National Screening Unit

National Cervical Screening Programme

Annual Report 2014

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Report prepared by Megan Smith†, Leanne Rumlee† and Karen Canfell.

Cancer Research Division, Cancer Council NSW, Sydney NSW Australia

† Joint first authors

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Acknowledgments

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We would like to acknowledge the contribution from Ivan Rowe, Senior Analyst Service Development for extracting the cancer data to calculate and produce the annual report tables.

About the authors

The authors are based in the Cancer Research Division at Cancer Council NSW, Sydney, Australia. They are part of a research group (led by Prof Karen Canfell) which has as its core research focus in the epidemiology of cervical cancer, cervical screening and human papillomavirus (HPV) vaccination. This research group has established an extensive track record both in research publication and in successful completion of commissioned projects related to national cervical screening programs in New Zealand, Australia and England. The group has extensive experience in the analysis of descriptive data from cervical cancer screening programmes. The team also has a range of related skills in the analysis of linked datasets, systematic review and meta-analysis, biostatistics, health economics, and advanced statistical modelling techniques.

Selected Results

Cancer incidence

- In 2014 there were 144 new diagnoses of cervical cancer, including 35 new diagnoses in Māori women.
- This is equivalent to an age-standardised rate (ASR) of 5.5 new diagnoses per 100,000 women in the population, and 10.8 per 100,000 for Māori women.
- Most cervical cancers were squamous cell carcinomas (103 cases; ASR of 4.0 per 100,000 women), with a smaller proportion comprising adenocarcinomas (29 cases; ASR of 1.1 per 100,000 women), adenosquamous (4 cases; ASR of 0.2 per 100,000 women) or other cervical cancers (8 cases; ASR of 0.2 per 100,000 women).
- Overall, between 1996 and 2014 cervical cancer incidence has declined from 10.5 to 5.5 per 100,000 for women of all ethnicities, and from 25.0 to 10.8 per 100,000 for Māori women.

Cancer mortality

- In 2013, there were 54 deaths due to cervical cancer, including 12 deaths in Māori women.
- This is equivalent to an age-standardised mortality rate of 1.7 per 100,000 women in the population, and 4.0 per 100,000 for Māori women.
- Overall, between 1998 and 2013 cervical cancer mortality has declined from 3.2 to 1.7 per 100,000 for women of all ethnicities, and from 10.3 to 4.0 per 100,000 for Māori women.

Changes from previous Annual Reports

Previous annual reports have contained sections relating to participation in screening (coverage and regularity of screening) and screening programme statistics (cytology reporting, histology reporting, and positive predictive value of high grade cytology results). This information on participation in screening and programme statistics will no longer be included in Annual Reports from the current 2014 Annual Report onwards, because of substantial overlap with information available in the biannual monitoring reports. These biannual reports are published sooner than the Annual Report for the same time period, because of the additional need in the Annual Reports to wait for the release of updated data on cancer registrations and deaths.

Information on participation in screening and on programme statistics for 2014 can be found in the published reports *NCSP Six-monthly Monitoring Report 41, January - June 2014* and *NCSP Six-monthly Monitoring Report 42, July - December 2014*, available on the NCSP website at https://www.nsu.govt.nz/health-professionals/national-cervical-screening-programme/independent-monitoring-reports.

Cancer Incidence

Definition

Cancer incidence is the annual rate of new registrations of invasive cervical cancer (per 100,000 women in the New Zealand estimated resident population), standardised to the WHO Standard Population according to Ahmad *et al*.(1)

Target

Incidence of no more than 7.5 per 100,000 women in the New Zealand population[a].

Calculation

Registrations of cancer cases (by age, ethnicity, and histological type) over the period 2006 to 2014 were obtained from the New Zealand Cancer Registry (data extracted 28 July 2016).

Age-specific incidence rates were calculated for each calendar year, based on the estimated resident New Zealand female population in June of that year (mid-year estimates), using projections from the 2013 Census.

Age-specific rates were then weighted using the standard WHO population to derive age-standardised rates (details of the WHO Standard Population are provided in Appendix B – *Population data*). 95% confidence intervals were calculated according to the methods in *IARC Scientific Publication 95. Cancer Registrations: Principles & Methods (Chapter 11: Statistical Methods for Registries*).(2) Incidence rates were calculated separately for either each ethnic group, or for each histological type. Mortality rates were calculated separately for each ethnic group. Five-year average rates were also calculated by five-year age group as the sum of all cases over the five-year period within that age group, divided by the sum of the estimated population within that age group in each of the five years contributing to the average.

Results

In 2014, there were 144 new diagnoses of cervical cancer, or an age-standardised rate of 5.5 new diagnoses per 100,000 women in the population (Table 1). Cervical cancer incidence rates overall, and for each of Māori, Pacific, Asian and European/ Other women, are shown in Table 1, and with 95% confidence intervals in Figure 1a. Counts for incident cancer cases are also shown in Table 1. Rates could not be calculated for all four ethnicity groups prior to 2006 due to limitations in the availability of population data (although separate case numbers for 2005 only were available from previous Annual Monitoring Reports). Therefore cases and rates presented for "Other women" in 1996 to 2004

[a] These targets are age-standardised to the Segi population.

relate to all non-Māori women. These data were sourced from *Cancer: New Registrations and Deaths*(3, 4).

Overall, between 1996 and 2014 cervical cancer incidence has declined from 10.5 to 5.5 per 100,000 for women of all ethnicities, and from 25.0 to 10.8 per 100,000 for Māori women (Table 1).

As shown in Figure 1a, there is some variation in the incidence rates by ethnicity, however the 95% confidence intervals are wide for some ethnicities. As case numbers are quite small for Pacific women and Asian women, an additional figure is included which compares rates in Māori women to rates in all women in New Zealand (Figure 1b), to supplement the detailed information in Figure 1a.

Cervical cancer incidence rates by histological type are shown in Figure 2 and Table 2. Squamous cell cancer remained the most commonly diagnosed type of cervical cancer over the period 2006-2014. A more detailed breakdown by histological type of cases diagnosed in 2014 is shown in Table 6.

Five-year average age-specific cervical cancer incidence rates (2010-2014), are shown in Figure 3 and Table 3. Overall there is a low incidence at younger ages, increasing by around the age of 25-29 years to reach a peak at age 40-44 (13.2 per 100,000 for all ethnicities) before plateauing for the remaining ages. Five-year average age-specific incidence rates are shown by ethnicity in Figure 4 and Table 3. Confidence intervals are generally wide, so are not displayed on Figure 4, but are included in Table 3. There are small case numbers (five or less per year) in most age groups for Māori, Pacific and Asian women. Because of these factors, age-specific incidence rates by ethnicity must be interpreted cautiously.

Five-year average age-specific cervical cancer incidence rates (2010-2014), by histological type are shown in Figure 5. Squamous and adenocarcinoma histological types follow broadly similar patterns by age to each other, while the histological types defined in the other group (not squamous, adenocarcinoma, or adenosquamous carcinoma) tended to increase with increasing age. The absolute rates varied, being highest for squamous cell cancer, and generally lowest for adenosquamous cancer in virtually all age groups.

Among cancer cases where extent of disease information is recorded, most new cases are localised to the cervix (Table 7).

Comments

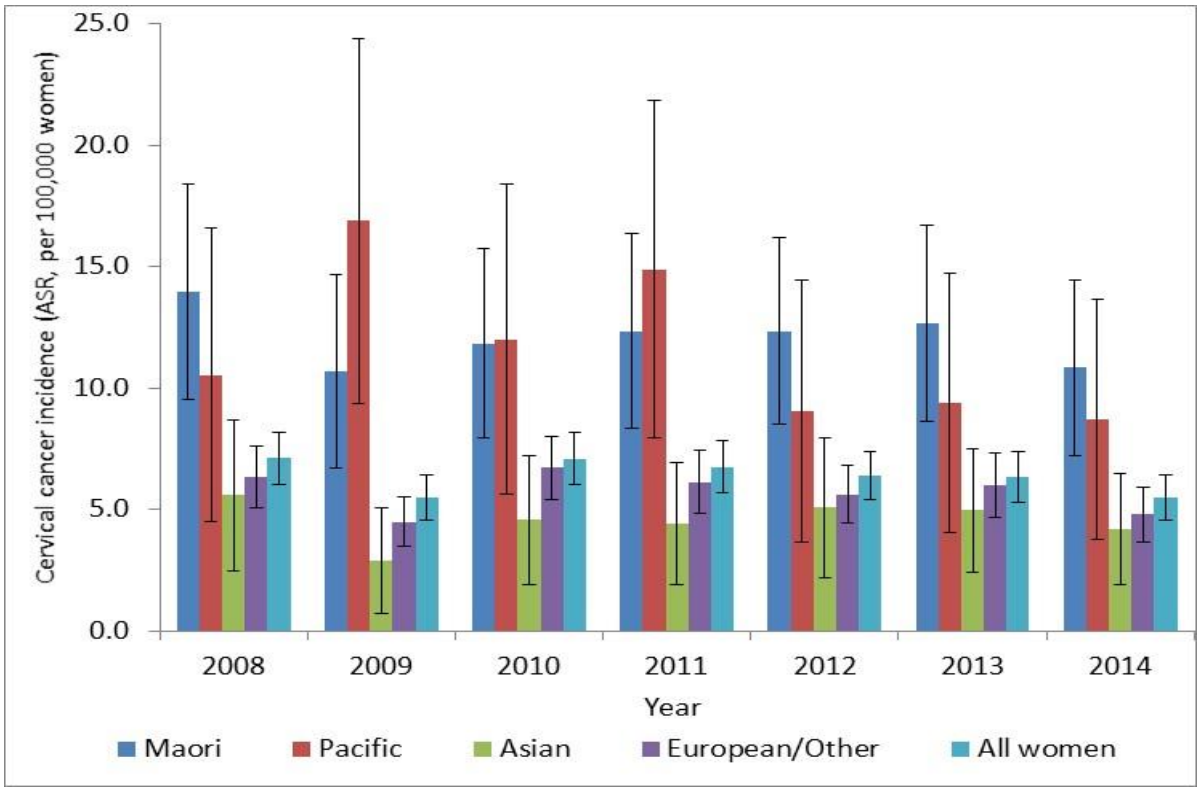
In this report incidence rates are standardised using the WHO Standard Population (see Appendix B – *Population data*), consistent with the population used to produce standardised rates in *Cancer: New Registrations and Deaths*. Note that National Cervical Screening Programme Annual Monitoring Reports prior to that for 2008-2009 reported on rates which were standardised to the Segi population, and therefore these rates are not directly comparable.

Consistent with other statistical data, the rates of cervical cancer incidence are expressed per 100,000 women in the population. The population is not adjusted to take into account hysterectomy prevalence.

The distribution of new diagnoses by FIGO stage has not been included in this report due to 74.3% of newly diagnosed cases not having a FIGO stage recorded.

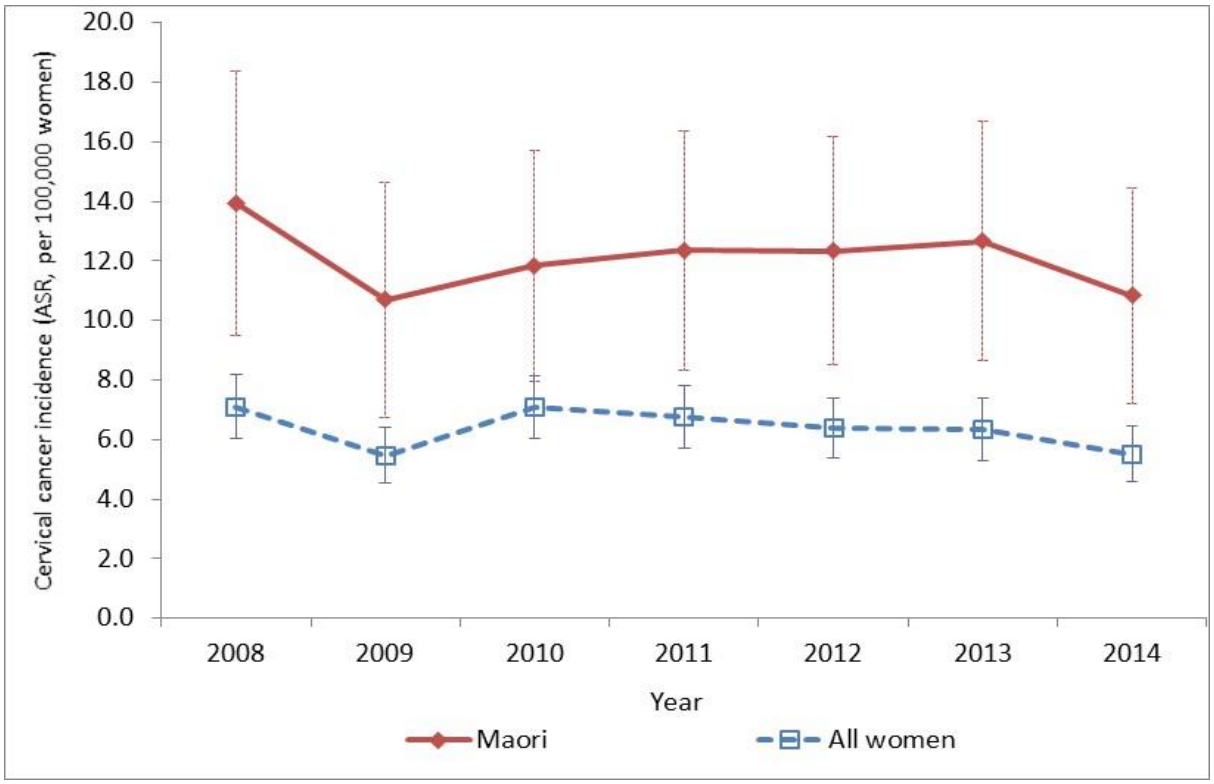
Figure 1 – Age-standardised cervical cancer incidence rates, 2008 to 2014, by ethnicity

a) All ethnic groups



Vertical bars represent 95% confidence intervals

b) Māori women, compared to All women



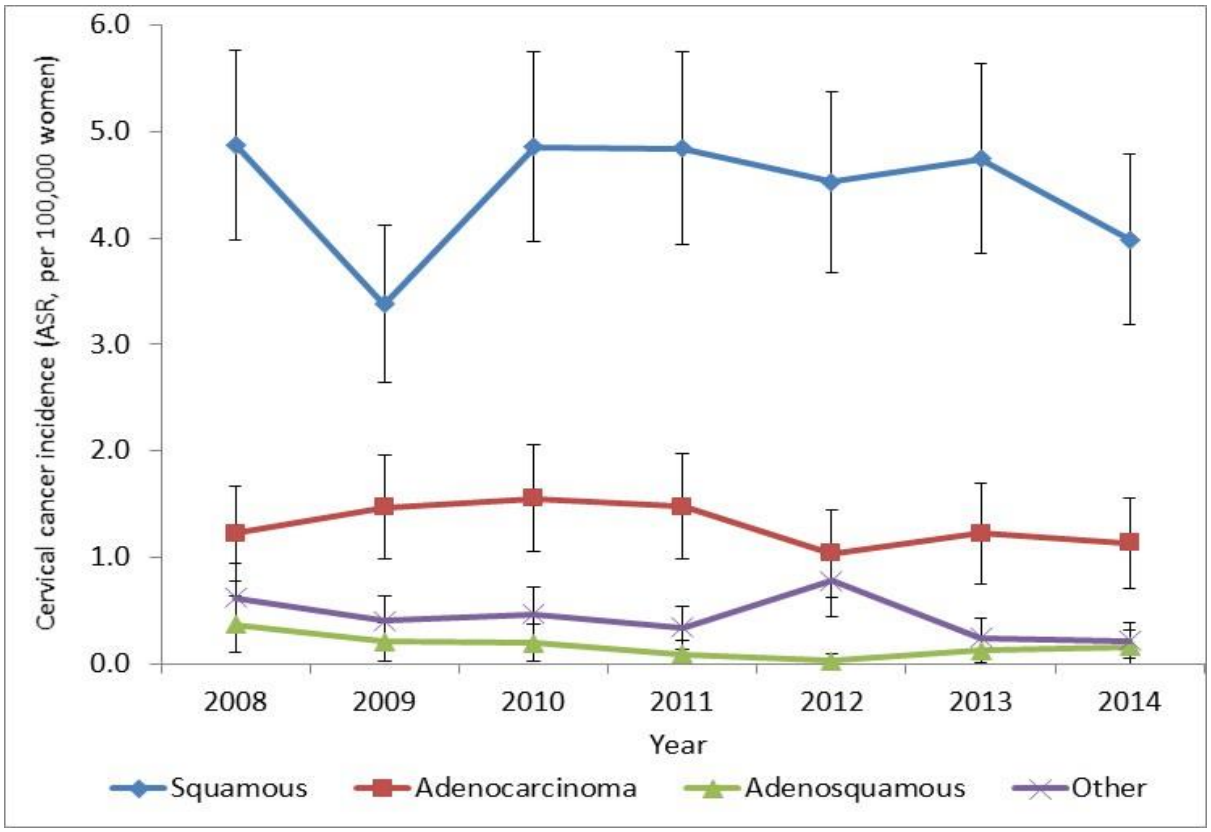
Vertical bars represent 95% confidence intervals

Table 1 – Cervical cancer incidence, 1996 to 2014, by ethnicity

	All women		Māori women		Pacific women		Asian women		European/Other women §	
Year†	N	Rate*	N	Rate*	N	Rate*	N	Rate*	N	Rate*
1996	211	10.5	47	25.0	NA	NA	NA	NA	*164*	*9.0*
1997	205	9.3	51	22.5	NA	NA	NA	NA	*154*	*7.6*
1998	200	9.1	36	17.7	NA	NA	NA	NA	*164*	*8.3*
1999	220	10.0	43	18.7	NA	NA	NA	NA	*177*	*8.9*
2000	204	9.4	43	16.8	NA	NA	NA	NA	*161*	*8.3*
2001	189	8.5	33	13.7	NA	NA	NA	NA	*156*	*8.0*
2002	181	7.7	33	15.1	NA	NA	NA	NA	*148*	*7.2*
2003	178	7.7	33	13.5	NA	NA	NA	NA	*145*	*7.1*
2004	157	6.6	33	14.4	NA	NA	NA	NA	*124*	*5.9*
2005	154	6.1	25	10.1	17	NA	15	NA	97	NA
2006	158	6.4	28	11.0	10	8.4	15	7.6	105	6.0
2007	163	6.5	34	12.9	12	12.1	12	6.2	105	5.8
2008	175	7.1	39	13.9	12	10.5	13	5.6	111	6.3
2009	142	5.5	30	10.7	20	16.9	7	2.9	85	4.5
2010	180	7.1	36	11.8	14	12.0	12	4.6	118	6.7
2011	169	6.7	37	12.3	18	14.9	12	4.4	102	6.1
2012	168	6.4	40	12.3	11	9.0	13	5.1	104	5.6
2013	159	6.3	39	12.7	12	9.4	15	5.0	93	6.0
2014	144	5.5	35	10.8	12	8.7	13	4.2	84	4.8

† Cases and rates for 1997-2004 sourced from *Cancer: New Registrations and Deaths, 2007(4);* cases and rates for 1996 sourced from *Cancer: New Registrations and Deaths, 2006*.(3) Cases and rates for 2005 sourced from a previous NCSP Annual Report (2008-2009) (5) § Counts and rates for "European/Other women" in 1996-2004 are combined for all non- Māori women i.e. they also include cases in Pacific and Asian women *Rates are per 100,000 women, age-standardised to the WHO Standard Population (all ages) NA = not available

Figure 2 – Age-standardised cervical cancer incidence rates, 2008 to 2014, by histological type



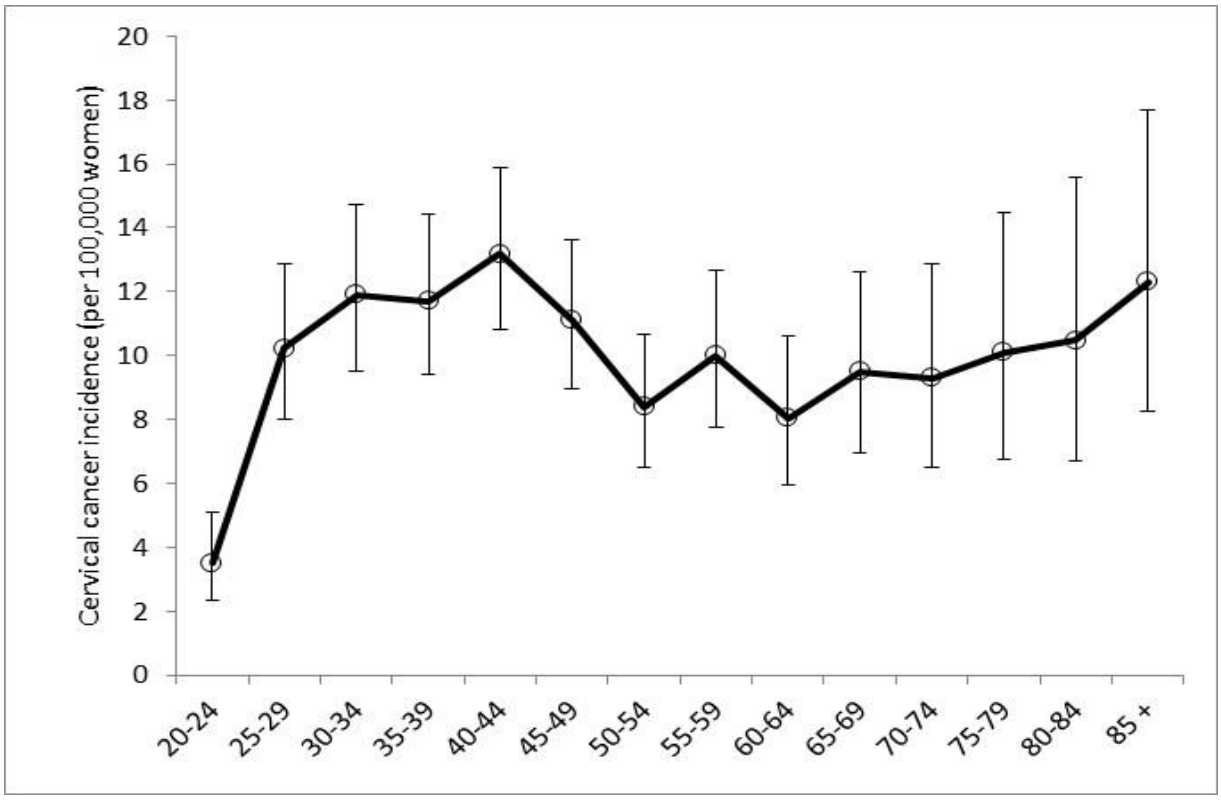
Vertical bars represent 95% confidence intervals

Table 2 – Cervical cancer incidence (per 100,000 women), 2006 to 2014, by histological type

	Squamous		Adenocarcinoma		Adenosquamous		Other	
Year	N	Rate*	N	Rate*	N	Rate*	N	Rate*
2006	100	4.1	36	1.5	7	0.3	15	0.5
2007	102	4.1	31	1.2	11	0.4	19	0.7
2008	121	4.9	30	1.2	8	0.4	16	0.6
2009	87	3.4	37	1.5	5	0.2	13	0.4
2010	123	4.9	38	1.6	5	0.2	14	0.5
2011	119	4.8	36	1.5	2	0.1	12	0.3
2012	117	4.5	27	1.0	1	<0.1	23	0.8
2013	118	4.7	28	1.2	5	0.1	8	0.2
2014	103	4.0	29	1.1	4	0.2	8	0.2

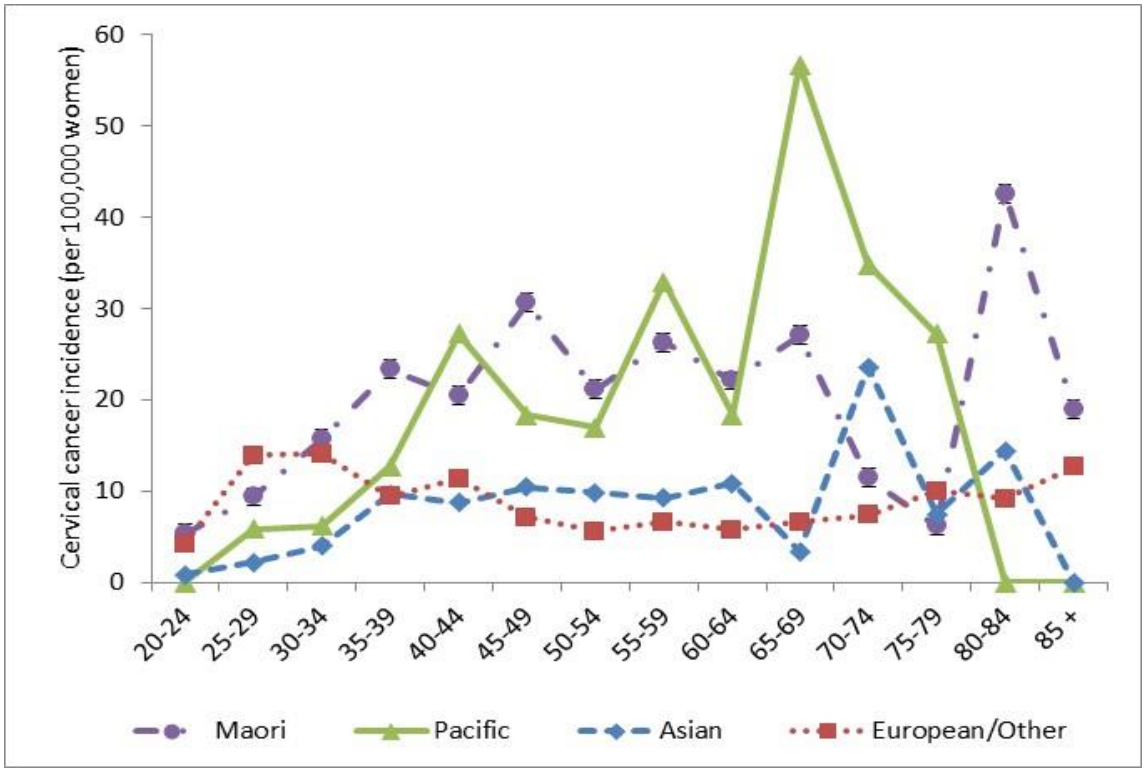
* Per 100,000 women, age-standardised to the WHO population (all ages)

Figure 3 – Five-year average cervical cancer incidence rates (2010-2014), by age



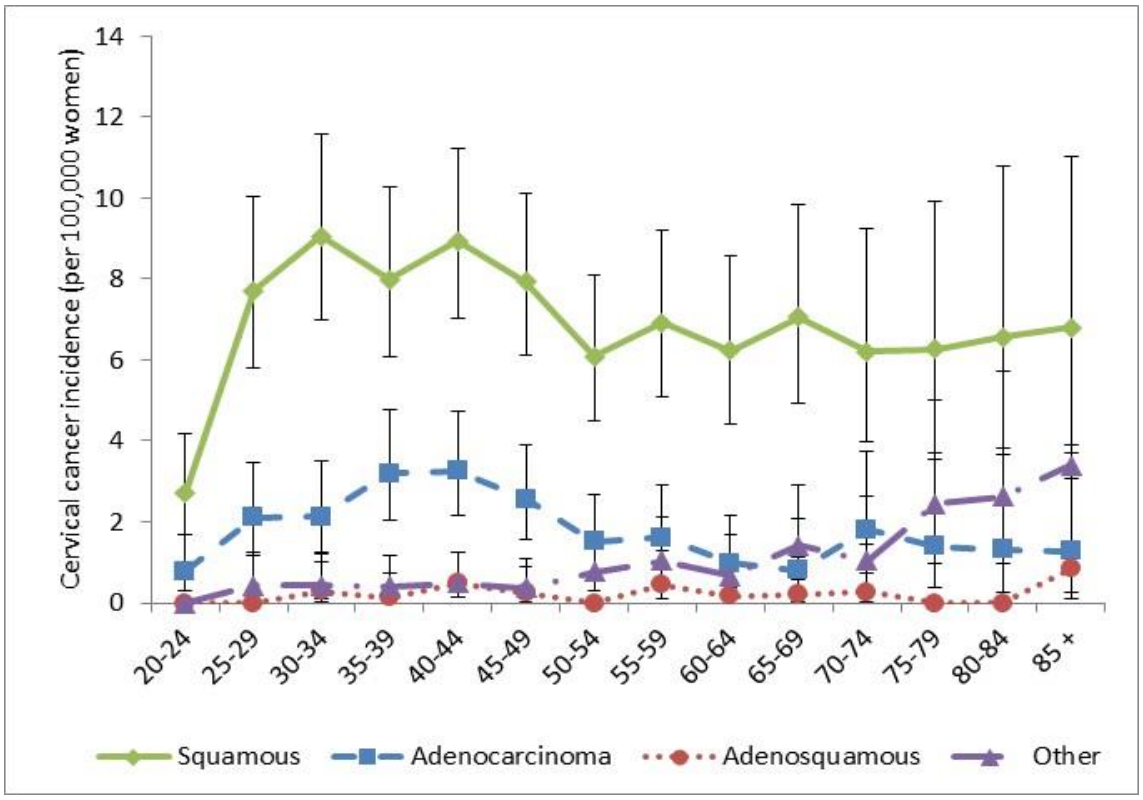
Vertical bars represent 95% confidence intervals

Figure 4 – Five-year average cervical cancer incidence rates (2010-2014), by age and ethnicity



Note that no cases were observed in Pacific women aged 20-24 years, and 80+ years, or in Asian women aged 85+ years over this time period. See also Table 3.

Figure 5 – Five-year average cervical cancer incidence rates (2010-2014), by age and histological type



Vertical bars represent 95% confidence intervals

Table 3 – Five-year average cervical cancer incidence (2010-2014), by age and ethnicity

	All women		Māori women		Pacific women		Asian women		European/ Other women	
Age	**Rate**	**(95%CI)**	**Rate**	**(95%CI)**	**Rate**	**(95%CI)**	**Rate**	**(95%CI)**	**Rate**	**(95%CI)**
20-24	3.5	(2.3 - 5.1)	5.3	(2.3 - 10.5)	.	-	0.8	(0.0 - 4.3)	4.2	(2.5 - 6.6)
25-29	10.2	(8.0 - 12.9)	9.3	(4.7 - 16.7)	5.8	(1.2 - 16.9)	2.2	(0.4 - 6.3)	13.9	(10.5 - 18)
30-34	11.9	(9.5 - 14.7)	15.7	(9.1 - 25.1)	6.2	(1.3 – 18.0)	3.9	(1.3 - 9.1)	14.0	(10.7 - 18.1)
35-39	11.7	(9.4 - 14.4)	23.3	(15.2 - 34.2)	12.7	(4.6 - 27.5)	9.7	(4.6 - 17.8)	9.4	(6.9 - 12.5)
40-44	13.2	(10.8 - 15.9)	20.4	(12.9 - 30.6)	27.2	(14.5 - 46.5)	8.7	(4.0 - 16.6)	11.3	(8.7 - 14.5)
45-49	11.1	(8.9 - 13.6)	30.6	(20.9 - 43.1)	18.3	(7.9 – 36.0)	10.4	(5.0 - 19.2)	7.1	(5.1 - 9.7)
50-54	8.4	(6.5 - 10.7)	21.1	(12.9 - 32.5)	16.9	(6.2 - 36.7)	9.8	(4.2 - 19.3)	5.6	(3.8 - 7.9)
55-59	10.0	(7.8 - 12.7)	26.3	(15.8 – 41.0)	32.9	(15.0 - 62.5)	9.2	(3.4 - 20)	6.6	(4.6 - 9.2)
60-64	8.0	(6.0 - 10.6)	22.1	(11.4 - 38.5)	18.3	(5.0 - 46.8)	10.8	(3.5 - 25.3)	5.8	(3.8 - 8.3)
65-69	9.5	(7.0 - 12.6)	27.0	(12.9 - 49.6)	56.6	(25.9 - 107.5)	3.3	(0.1 - 18.5)	6.5	(4.3 - 9.5)
70-74	9.3	(6.5 - 12.9)	11.4	(2.4 - 33.4)	34.7	(9.5 - 88.8)	23.5	(7.6 - 54.8)	7.3	(4.7 - 10.9)
75-79	10.1	(6.8 - 14.5)	6.1	(0.2 - 34.1)	27.1	(3.3 – 98.0)	7.4	(0.2 - 41.3)	10.0	(6.5 - 14.8)
80-84	10.5	(6.7 - 15.6)	42.5	(11.6 - 108.8)	.	-	14.4	(0.4 - 80.2)	9.1	(5.5 - 14.3)
85 +	12.3	(8.2 - 17.7)	18.9	(0.5 - 105.5)	.	-	.	-	12.6	(8.3 - 18.2)

'-' indicates no cases recorded

Cancer Mortality

Definition

Cancer mortality is the annual rate of deaths due to invasive cervical cancer (per 100,000 women in the New Zealand estimated resident population), standardised to the WHO population.

Target

Mortality of no more than 2.5 per 100,000 women in the New Zealand population[b].

Calculation

Registrations of cervical cancer mortality (by age and ethnicity) over the period 2005-2013 were obtained from the New Zealand Cancer Registry (data extracted 28 July 2016).

Age-specific mortality rates were calculated for each calendar year, based on the estimated resident New Zealand female population in June of that year (mid-year estimates), using projections from the 2013 Census.

Age-specific rates were then weighted using the standard WHO population to derive age-standardised rates (details of the WHO Standard Population are provided in Appendix B – *Population data*). 95% confidence intervals were calculated according to the methods in *IARC Scientific Publication 95. Cancer Registrations: Principles & Methods (Chapter 11: Statistical Methods for Registries*)(2). Incidence rates were calculated separately for each ethnic group. Five-year average rates were also calculated by five-year age group as the sum of all cases over the five-year period within that age group, divided by the sum of the estimated population within that age group in each of the five years contributing to the average.

Results

The most recent mortality data available is for 2013. In 2013, there were 54 deaths due to cervical cancer, or an age-standardised rate of 1.7 cervical cancer deaths per 100,000 women in the population (Table 4). Cervical cancer mortality rates overall, and for each of Māori, Pacific, Asian and European/ Other women, are shown in Table 4 and Figure 6a. Counts of deaths due to cervical cancer are also shown in Table 4. Rates could not be calculated for all four ethnicity groups prior to 2006 due to limitations in the availability of population data, however separate counts for deaths were available for 2005 from previous Annual Monitoring Reports (5, 6). Therefore rates and deaths reported for "Other women" in 1998 to 2004 relate to all non-Māori women; these data were sourced from *Cancer: New Registrations and Deaths* (4).

[b] These targets are age-standardised to the Segi population.

Overall, between 1998 and 2013 cervical cancer mortality has declined from 3.2 to 1.7 per 100,000 for women of all ethnicities, and from 10.3 to 4.0 per 100,000 for Māori women (Table 4).

As shown in Figure 6a, there is some variation in the mortality rates by ethnicity (although the 95% confidence intervals are very wide). As for the incidence data, an additional figure is included which compares mortality rates in Māori women to rates in all women in New Zealand (Figure 6b), to supplement the more detailed ethnicity information in Figure 6a.

Average age-specific cervical cancer mortality rates (2009-2013) are shown for all women in Figure 7, and by ethnicity in Figure 8. As for incidence, the associated confidence intervals are wide, making ethnicity-specific trends by age more difficult to discern, but generally there appears to be a broad increase with age. Case numbers by age are generally small for Māori, Pacific and Asian women (total deaths across all ages over the five year period were 54 for Māori women, 34 for Pacific women and ten for Asian women).

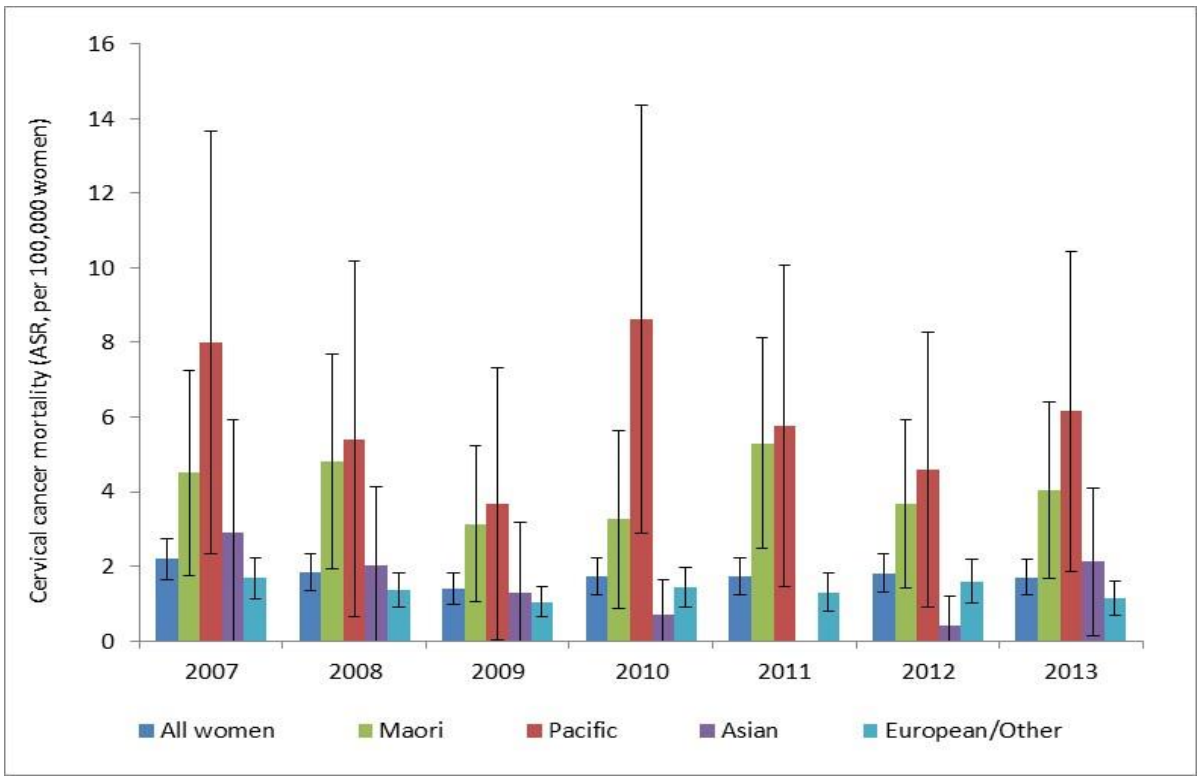
Comments

In this report mortality rates are standardised using the WHO Standard Population (see Appendix B – *Population data*), consistent with the population used to produce standardised rates in *Cancer: New Registrations and Deaths*. Note that National Cervical Screening Programme Annual Monitoring Reports prior to that for 2008-2009 reported on rates which were standardised to the Segi population, and therefore these rates are not directly comparable.

Consistent with other statistical data, the rates of cervical cancer incidence and mortality are expressed per 100,000 women in the population. The population is not adjusted to take into account hysterectomy prevalence.

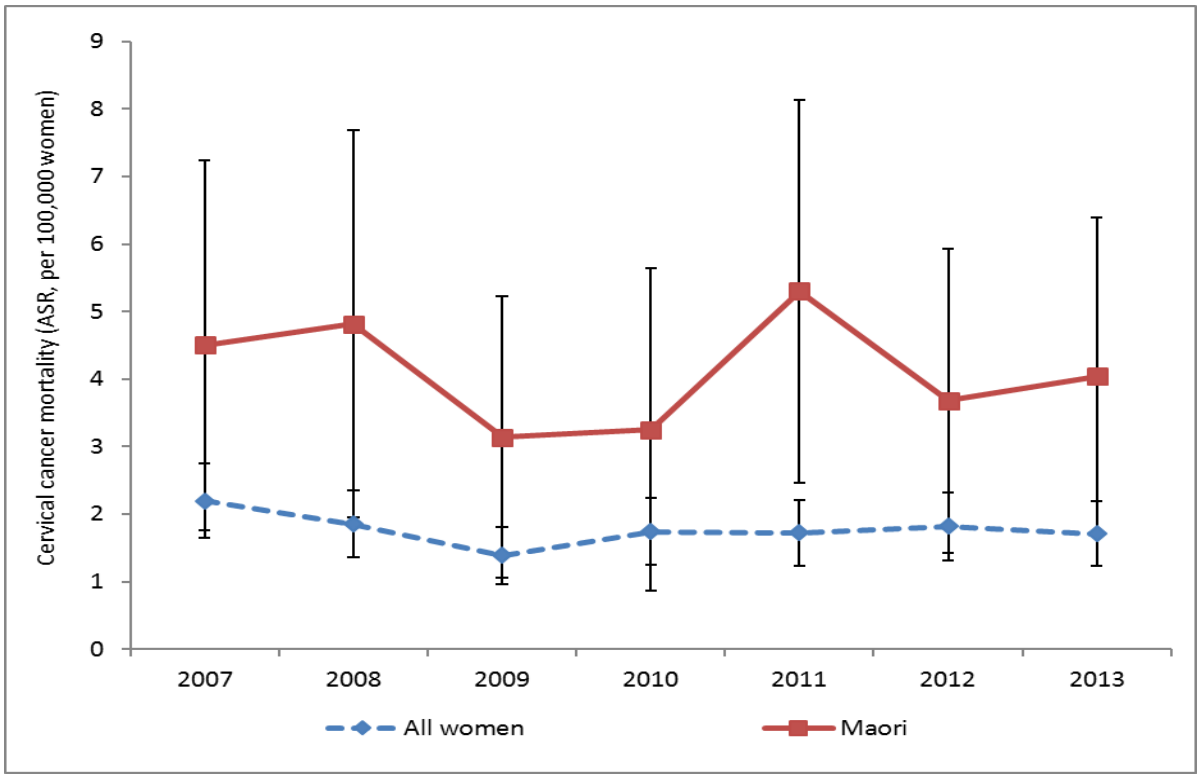
Figure 6 – Age-standardised cervical cancer mortality rates, 2007 to 2013, by ethnicity

a) All ethnic groups



Vertical bars represent 95% confidence intervals. Note: no deaths were recorded for Asian women in 2006 or 2011.

b) Māori women, compared to All women



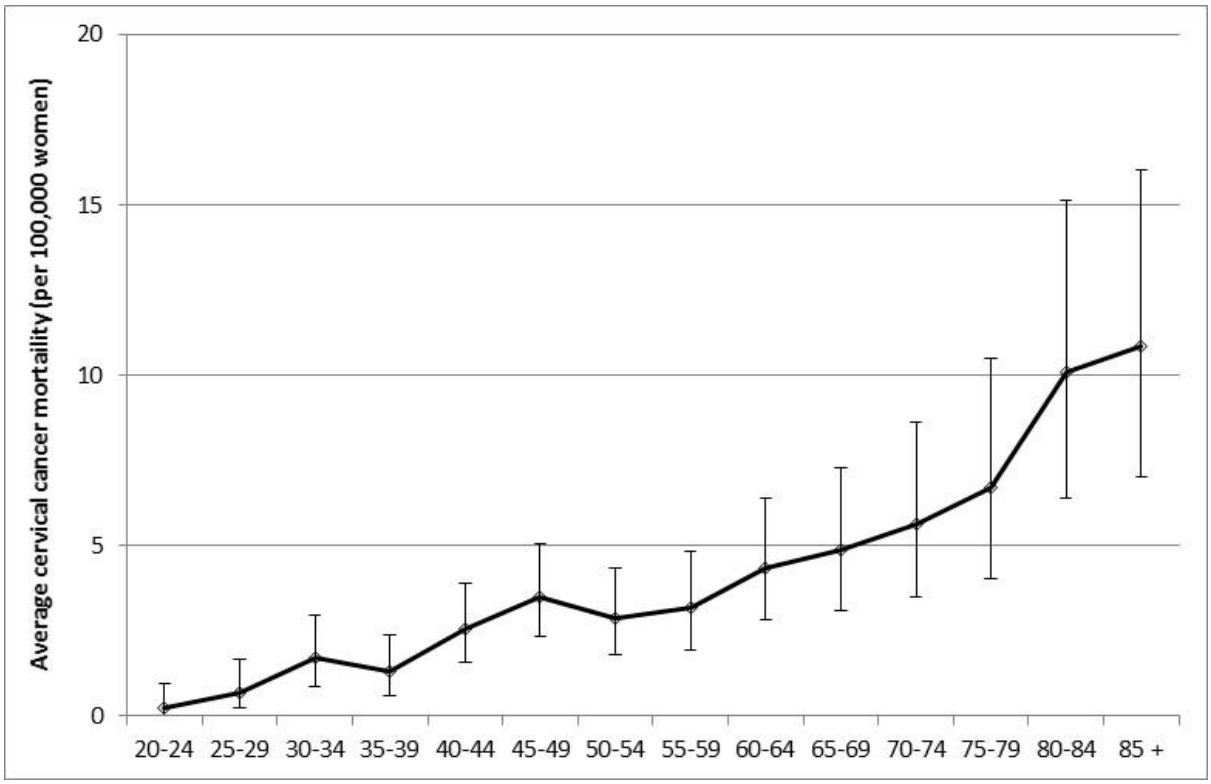
Vertical bars represent 95% confidence intervals

Table 4 – Cervical cancer mortality, 1998 to 2013, by ethnicity

	All women		Māori women		Pacific women		Asian women		European/ Other women §	
Year†	N	Rate*	N	Rate*	N	Rate*	N	Rate*	N	Rate*
1998	77	3.2	17	10.3	4	NA	NA	NA	*60*	*2.7*
1999	71	3.0	20	10.6	7	NA	NA	NA	*51*	*2.3*
2000	66	2.7	17	8.7	3	NA	NA	NA	*49*	*2.1*
2001	63	2.4	13	7.0	1	NA	NA	NA	*50*	*2.0*
2002	65	2.4	12	5.8	2	NA	NA	NA	*53*	*2.1*
2003	58	2.1	8	3.5	5	NA	NA	NA	*50*	*2.0*
2004	71	2.7	15	5.8	4	NA	NA	NA	*56*	*2.2*
2005	54	1.9	13	6.5	6	NA	-	-	35	NA
2006	52	1.7	10	4.4	7	7.0	-	-	35	1.2
2007	65	2.2	11	4.5	8	8.0	4	2.9	42	1.7
2008	59	1.9	12	4.8	5	5.4	4	2.0	38	1.4
2009	44	1.4	9	3.1	4	3.7	2	1.3	29	1.0
2010	52	1.7	8	3.3	9	8.6	2	0.7	33	1.4
2011	53	1.7	14	5.3	7	5.8	-	-	32	1.3
2012	56	1.8	11	3.7	6	4.6	1	0.4	38	1.6
2013	54	1.7	12	4.0	8	6.1	5	2.1	29	1.1

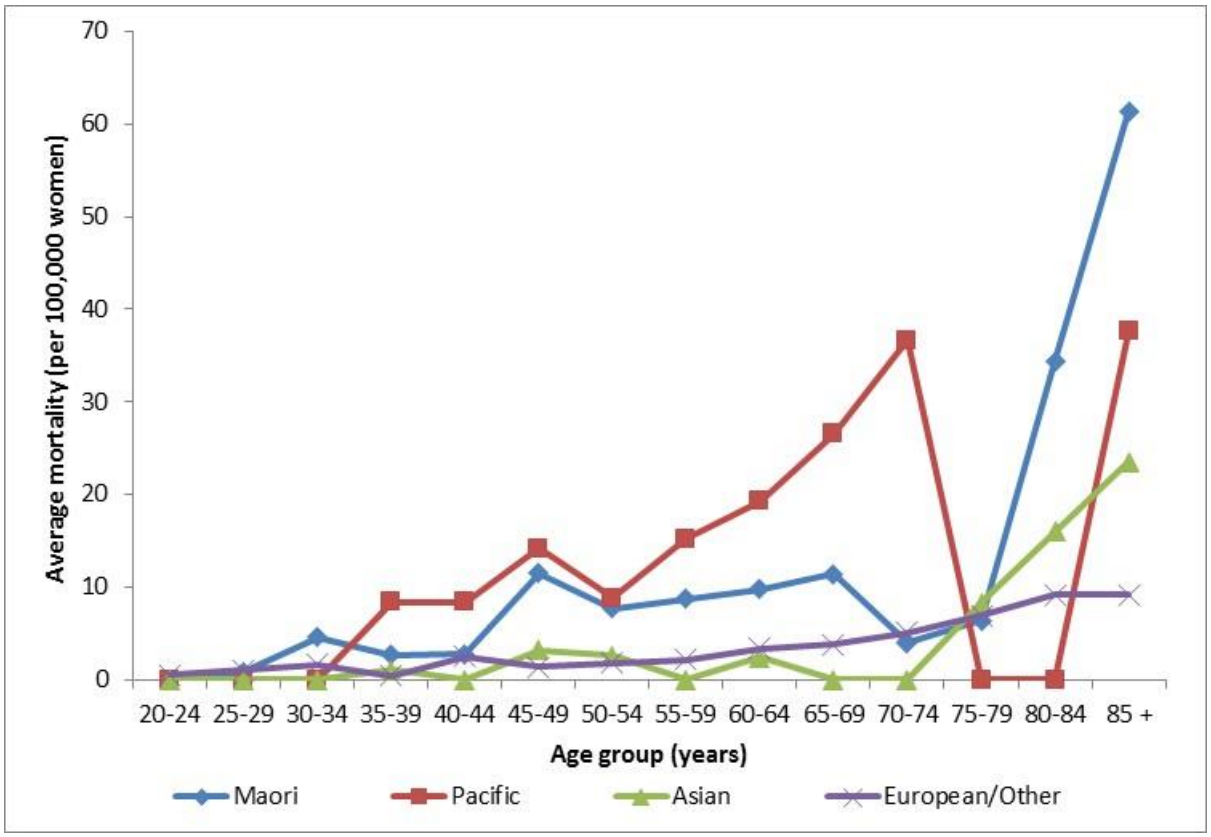
† Deaths and rates for 1998-2004 sourced from *Cancer: New Registrations and Deaths, 2007.(4)* Deaths and rates for 2005 sourced from *National Cervical Screening Programme Annual Monitoring Report 2008-2009.(5)* Separate data on deaths in Pacific women were sourced from *National Cervical Screening Programme Annual Monitoring Report 2006.(6)* § Counts and rates for "European/ Other women" in 1998-2004 are combined for all non- Māori women i.e. they also include deaths in Pacific and Asian women * Rates are per 100,000 women, age-standardised to the WHO Standard Population (all ages) NA = not available. '-' = no cases recorded

Figure 7 – Five-year average cervical cancer mortality rates (2009-2013), by age



Vertical bars represent 95% confidence intervals. See also Table 5.

Figure 8 – Five-year average cervical cancer mortality rates (2009-2013), by age and ethnicity



Note that no deaths were recorded in Māori women aged 20-24 years, in Pacific women aged 20-34 or 75-84 years, in Asian women aged 20-34, 40-44, 55-59, 65-74 years over this time period. See also Table 5.

Table 5 – Average cervical cancer mortality (2009-2013), by age

	All women		Māori women	
Age	**Rate**	**(95%CI)**	**Rate**	**(95%CI)**
20-24	0.3	(0.0 - 1.0)	-	(0.0 - 2.5)
25-29	0.7	(0.2 - 1.7)	0.9	(0.0 - 4.8)
30-34	1.7	(0.9 - 3.0)	4.6	(1.5 - 10.7)
35-39	1.3	(0.6 - 2.4)	2.6	(0.5 - 7.7)
40-44	2.5	(1.6 - 3.9)	2.7	(0.6 - 7.9)
45-49	3.5	(2.4 - 5.0)	11.5	(5.9 - 20.0)
50-54	2.9	(1.8 - 4.3)	7.7	(3.1 - 15.9)
55-59	3.2	(2.0 - 4.8)	8.7	(3.2 - 19.0)
60-64	4.4	(2.8 - 6.4)	9.7	(3.2 - 22.7)
65-69	4.9	(3.1 - 7.3)	11.4	(3.1 - 29.3)
70-74	5.7	(3.5 - 8.6)	4.0	(0.1 - 22.2)
75-79	6.7	(4.0 - 10.5)	6.4	(0.2 - 35.7)
80-84	10.1	(6.4 - 15.2)	34.4	(7.1 - 100.4)
85 +	10.8	(7.0 - 16.0)	61.3	(12.7 - 179.3)

'-' indicates no deaths recorded over the five-year period

Appendix A – Additional data tables

Table 6 – Incident cases by detailed morphology, 2014

Morphology	Sub-category	Cases	% of all cervical cancers
Adenocarcinoma		**29**	**20.1**
	Adenocarcinoma in tubulovillous adenoma	1	0.7
	Adenocarcinoma, endocervical type	4	2.8
	Adenocarcinoma, intestinal type	1	0.7
	Adenocarcinoma, not otherwise specified	19	13.2
	Endometrioid adenocarcinoma, not otherwise specified	2	1.4
	Mixed adenoneuroendocrine carcinoma	1	0.7
	Mucin-producing adenocarcinoma	1	0.7
Adenosquamous		**4**	**2.8**
	Adenosquamous carcinoma	4	2.8
Squamous cell carcinoma		**103**	**71.5**
	Papillary squamous cell carcinoma	1	0.7
	Squamous cell carcinoma, keratinizing, not otherwise specified	5	3.5
	Squamous cell carcinoma, large cell, non-keratinizing, not otherwise specified	5	3.5
	Squamous cell carcinoma, microinvasive	18	12.5
	Squamous cell carcinoma, not otherwise specified	74	51.4
Other		**8**	**5.6**
	Adenosarcoma	1	0.7
	Leiomyosarcoma, not otherwise specified	2	1.4
	Lymphoepithelial carcinoma	1	0.7
	Neoplasm, malignant	2	1.4
	Small cell carcinoma, not otherwise specified	2	1.4
Total		**144**	**100**

Table 7 - Extent of disease at time of diagnosis for incident cervical cancer cases, 2006-2014

Code	Description	Year																	
		2006		2007		2008		2009		2010		2011		2012		2013		2014	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
B	**Localised to organ of origin**	68	43.0	52	31.9	71	40.6	45	31.7	77	42.8	67	39.6	52	31.0	68	42.8	60	41.7
C	**Invasion of adjacent tissue or organ**	6	3.8	6	3.7	14	8.0	20	14.1	21	11.7	19	11.2	18	10.7	35	22.0	16	11.1
D	**Regional lymph nodes**	6	3.8	4	2.5	12	6.9	8	5.6	8	4.4	8	4.7	7	4.2	7	4.4	10	6.9
E	**Distant**	19	12.0	22	13.5	16	9.1	17	12.0	22	12.2	21	12.4	28	16.7	18	11.3	13	9.0
F	**Not known**	59	37.3	79	48.5	62	35.4	52	36.6	52	28.9	54	32.0	63	37.5	31	19.5	45	31.3
TOTAL		**158**	**100**	**163**	**100**	**175**	**100**	**142**	**100**	**180**	**100**	**169**	**100**	**168**	**100**	**159**	**100**	**144**	**100**

Appendix B – Population data

WHO Standard Population

Rates for cervical cancer incidence and mortality were standardised using the WHO World Standard Population according to Ahmad *et al* (2001)(1), as shown in Table 8.

Table 8 – WHO Standard Population

Age group	N	Proportion
00-04	8,860	0.088569
05-09	8,690	0.08687
10-14	8,600	0.08597
15-19	8,470	0.08467
20-24	8,220	0.082171
25-29	7,930	0.079272
30-34	7,610	0.076073
35-39	7,150	0.071475
40-44	6,590	0.065877
45-49	6,040	0.060379
50-54	5,370	0.053681
55-59	4,550	0.045484
60-64	3,720	0.037187
65-69	2,960	0.02959
70-74	2,210	0.022092
75-79	1,520	0.015195
80-84	910	0.009097
85 +	635	0.006348
Total	**100,035**	**1**

New Zealand estimated resident population

The estimated data for New Zealand female population was based on data from Statistics New Zealand. Population figures for cancer incidence and mortality used mid-year estimates, based on projections from 2013 Census data for 2006-2014. Population estimates for 2005 were based on a linear interpolation between data from the 2001 Census and 2006 Census. Population data for 2005 were not available in the four required ethnic groups, and so ethnicity-specific estimates could not be calculated for 2005 for cancer incidence, cancer mortality, or coverage.

References

1. Ahmad OB, Boschi-Pinto C, Lopez AD, Murray CJL, Lozano R, Inoue M. Age standardization of rates: A new WHO standard. Geneva: World Health Organization; 2001.
2. Boyle P, Parkin D. Chapter 11. Statistical methods for registries. IARC Scientific Publication 95 Cancer Registrations: Principles & Methods. Lyon, France: International Agency for Research on Cancer (IARC) Press; 2002.
3. Ministry of Health. Cancer: New registrations and deaths 2006. Wellington: Ministry of Health, 2010.
4. Ministry of Health. Cancer: New registrations and deaths 2007. Wellington: Ministry of Health, 2010.
5. Smith M, Walker R, Canfell K. National Cervical Screening Programme Annual Report 2008-2009. 2012.
6. Centre for Public Health R, Brewer N, McKenzie F, Wong KC, Ellison-Loschmann L. National Cervical Screening Programme Annual Monitoring Report 2006. Wellington, New Zealand: Centre for Public Health Research, Massey University, NZ, 2008.
7. Gray A. Methodology for estimating hysterectomy prevalence in women 20-69. Wellington, New Zealand: 2011.
8. Ministry of Health. Ethnicity Data Protocols for the Health and Disability Sector Wellington, New Zealand.2004. Available from: http://www.health.govt.nz/publication/ethnicity-data-protocols-health-and-disability-sector.
9. Wright C. Accuracy of Ethnicity Data in the National Cervical Screening Programme Register (NCSP-R). Wellington, New Zealand: Health & Disability Intelligence Unit, 2008.
10. New Zealand Ministry of Health. NCSP December 2015 Coverage: Impact of change of NCSP ethnicity and domicile data source Wellington 2016 [5/4/2016]. Available from: https://www.nsu.govt.nz/system/files/page/dec_2015_ncsp_coverage_new_vs_old_method_final_0.docx.