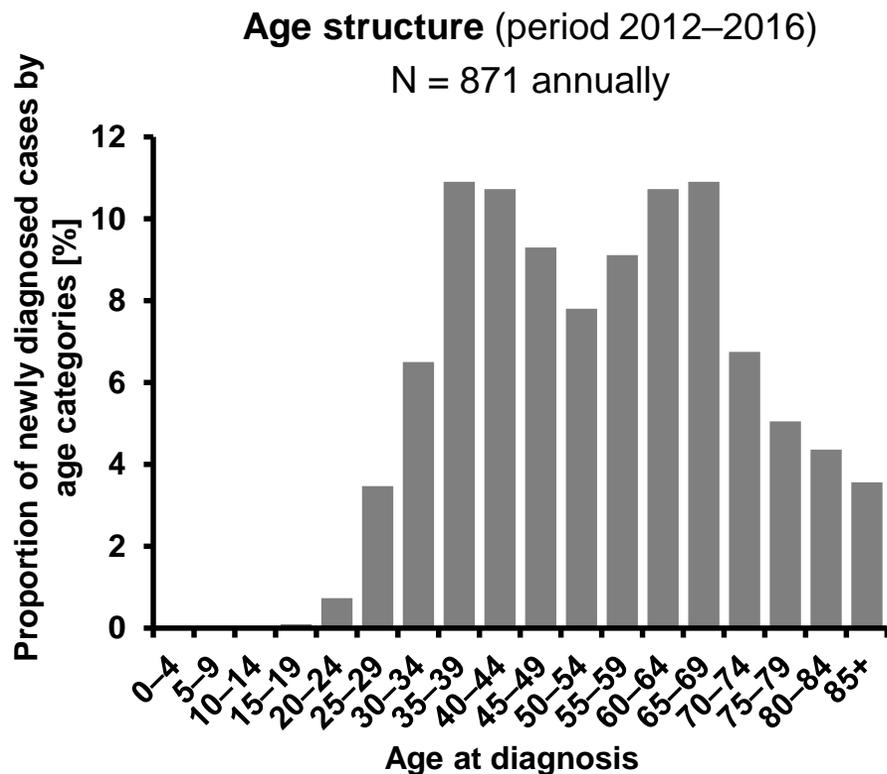
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for cervical cancer (C53) in the Czech Republic

	2010	2011	2012	2013	2014	2015	2016	<i>Annual average percentage change in trend 2010–2016</i>
<i>Absolute numbers</i>								
Incidence	994	1,027	926	902	831	874	822	-3.5%
Mortality	342	315	357	369	310	354	314	-0.6%
Prevalence (on 31 Dec)	16,853	17,152	17,330	17,455	17,600	17,714	17,787	+0.9%
<i>Rate per 100,000 women</i>								
Incidence	18.6	19.2	17.3	16.9	15.5	16.3	15.3	-3.6%
Mortality	6.4	5.9	6.7	6.9	5.8	6.6	5.8	-0.6%
Prevalence (on 31 Dec)	314.6	321.0	324.0	326.3	328.6	330.3	331.1	+0.8%

Source: Czech National Cancer Registry, IHIS – incidence, prevalence; Czech Statistical Office – mortality

Epidemiological trends for cervical cancer (C53) in the Czech Republic

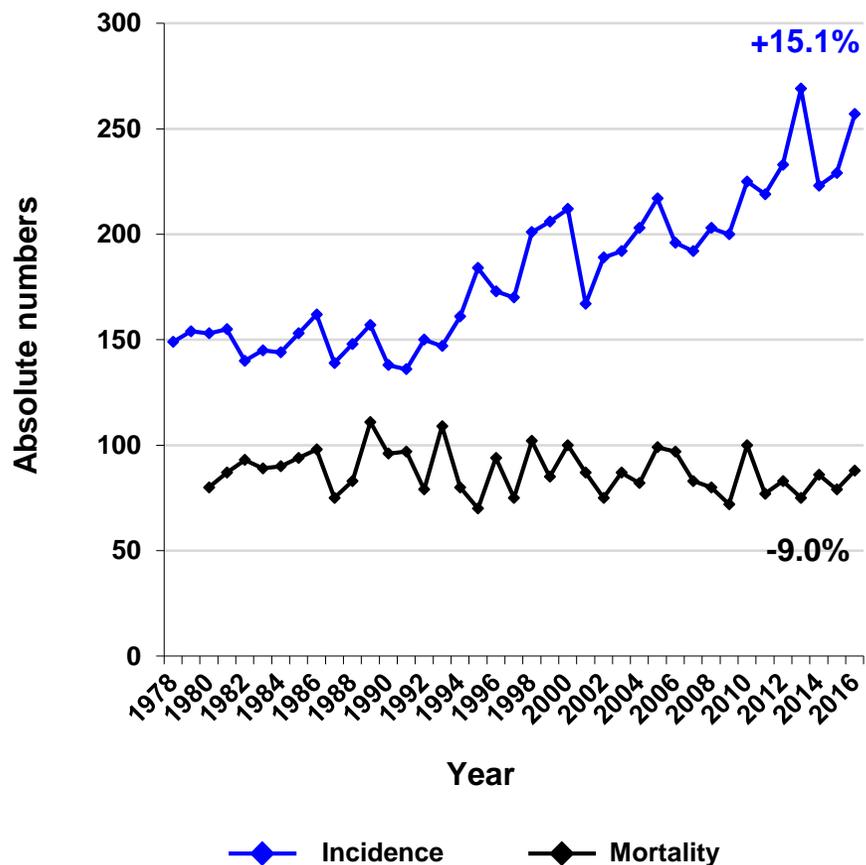


Mean	55 yrs		annual number	% of newly diagnosed cases
Median	55 yrs	aged < 35 yrs	94	11%
25%–75% quantile	41–67 yrs	aged < 45 yrs	282	32%

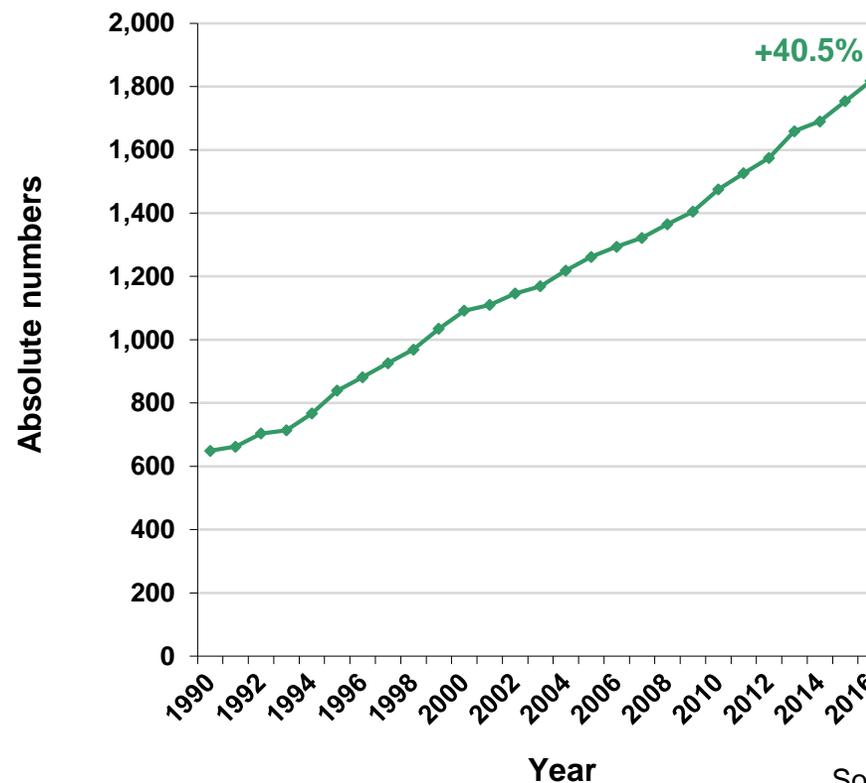
Source: Czech National Cancer Registry, IHIS

Epidemiological trends for vulvar cancer (C51) in the Czech Republic

Incidence and mortality trends



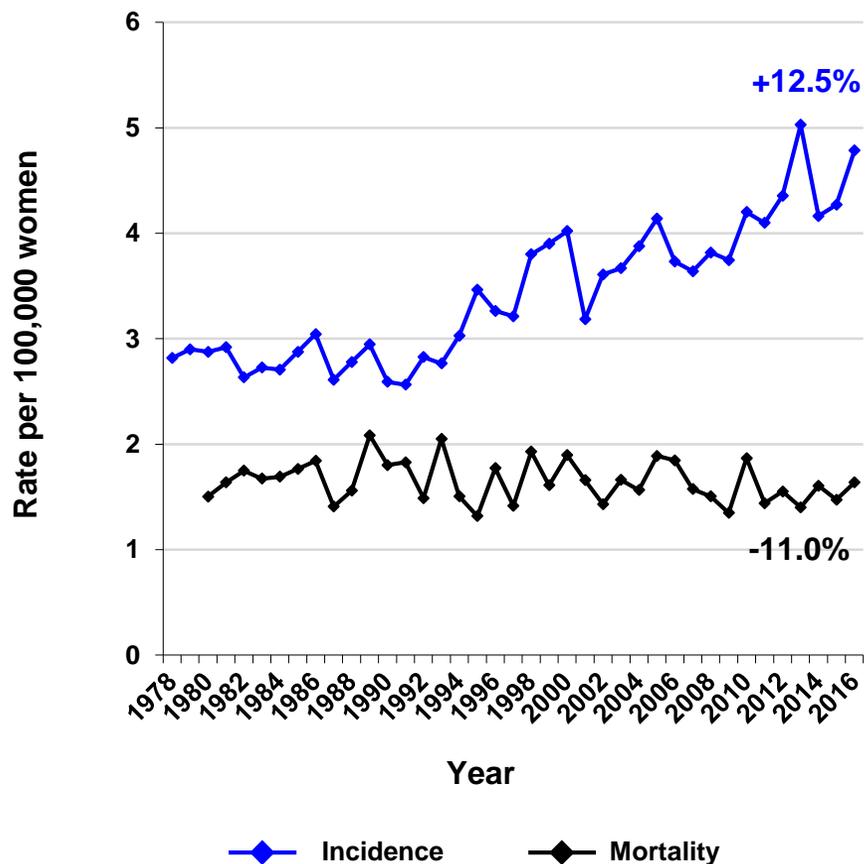
Prevalence trend



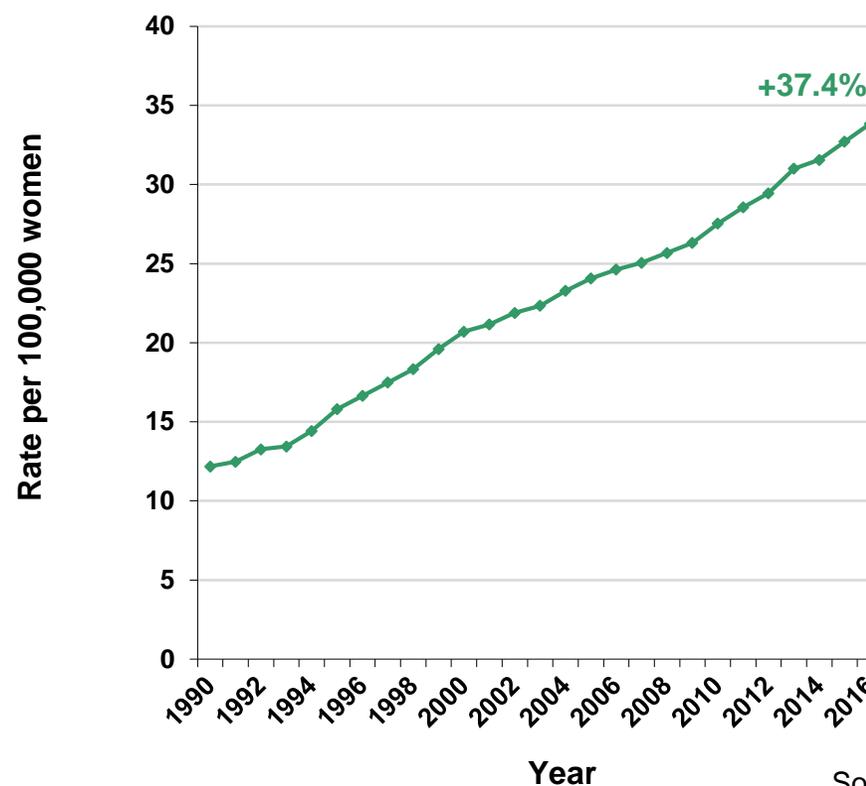
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for vulvar cancer (C51) in the Czech Republic

Incidence and mortality trends



Prevalence trend



◆ ◆ %: growth trend in the period 2006–2016

Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for vulvar cancer (C51) in the Czech Republic

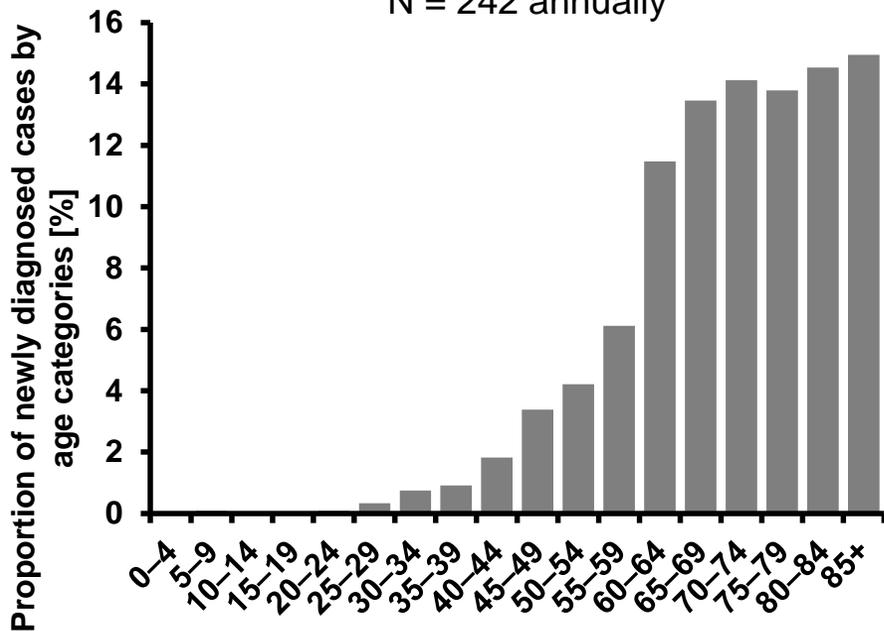
	2010	2011	2012	2013	2014	2015	2016	<i>Annual average percentage change in trend 2010–2016</i>
<i>Absolute numbers</i>								
Incidence	225	219	233	269	223	229	257	+1.6%
Mortality	100	77	83	75	86	79	88	-1.2%
Prevalence (on 31 Dec)	1,475	1,526	1,575	1,659	1,690	1,754	1,818	+3.6%
<i>Rate per 100,000 women</i>								
Incidence	4.2	4.1	4.4	5.0	4.2	4.3	4.8	+1.6%
Mortality	1.9	1.4	1.6	1.4	1.6	1.5	1.6	-1.3%
Prevalence (on 31 Dec)	27.5	28.6	29.4	31.0	31.6	32.7	33.8	+3.5%

Source: Czech National Cancer Registry, IHIS – incidence, prevalence; Czech Statistical Office – mortality

Epidemiological trends for vulvar cancer (C51) in the Czech Republic

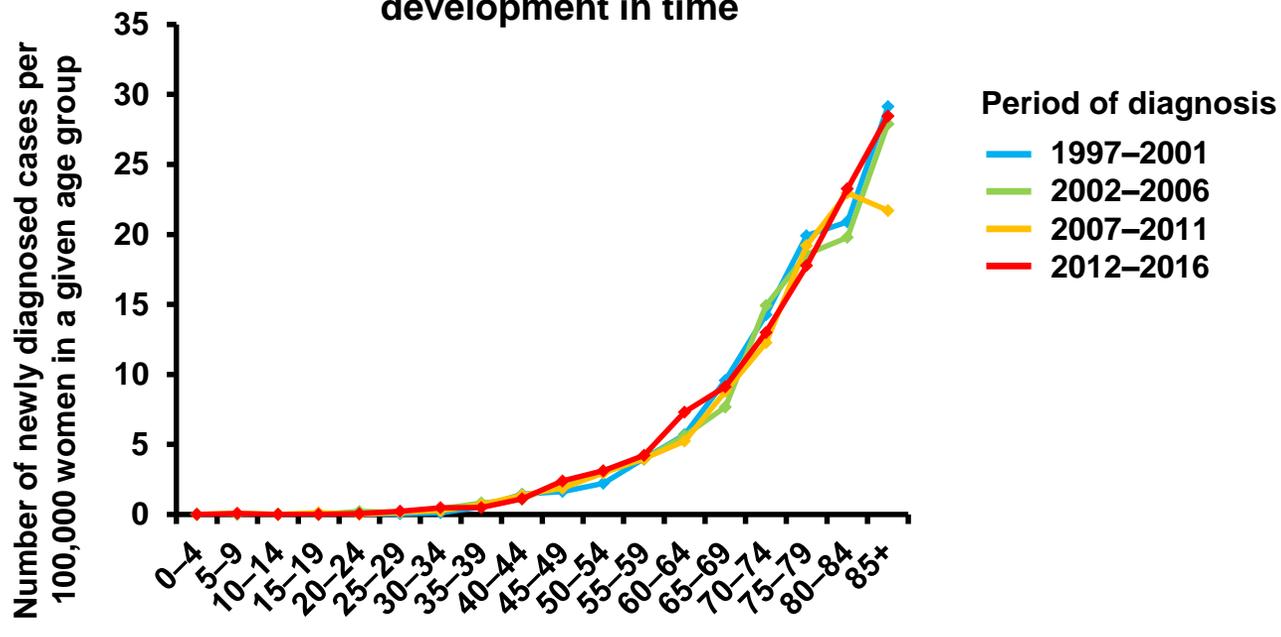
Age structure (period 2012–2016)

N = 242 annually



Age at diagnosis

Age-specific incidence rate: development in time



Age at diagnosis

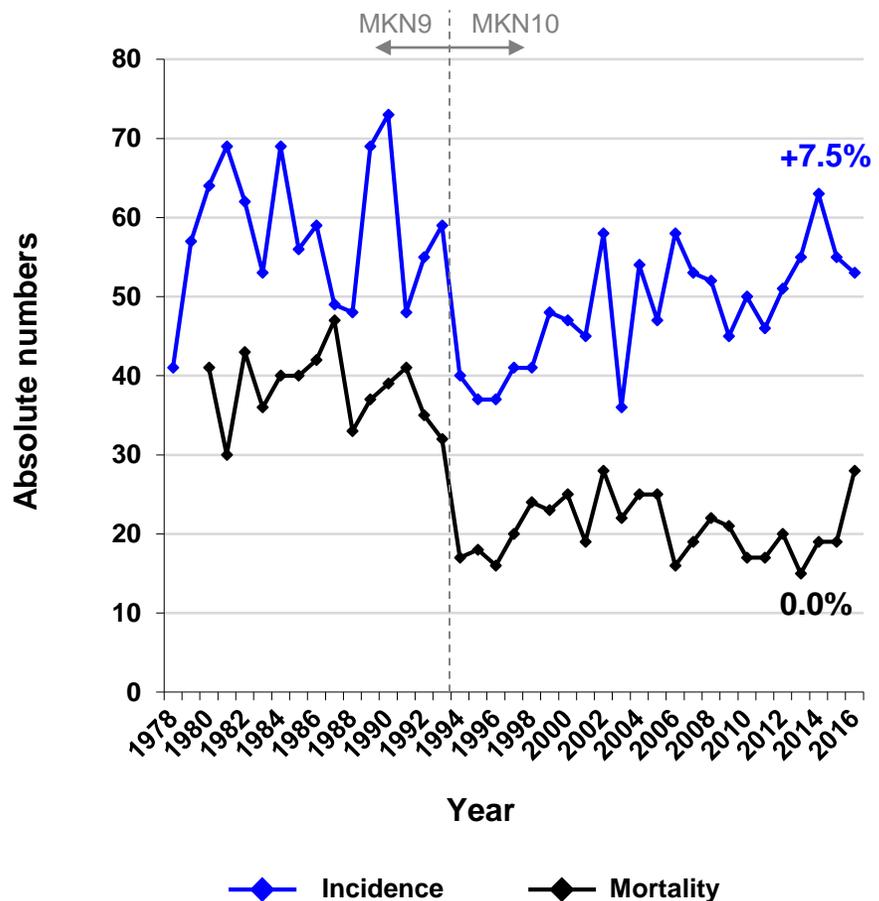
Mean 71 yrs
 Median 72 yrs
 25%–75% quantile 63–81 yrs

	annual number	% of newly diagnosed cases
aged < 50 yrs	18	7%
aged < 60 yrs	43	18%

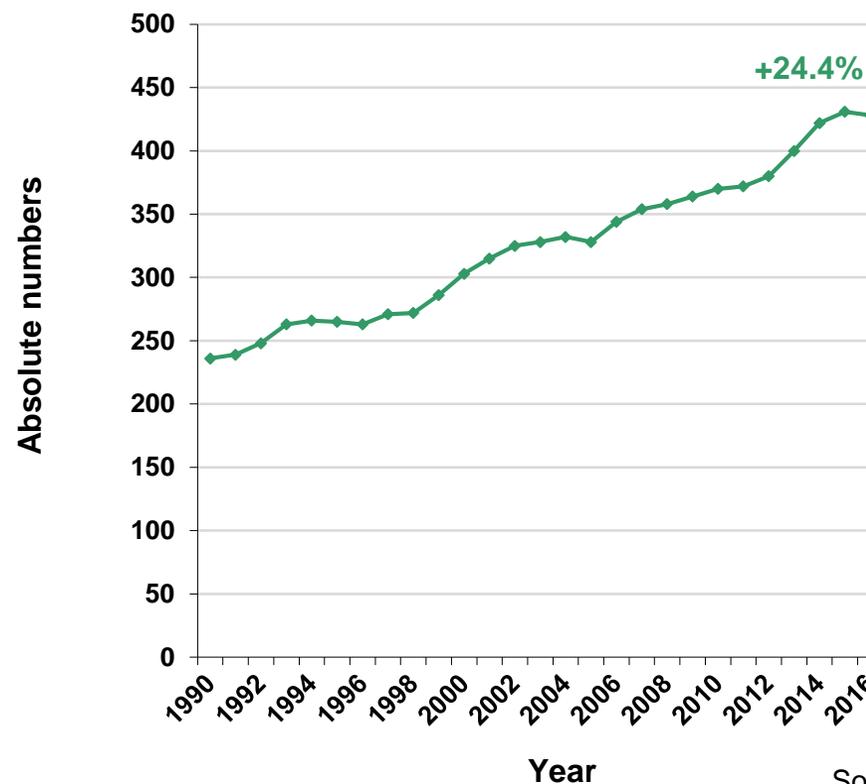
Source: Czech National Cancer Registry, IHIS

Epidemiological trends for vaginal cancer (C52) in the Czech Republic

Incidence and mortality trends



Prevalence trend

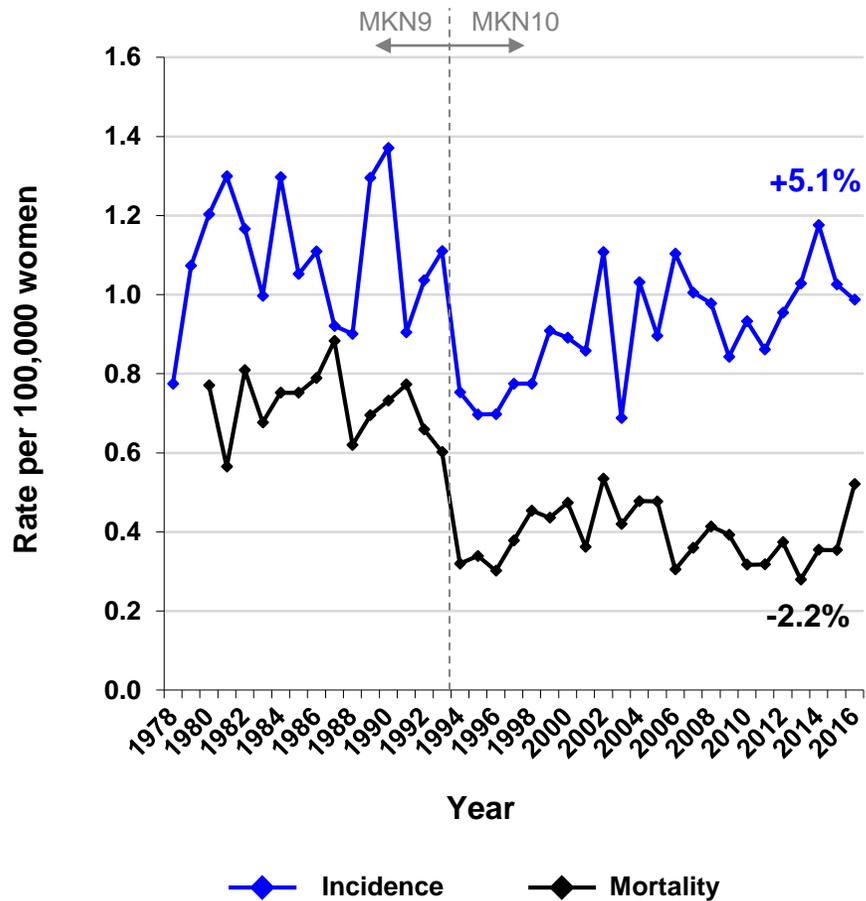


%: growth trend in the period 2006–2016

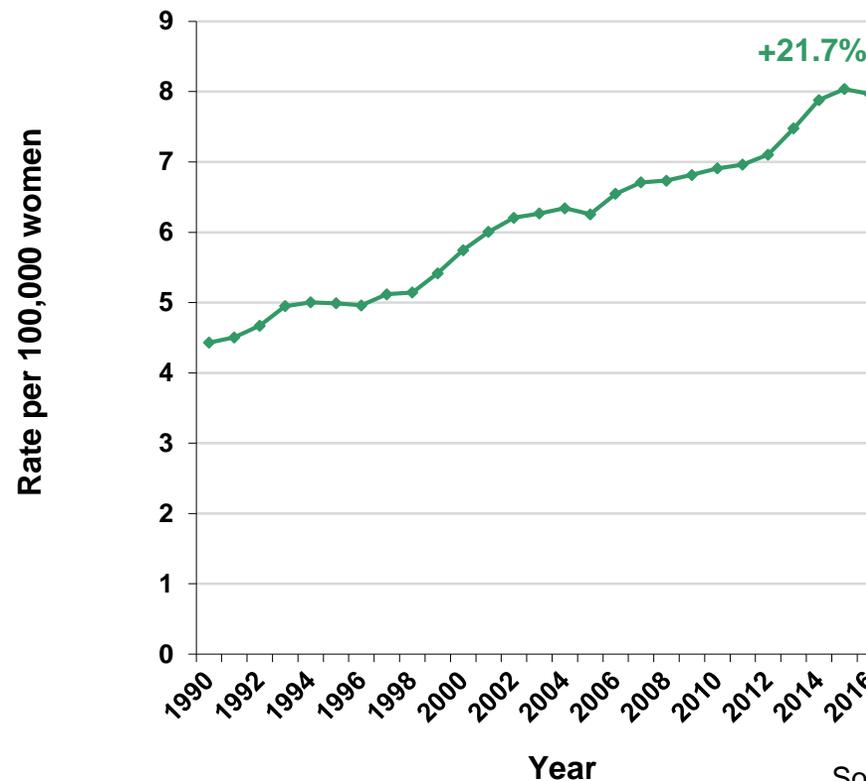
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for vaginal cancer (C52) in the Czech Republic

Incidence and mortality trends



Prevalence trend



Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for vaginal cancer (C52) in the Czech Republic

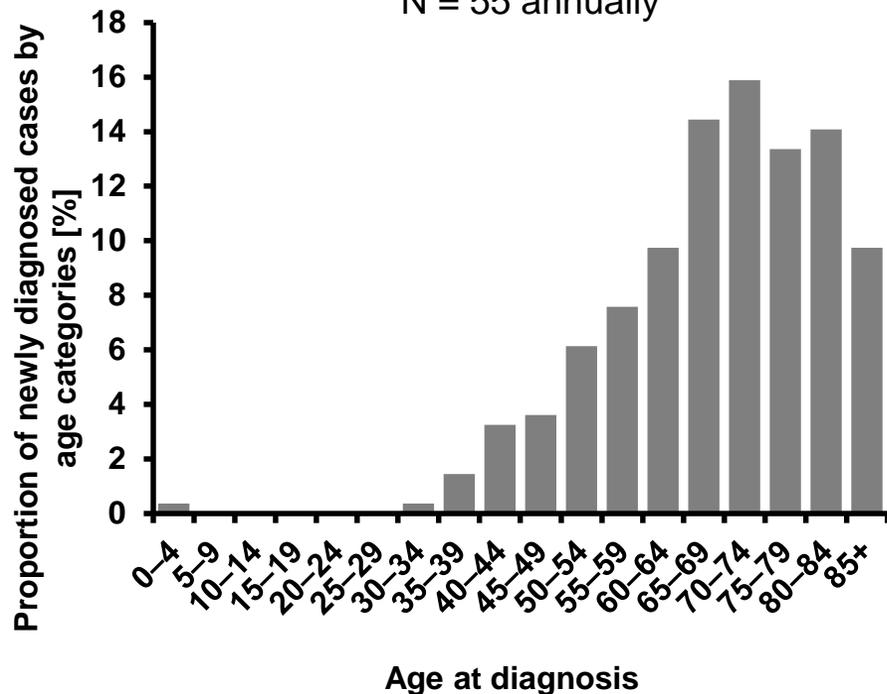
	2010	2011	2012	2013	2014	2015	2016	<i>Annual average percentage change in trend 2010–2016</i>
<i>Absolute numbers</i>								
Incidence	50	46	51	55	63	55	53	+2.7%
Mortality	17	17	20	15	19	19	28	+7.0%
Prevalence (on 31 Dec)	370	372	380	400	422	431	428	+3.0%
<i>Rate per 100,000 women</i>								
Incidence	0.93	0.86	0.95	1.03	1.18	1.03	0.99	+2.6%
Mortality	0.32	0.32	0.37	0.28	0.35	0.35	0.52	+6.9%
Prevalence (on 31 Dec)	6.91	6.96	7.10	7.48	7.88	8.04	7.97	+3.0%

Source: Czech National Cancer Registry, IHIS – incidence, prevalence; Czech Statistical Office – mortality

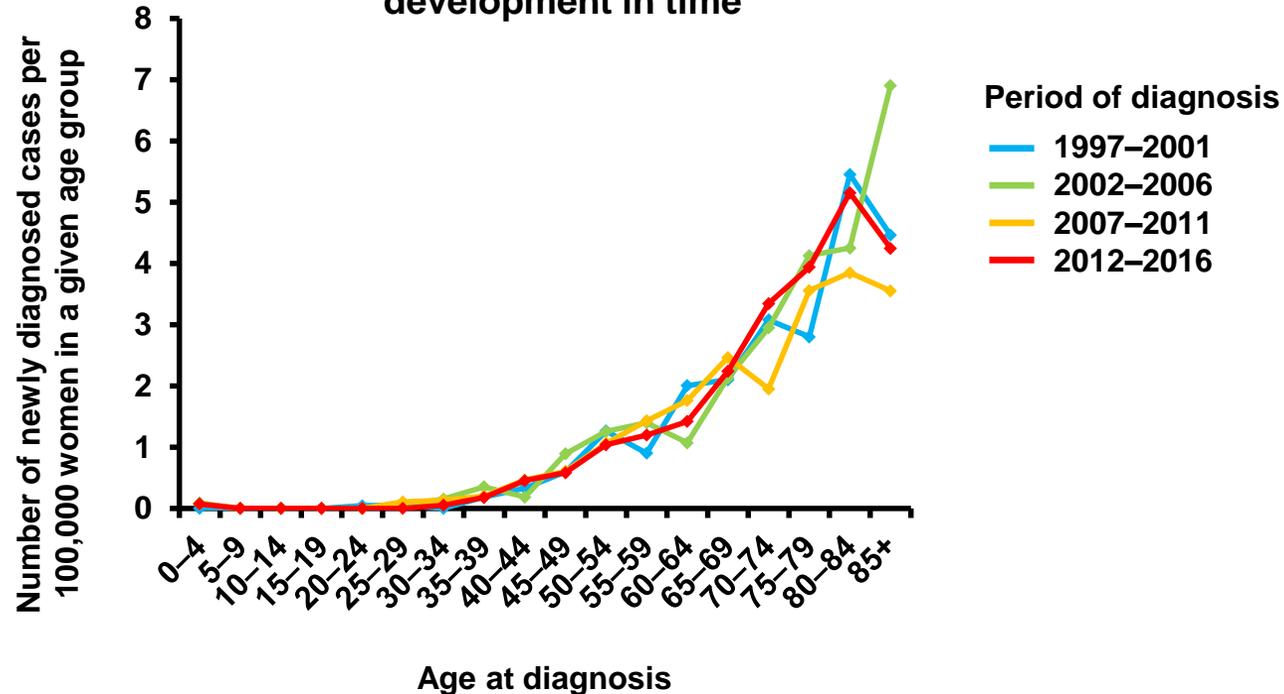
Epidemiological trends for vaginal cancer (C52) in the Czech Republic

Age structure (period 2012–2016)

N = 55 annually



Age-specific incidence rate: development in time



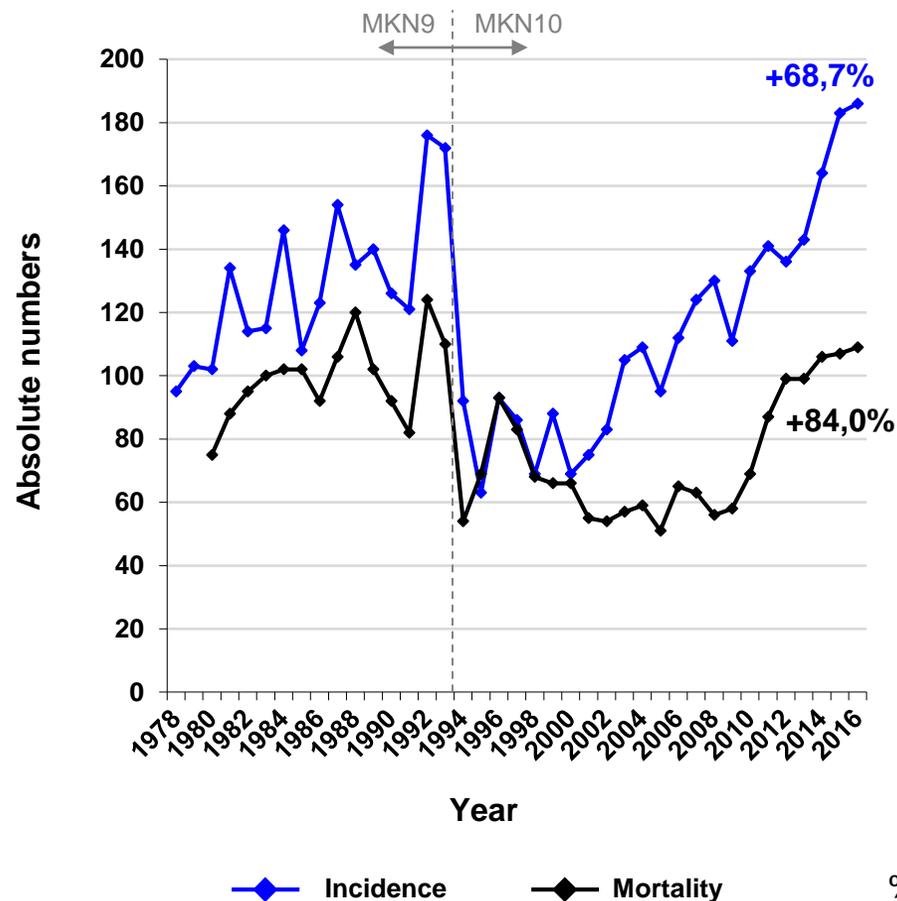
Mean 69 yrs
 Median 70 yrs
 25%–75% quantile 61–79 yrs

	annual number	% of newly diagnosed cases
aged < 50 yrs	5	9%
aged < 60 yrs	13	23%

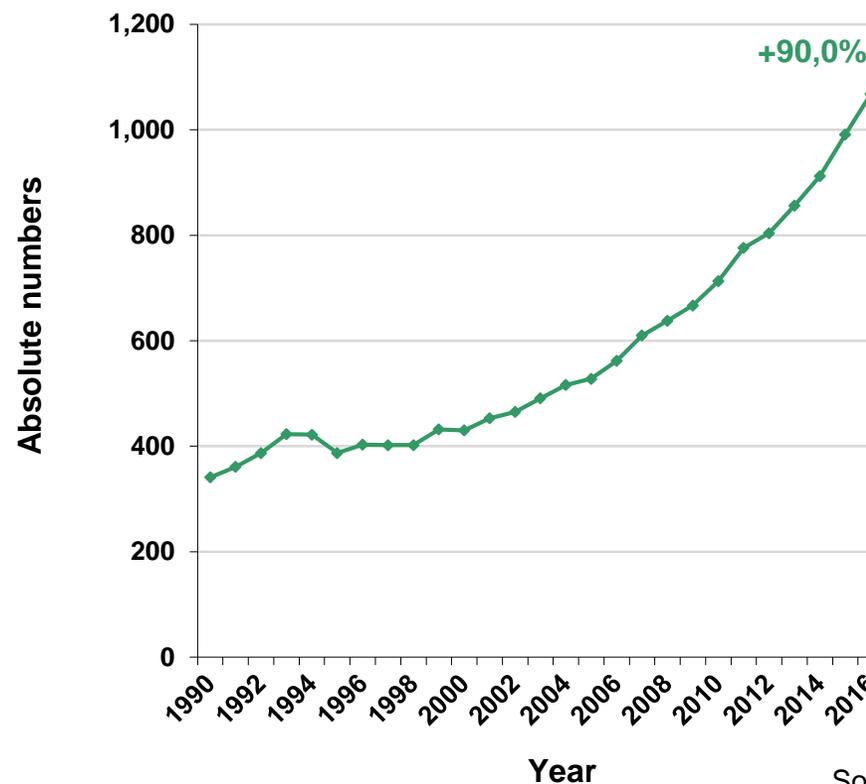
Source: Czech National Cancer Registry, IHIS

Epidemiological trends for anal cancer (C21) in the Czech Republic

Incidence and mortality trends



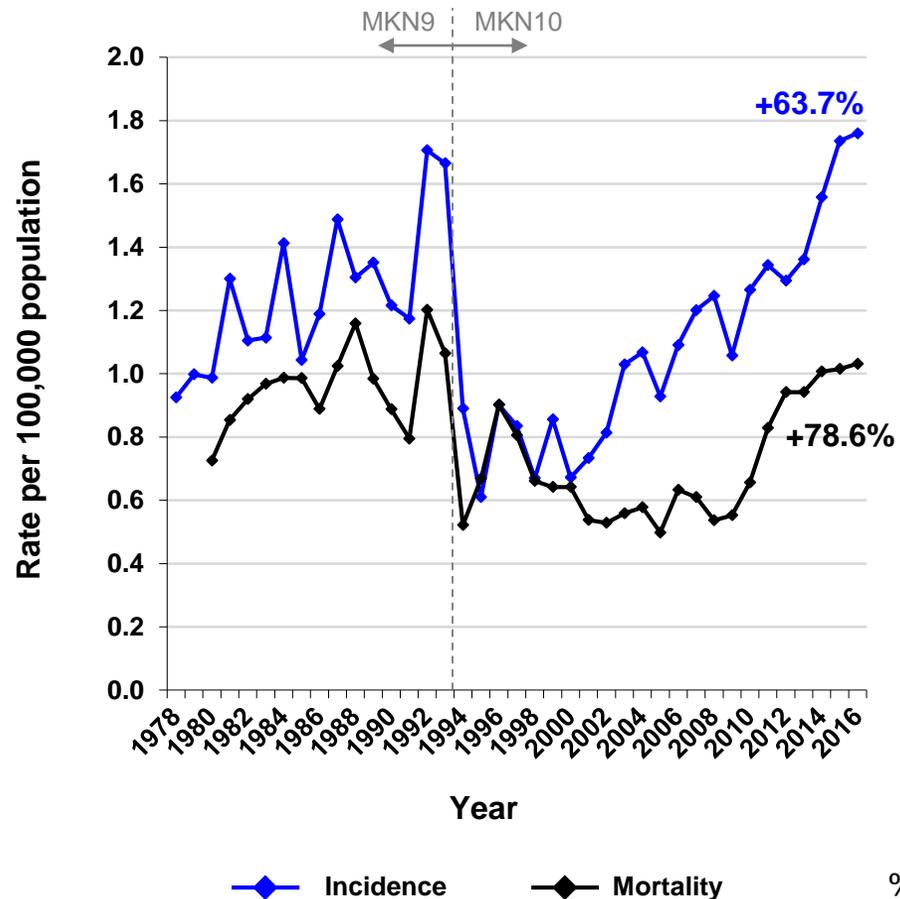
Prevalence trend



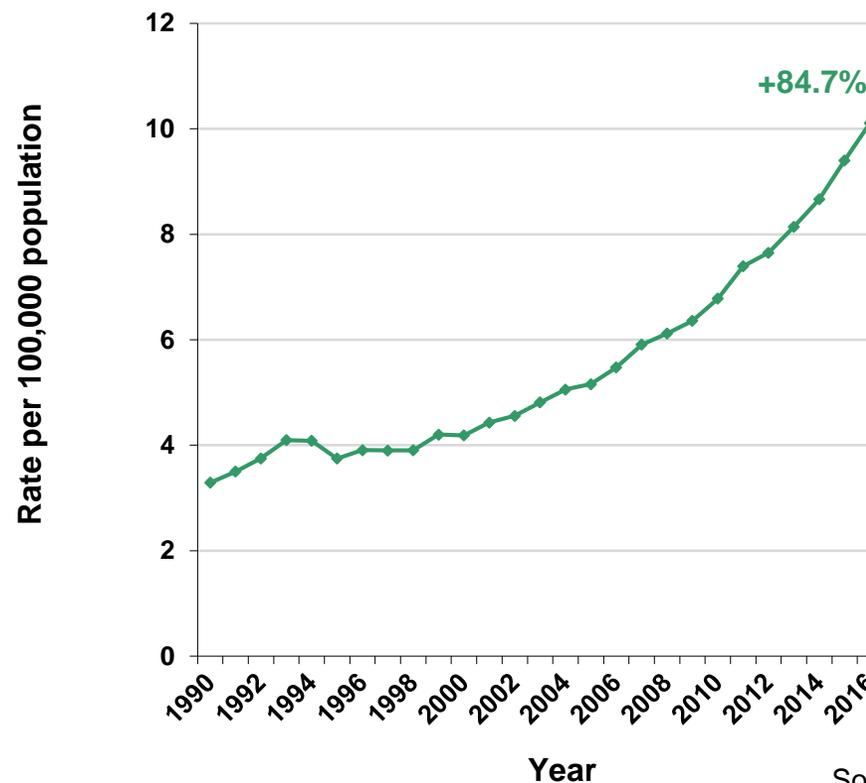
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for anal cancer (C21) in the Czech Republic

Incidence and mortality trends



Prevalence trend



Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for anal cancer (C21) in the Czech Republic

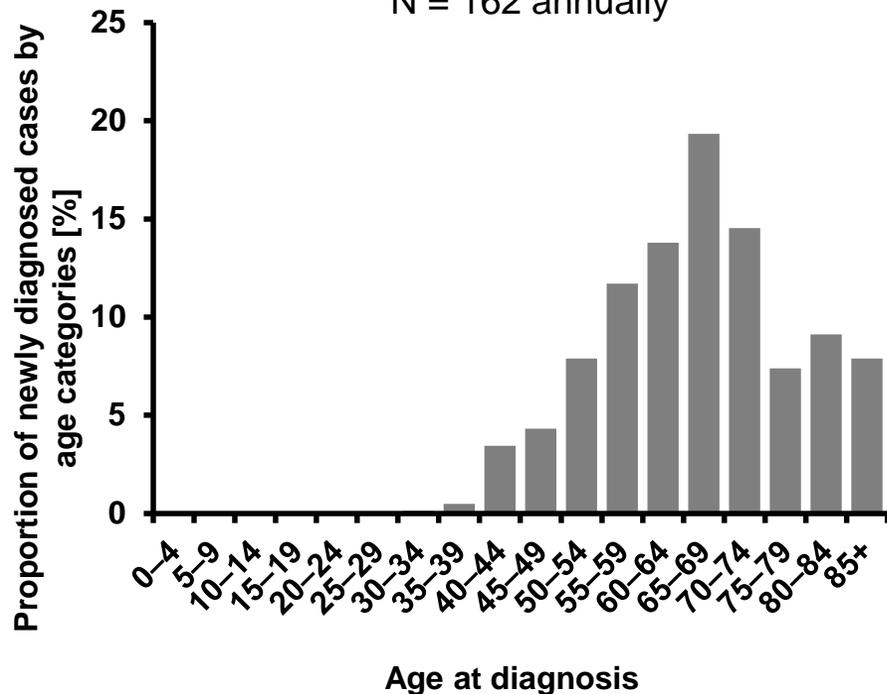
	2010	2011	2012	2013	2014	2015	2016	<i>Annual average percentage change in trend 2010–2016</i>
<i>Absolute numbers</i>								
Incidence	133	141	136	143	164	183	186	+6.5%
Mortality	69	87	99	99	106	107	109	+6.4%
Prevalence (on 31 Dec)	713	776	804	856	912	991	1,068	+6.9%
<i>Rate per 100,000 population</i>								
Incidence	1.26	1.34	1.29	1.36	1.56	1.74	1.76	+6.4%
Mortality	0.66	0.83	0.94	0.94	1.01	1.01	1.03	+6.4%
Prevalence (on 31 Dec)	6.78	7.39	7.65	8.14	8.67	9.40	10.11	+6.8%

Source: Czech National Cancer Registry, IHIS – incidence, prevalence; Czech Statistical Office – mortality

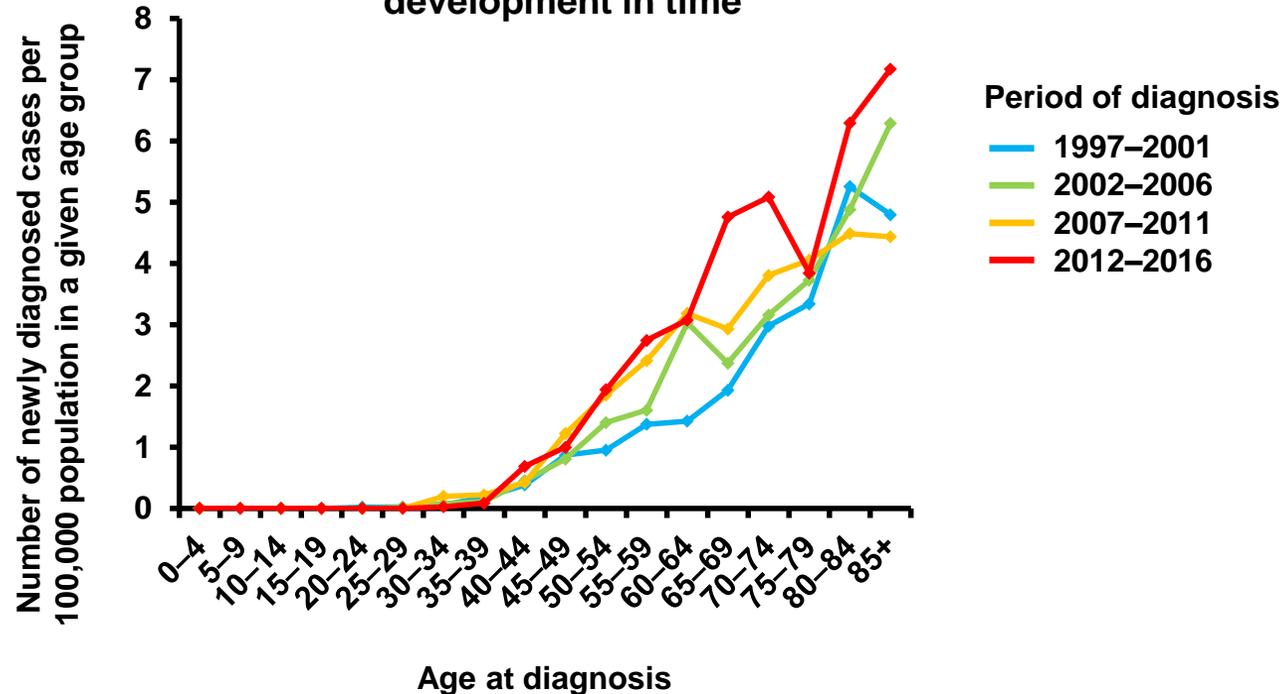
Epidemiological trends for anal cancer (C21) in the Czech Republic

Age structure (period 2012–2016)

N = 162 annually



Age-specific incidence rate: development in time



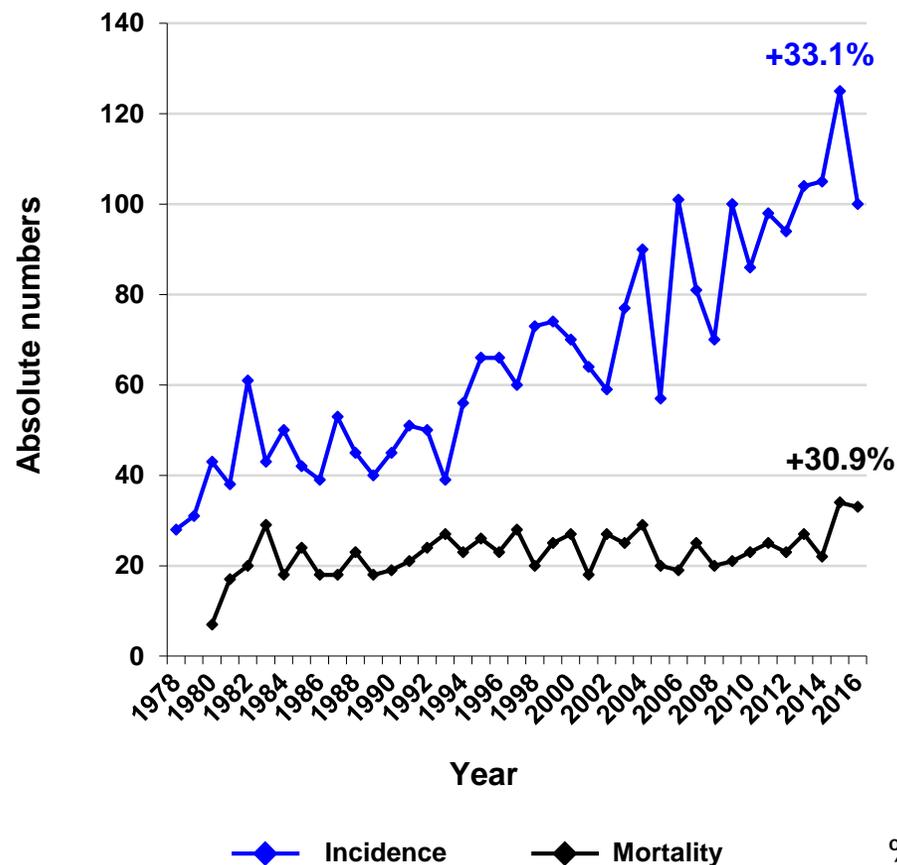
Mean 67 yrs
 Median 66 yrs
 25%–75% quantile 58–74 yrs

	annual number	% of newly diagnosed cases
aged < 50 yrs	14	8%
aged < 60 yrs	45	28%

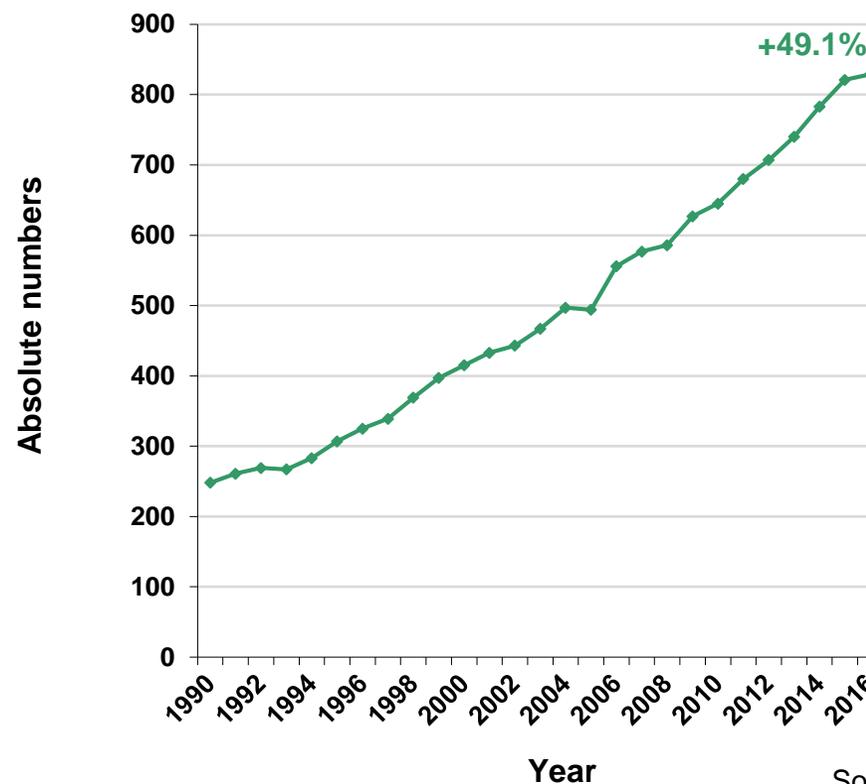
Source: Czech National Cancer Registry, IHIS

Epidemiological trends for penile cancer (C60) in the Czech Republic

Incidence and mortality trends



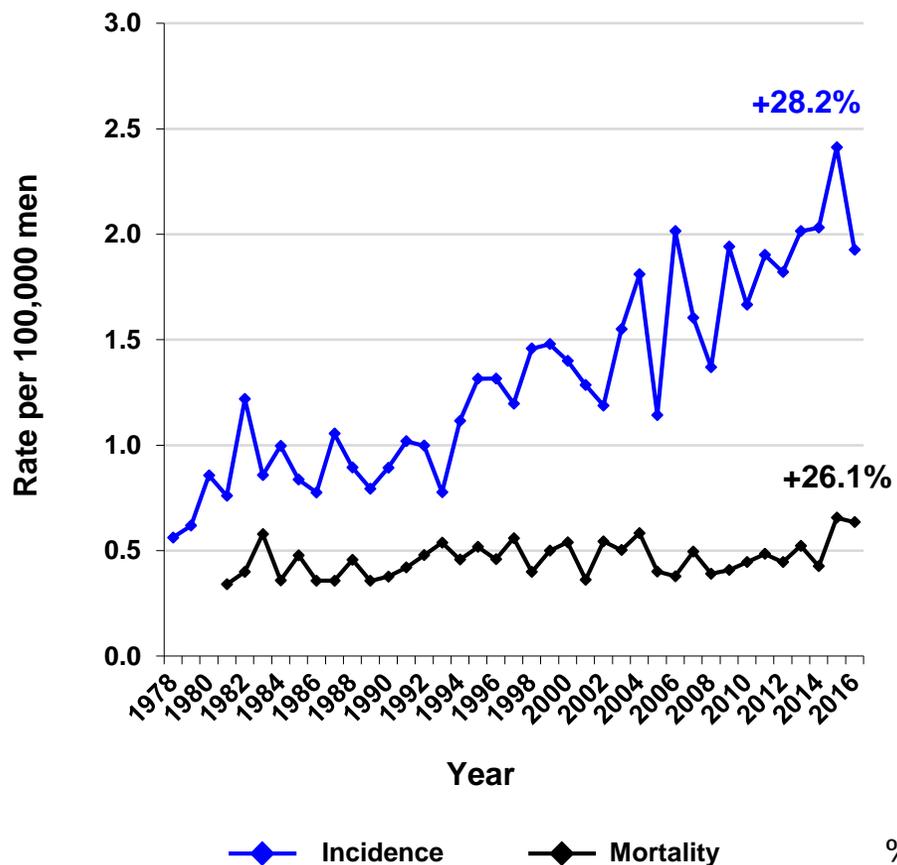
Prevalence trend



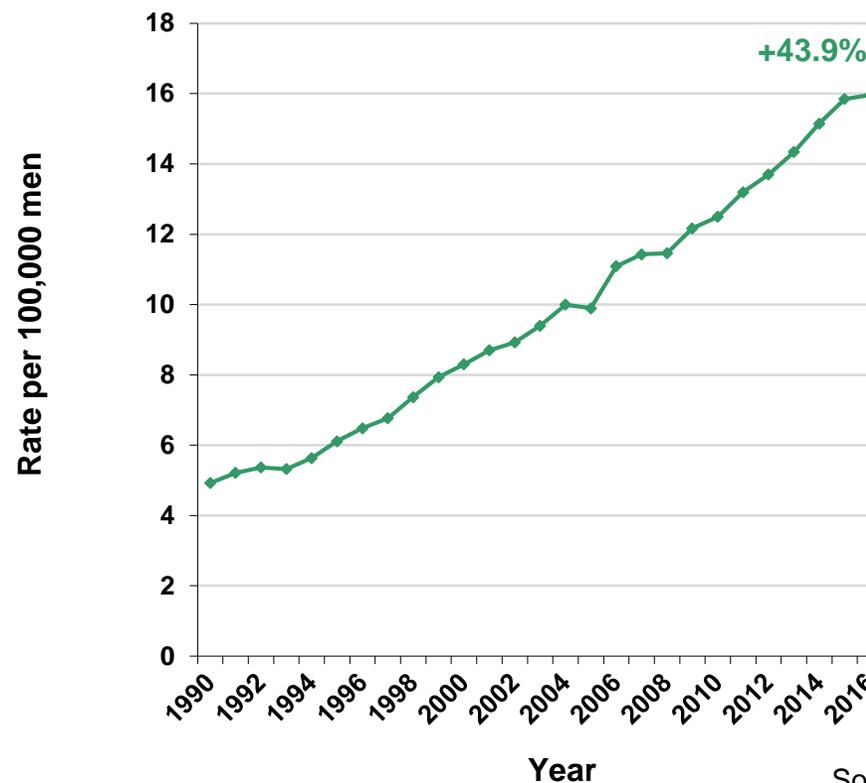
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for penile cancer (C60) in the Czech Republic

Incidence and mortality trends



Prevalence trend



Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for penile cancer (C60) in the Czech Republic

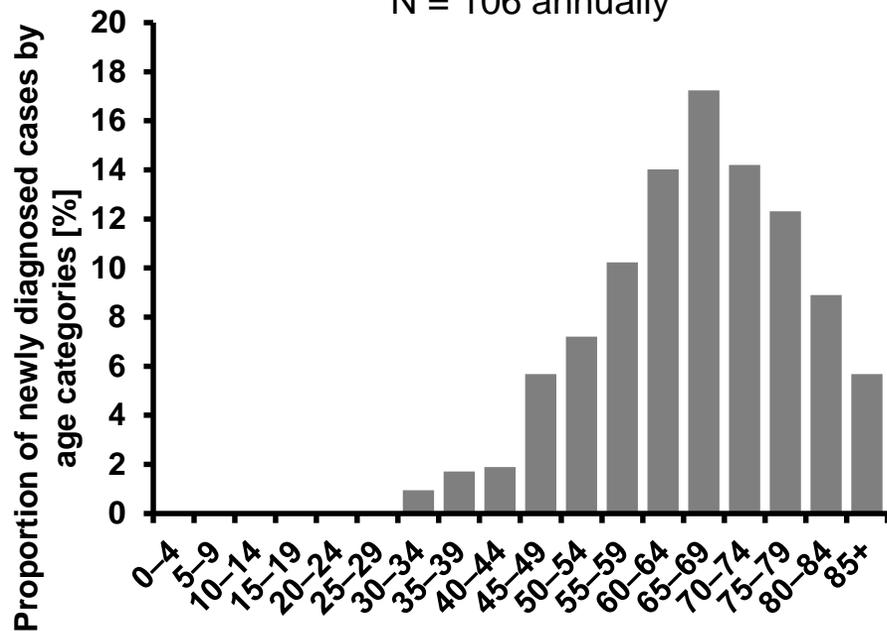
	2010	2011	2012	2013	2014	2015	2016	<i>Annual average percentage change in trend 2010–2016</i>
<i>Absolute numbers</i>								
Incidence	86	98	94	104	105	125	100	+3.8%
Mortality	23	25	23	27	22	34	33	+6.6%
Prevalence (on 31 Dec)	645	680	707	740	783	821	829	+4.5%
<i>Rate per 100,000 men</i>								
Incidence	1.7	1.9	1.8	2.0	2.0	2.4	1.9	+3.7%
Mortality	0.4	0.5	0.4	0.5	0.4	0.7	0.6	+6.4%
Prevalence (on 31 Dec)	12.5	13.2	13.7	14.3	15.1	15.8	16.0	+4.4%

Source: Czech National Cancer Registry, IHIS – incidence, prevalence; Czech Statistical Office – mortality

Epidemiological trends for penile cancer (C60) in the Czech Republic

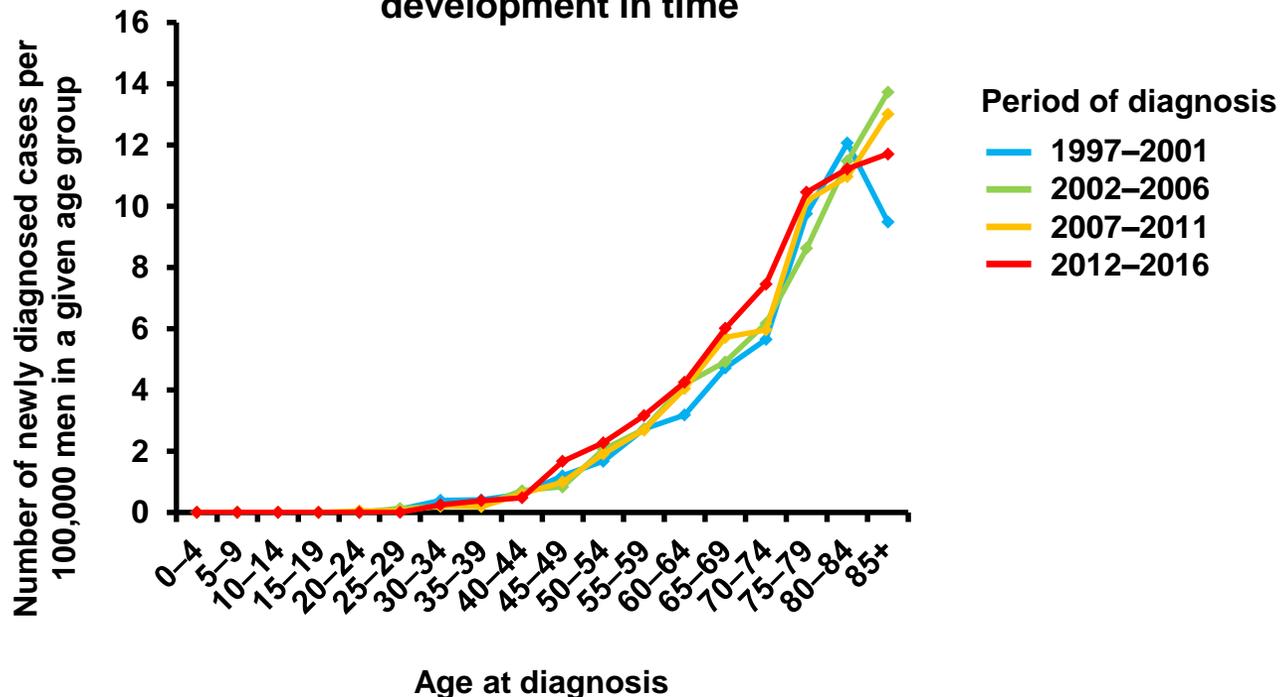
Age structure (period 2012–2016)

N = 106 annually



Age at diagnosis

Age-specific incidence rate: development in time



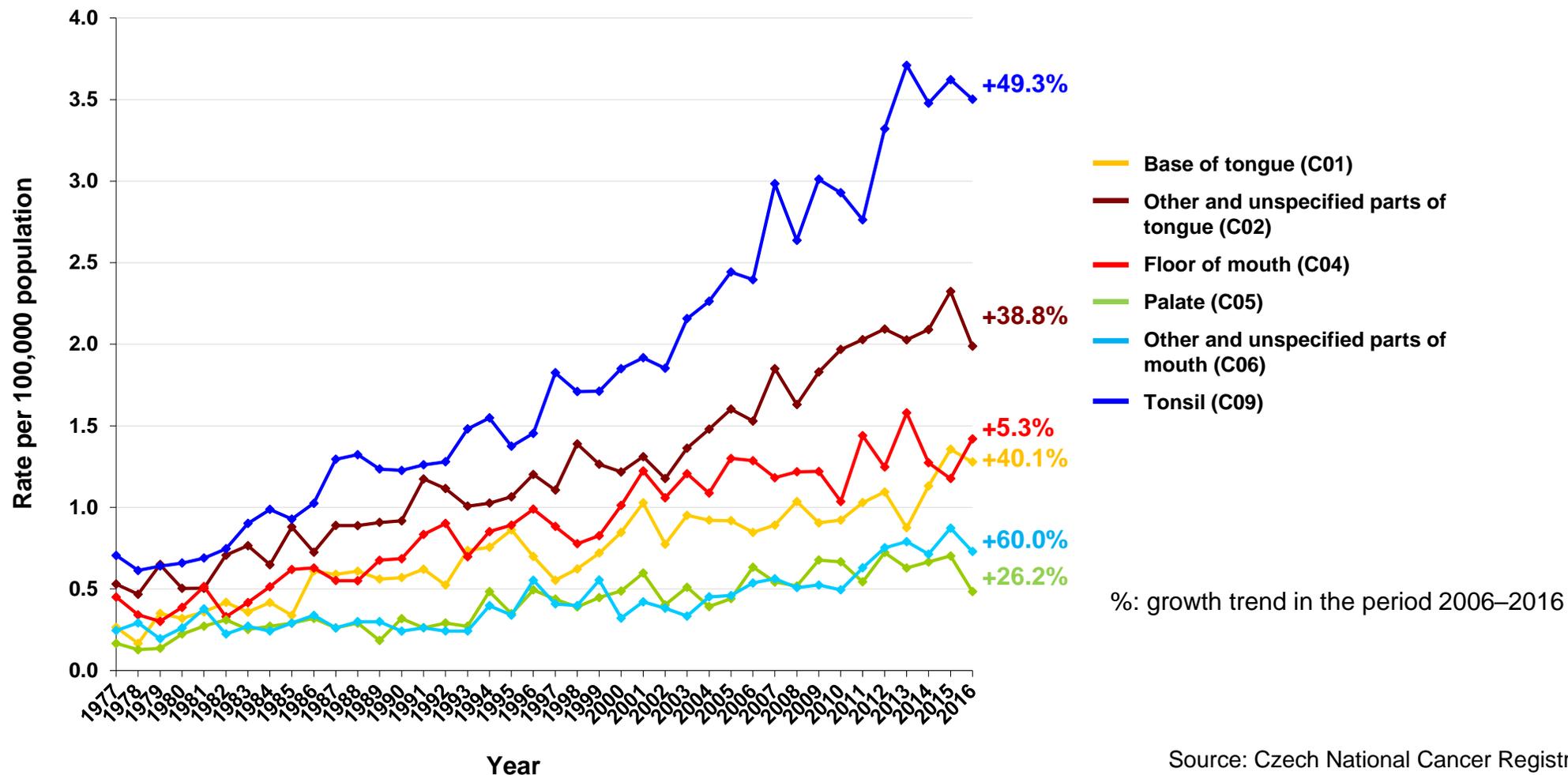
Age at diagnosis

Mean 66 yrs
 Median 67 yrs
 25%–75% quantile 58–75 yrs

	annual number	% of newly diagnosed cases
aged < 50 yrs	11	10%
aged < 60 yrs	29	28%

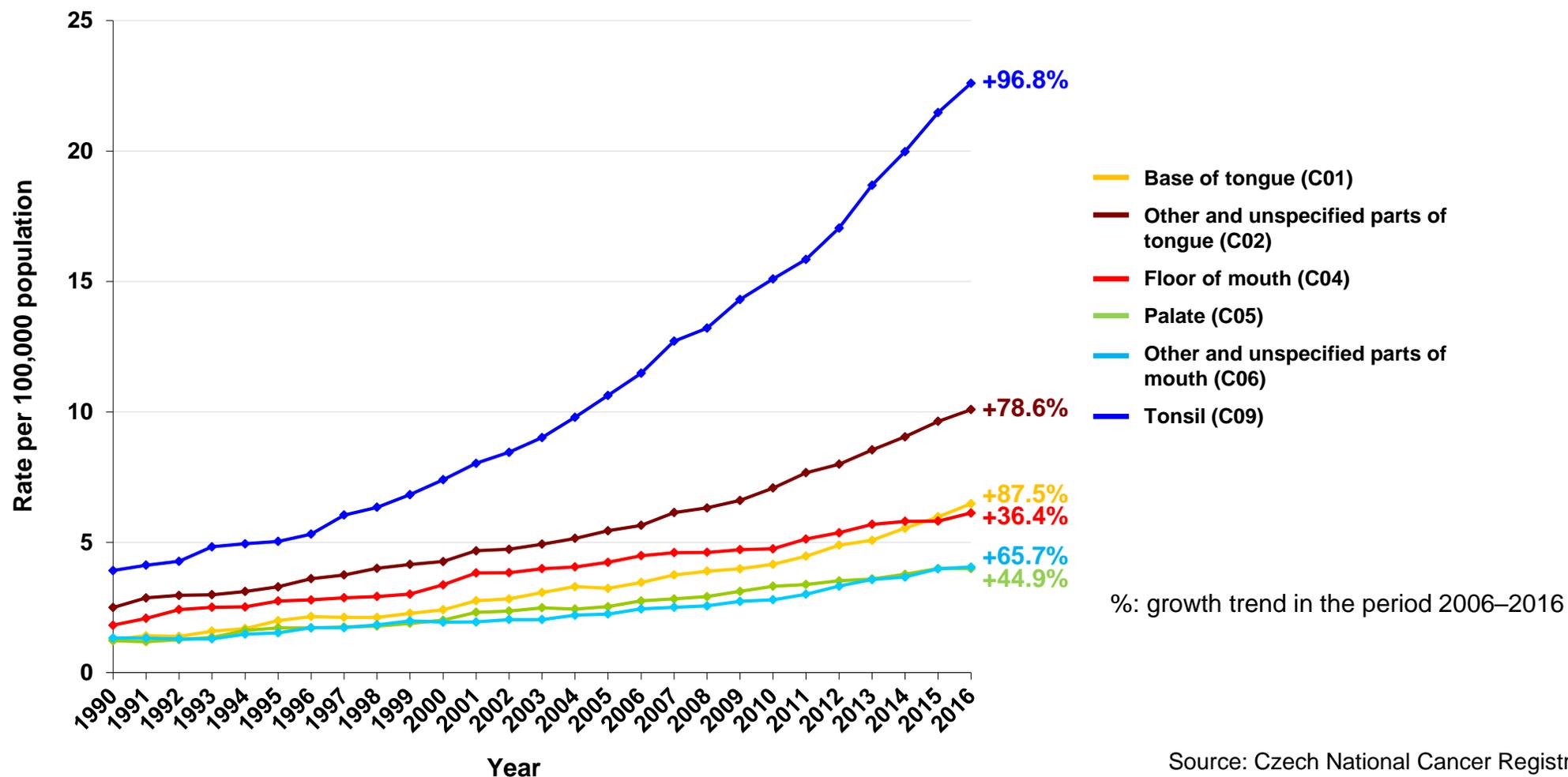
Source: Czech National Cancer Registry, IHIS

Incidence trends for selected head and neck cancers (C01, C02, C04–C06, C09) in the Czech Republic



Source: Czech National Cancer Registry, IHIS

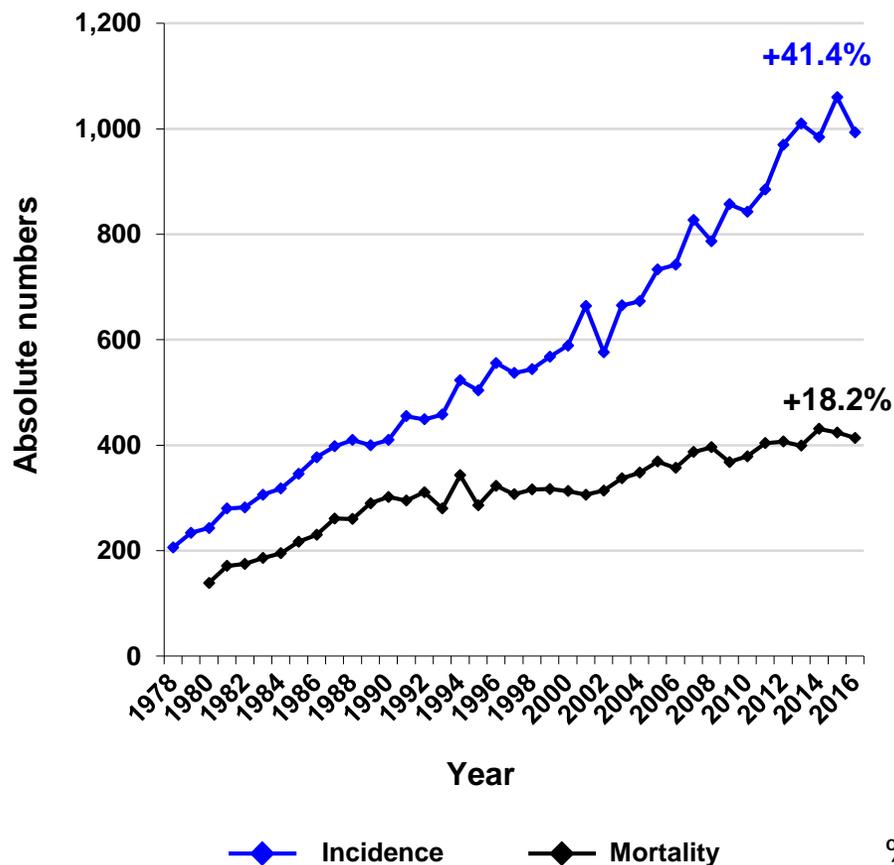
Prevalence trends for selected head and neck cancers (C01, C02, C04–C06, C09) in the Czech Republic



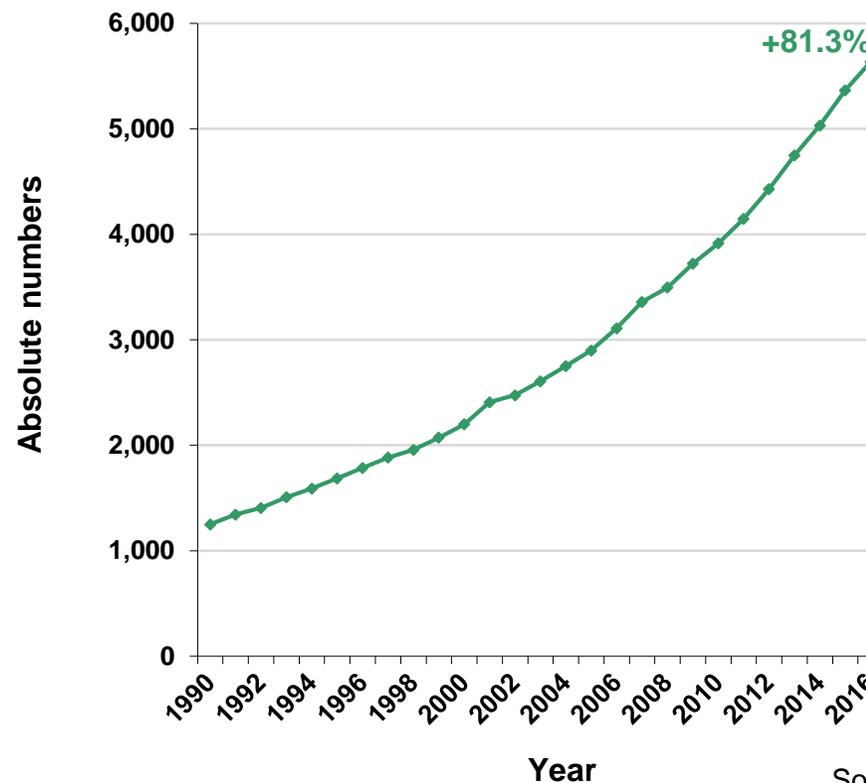
Source: Czech National Cancer Registry, IHIS

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in the Czech Rep.

Incidence and mortality trends



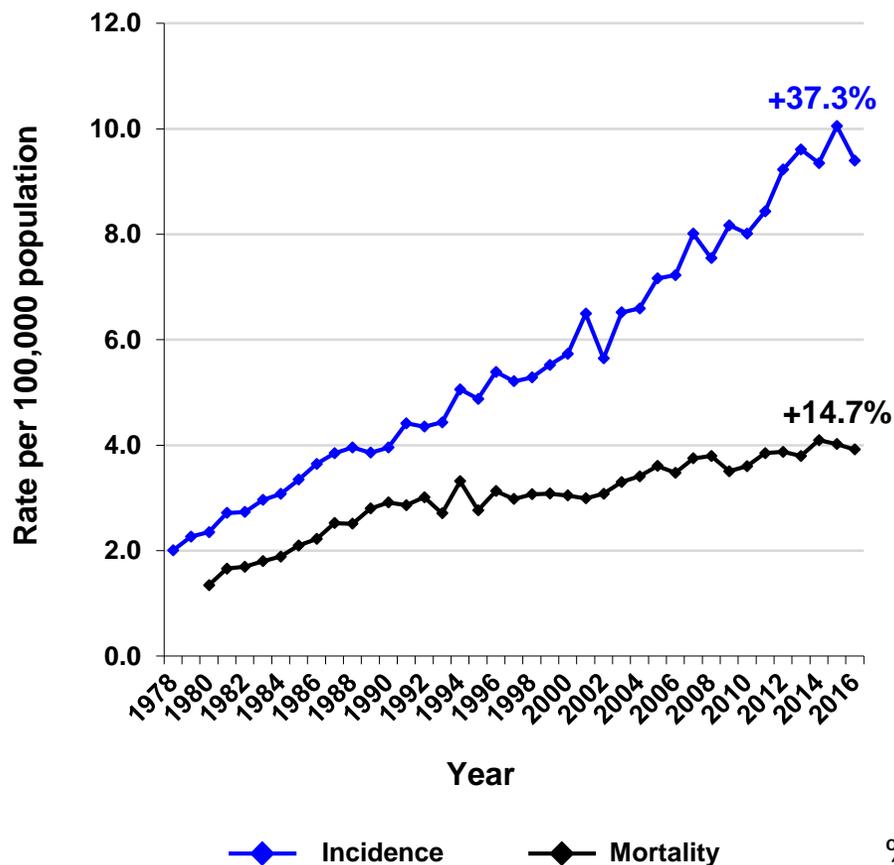
Prevalence trend



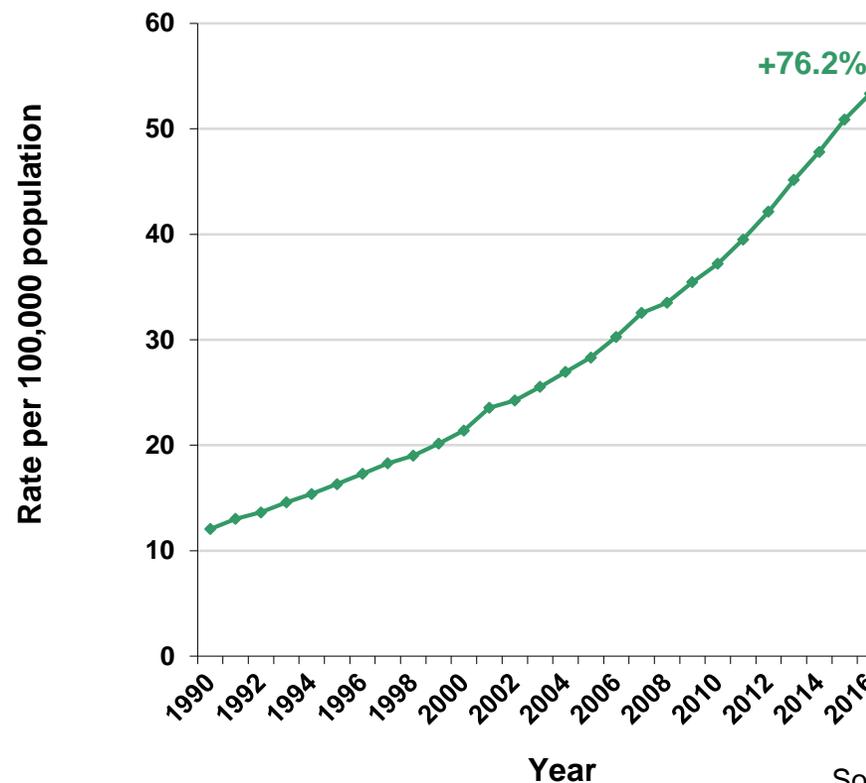
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in the Czech Rep.

Incidence and mortality trends



Prevalence trend



Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in the Czech Rep.

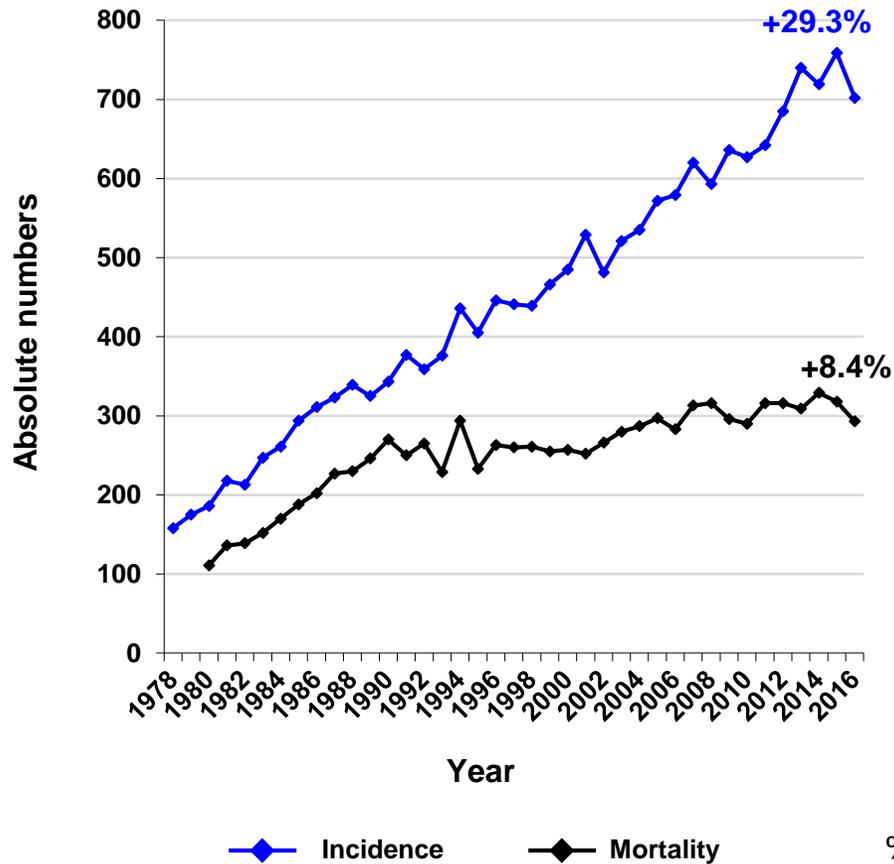


	2010	2011	2012	2013	2014	2015	2016	<i>Annual average percentage change in trend 2010–2016</i>
<i>Absolute numbers</i>								
Incidence	843	885	970	1 010	984	1 060	993	+3.1%
Mortality	379	404	407	399	431	424	414	+1.5%
Prevalence (on 31 Dec)	3,913	4,147	4,429	4,747	5,032	5,365	5,636	+6.4%
<i>Rate per 100,000 population</i>								
Incidence	8.0	8.4	9.2	9.6	9.3	10.1	9.4	+3.0%
Mortality	3.6	3.8	3.9	3.8	4.1	4.0	3.9	+1.4%
Prevalence (on 31 Dec)	37.2	39.5	42.1	45.2	47.8	50.9	53.3	+6.3%

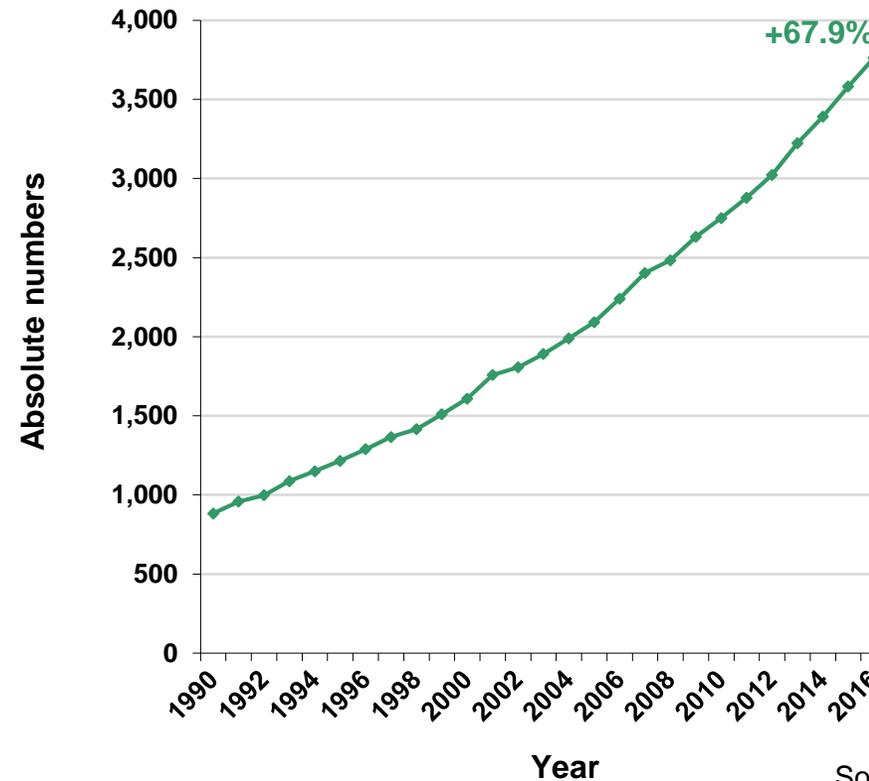
Source: Czech National Cancer Registry, IHIS – incidence, prevalence; Czech Statistical Office – mortality

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in men in the Czech Republic

Incidence and mortality trends



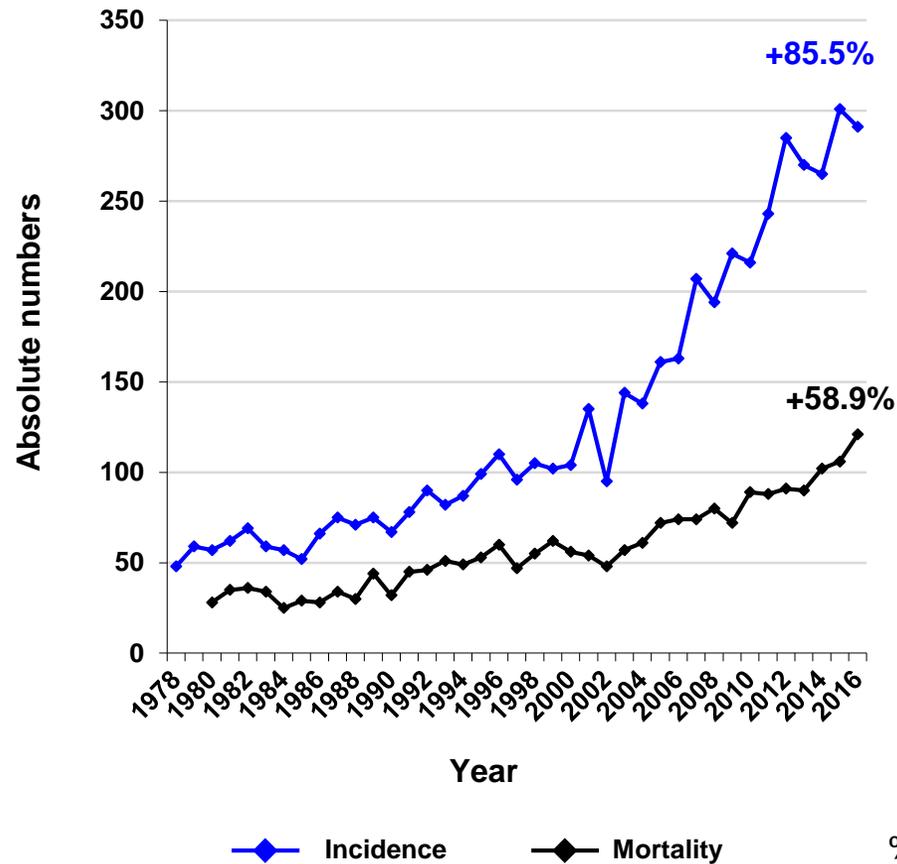
Prevalence trend



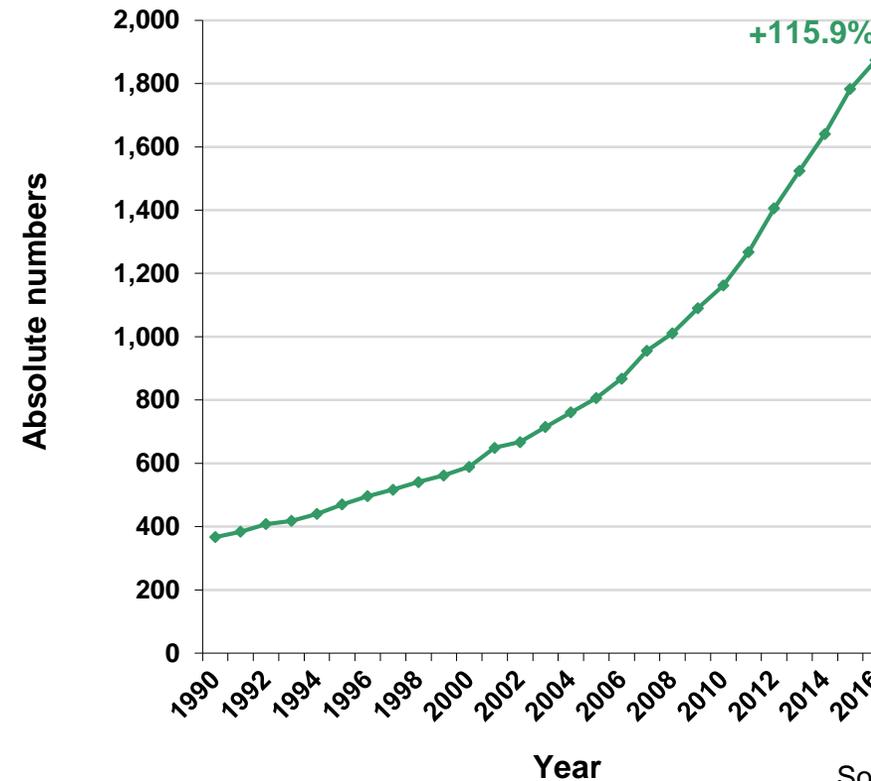
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in women in the Czech Rep.

Incidence and mortality trends



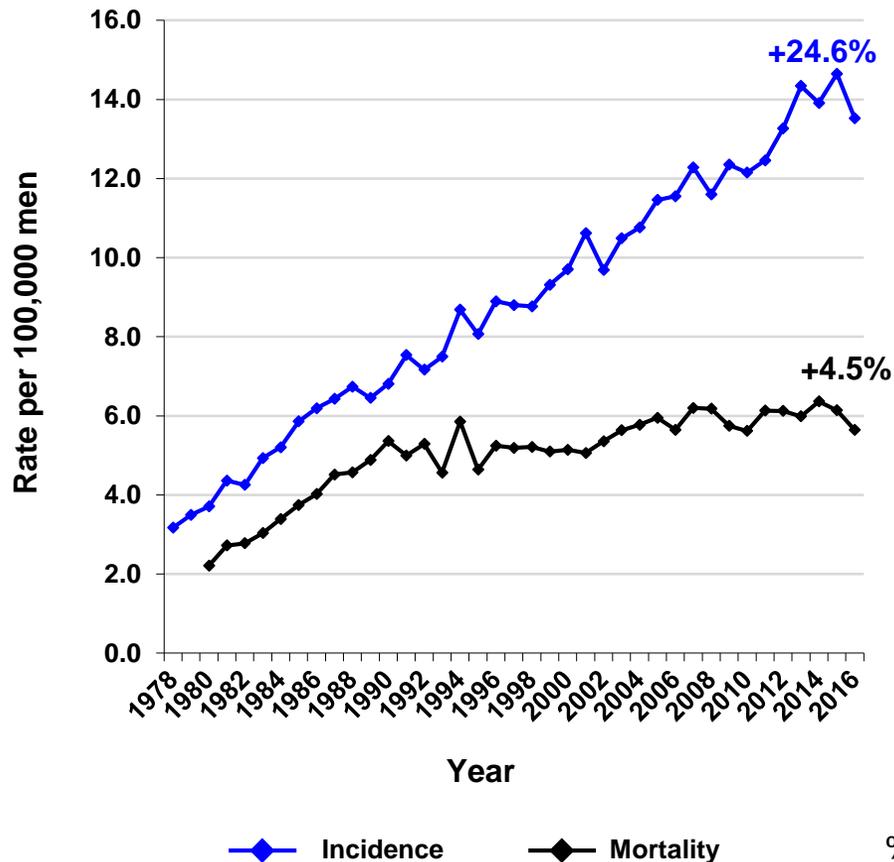
Prevalence trend



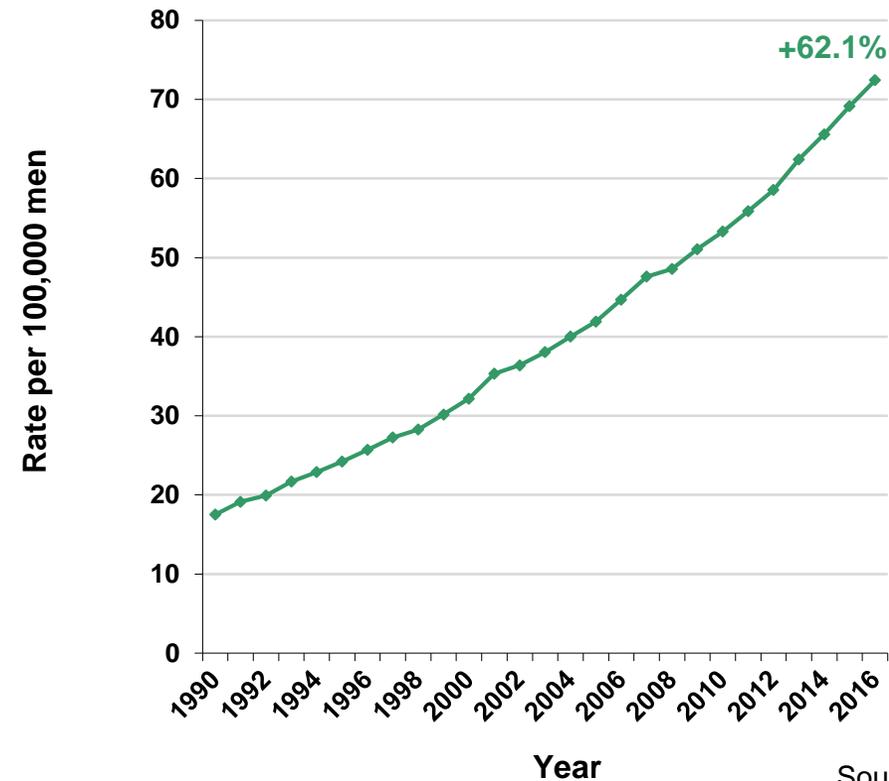
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in men in the Czech Republic

Incidence and mortality trends



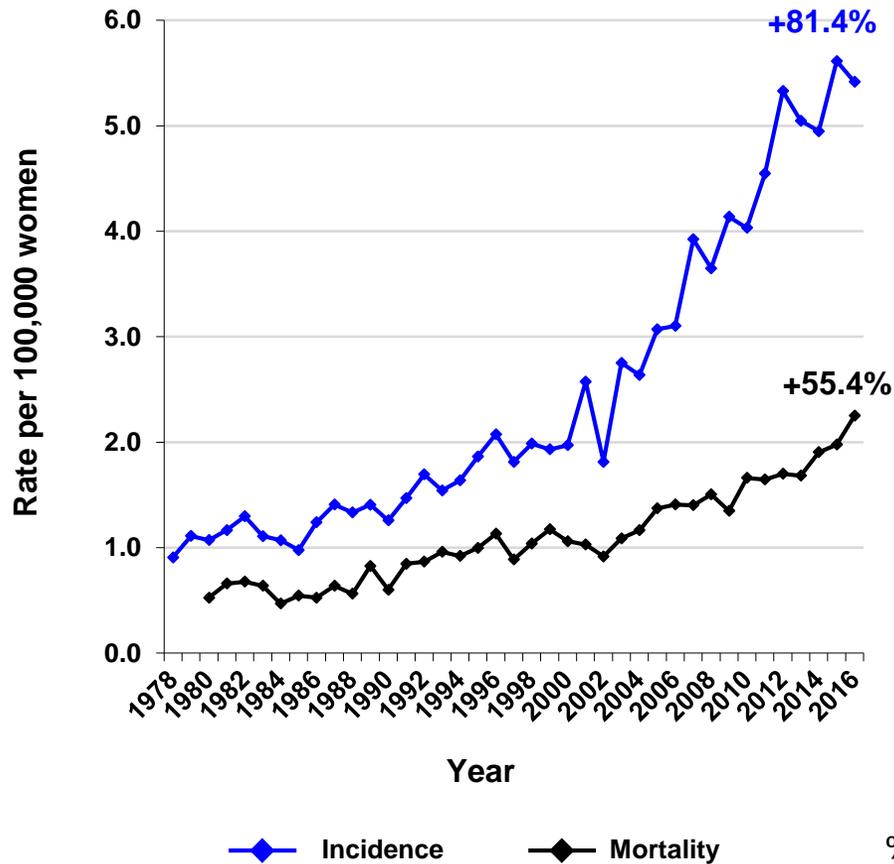
Prevalence trend



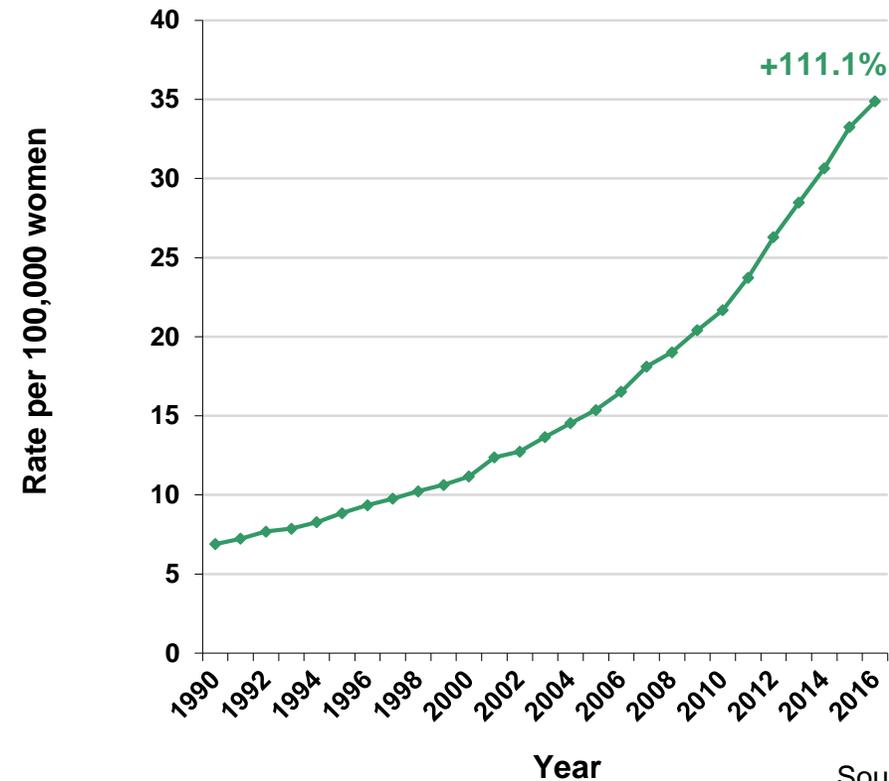
Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in men in the Czech Republic

Incidence and mortality trends



Prevalence trend



Source: Czech National Cancer Registry, IHIS – incidence, prevalence, mortality 1977–1993; Czech Statistical Office – mortality 1994–2015

Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in the Czech Republic by sex

MEN	2010	2011	2012	2013	2014	2015	2016	Annual average percentage change in trend 2010–2016
Absolute numbers								
Incidence	627	642	685	740	719	759	702	+2.6%
Mortality	290	316	316	309	329	318	293	+0.3%
Prevalence (on 31 Dec)	2,751	2,879	3,023	3,223	3,391	3,582	3,762	+5.5%
Rate per 100,000 men								
Incidence	12.1	12.5	13.3	14.3	13.9	14.7	13.5	+2.5%
Mortality	5.6	6.1	6.1	6.0	6.4	6.1	5.6	+0.2%
Prevalence (on 31 Dec)	53.3	55.9	58.6	62.4	65.6	69.1	72.4	+5.4%

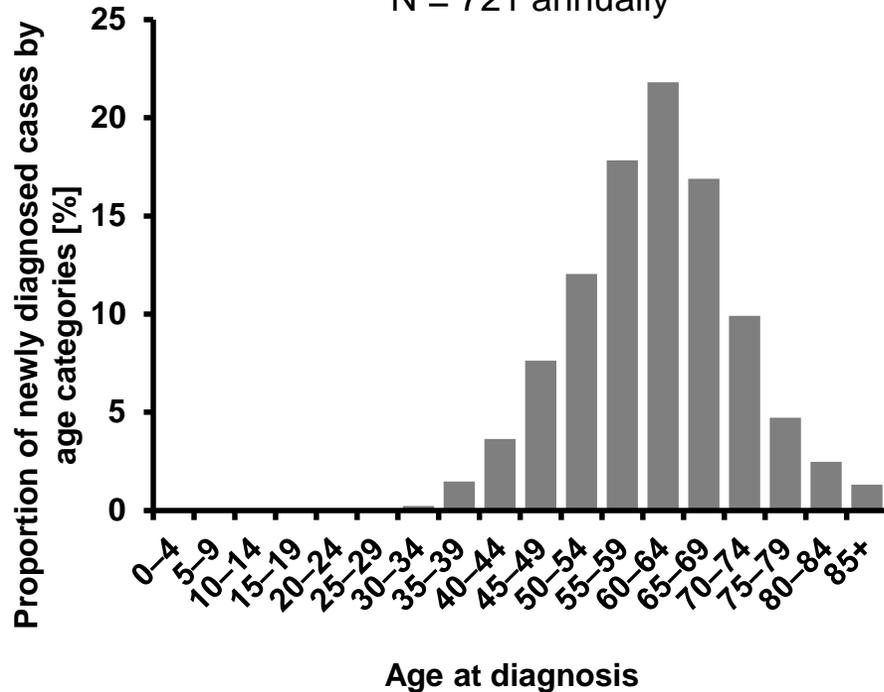
WOMEN	2010	2011	2012	2013	2014	2015	2016	Annual average percentage change in trend 2010–2016
Absolute numbers								
Incidence	216	243	285	270	265	301	291	+4.4%
Mortality	89	88	91	90	102	106	121	+5.4%
Prevalence (on 31 Dec)	1,162	1,268	1,406	1,524	1,641	1,783	1,874	+8.5%
Rate per 100,000 women								
Incidence	4.0	4.5	5.3	5.0	4.9	5.6	5.4	+4.3%
Mortality	1.7	1.6	1.7	1.7	1.9	2.0	2.3	+5.3%
Prevalence (on 31 Dec)	21.7	23.7	26.3	28.5	30.6	33.2	34.9	+8.4%

Source: Czech National Cancer Registry, IHIS – incidence, prevalence; Czech Statistical Office – mortality

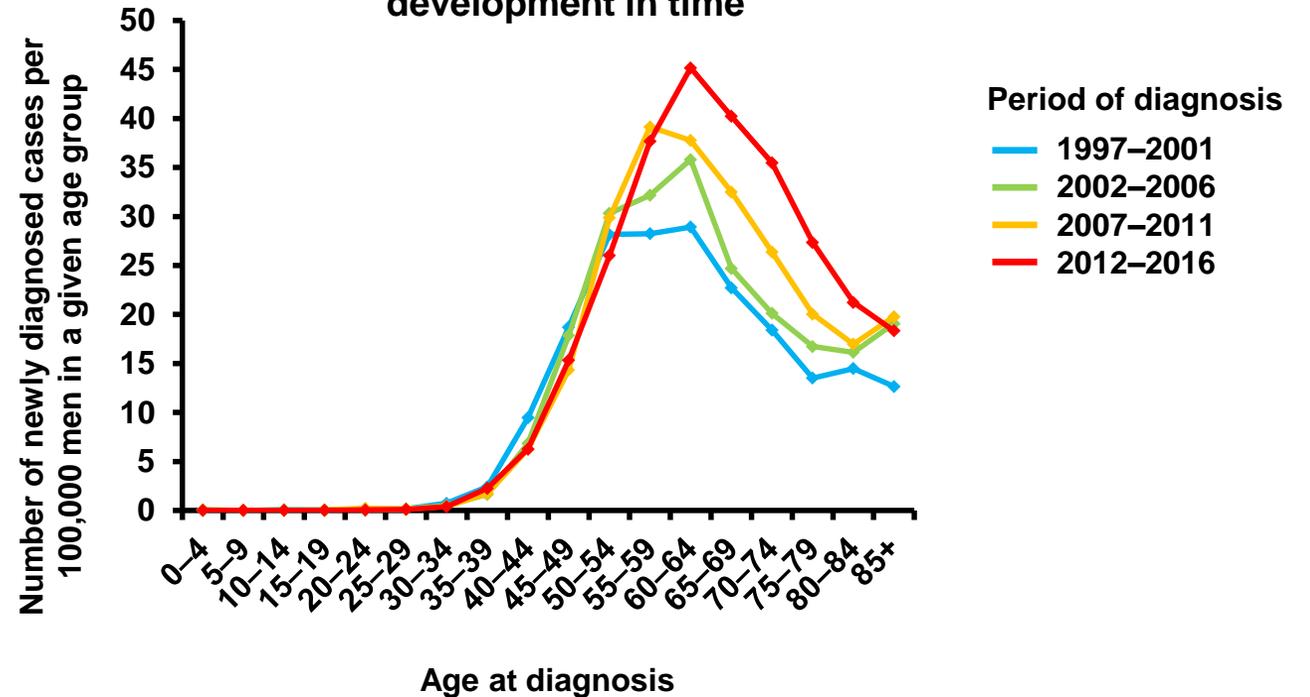
Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in men in the Czech Republic

Age structure (period 2012–2016)

N = 721 annually



Age-specific incidence rate: development in time



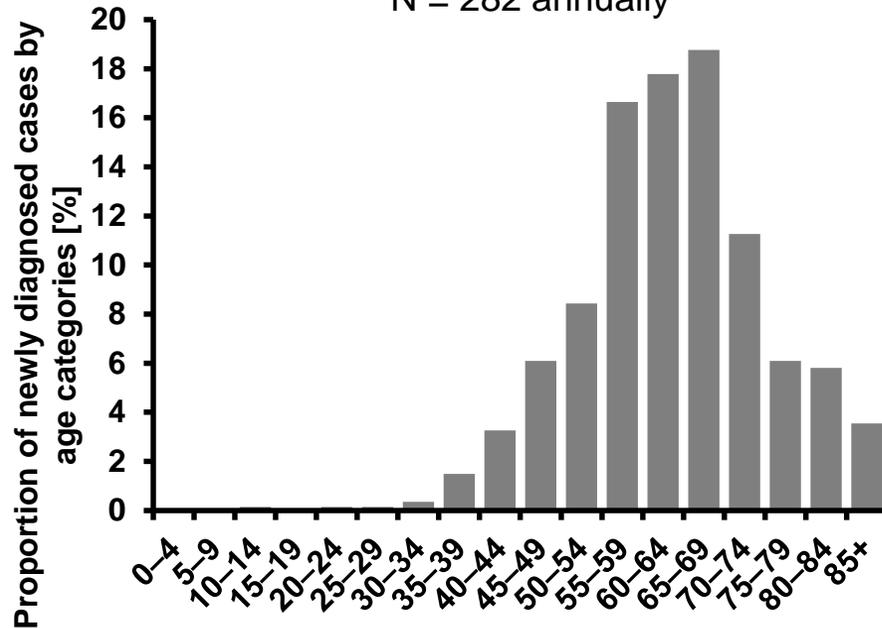
	Mean	Median	25%–75% quantile	annual number	% of newly diagnosed cases
	61 yrs	61 yrs	54–67 yrs	94	13%
				309	43%

Source: Czech National Cancer Registry, IHIS

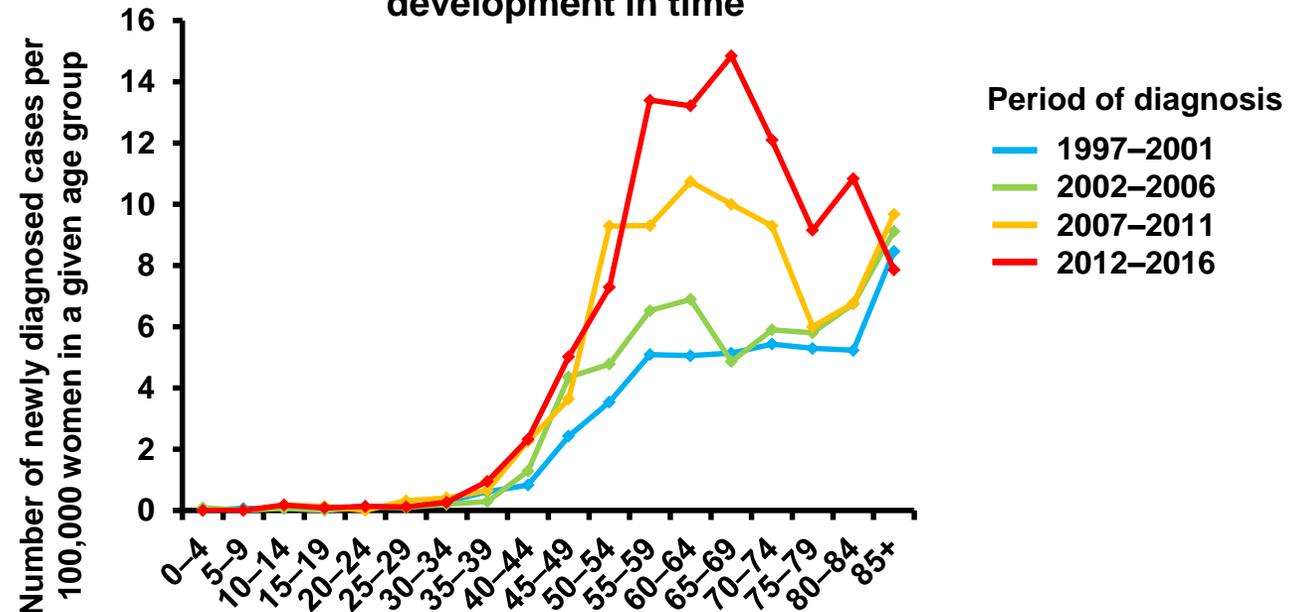
Epidemiological trends for selected head and neck cancers (C01, C02, C04–C06, C09) in women in the Czech Rep.

Age structure (period 2012–2016)

N = 282 annually



Age-specific incidence rate: development in time



	Age	annual number	% of newly diagnosed cases
Mean	63 yrs		
Median	63 yrs		
25%–75% quantile	56–70 yrs		
	aged < 50 yrs	33	12%
	aged < 60 yrs	104	37%

Age at diagnosis

Source: Czech National Cancer Registry, IHIS