

4. CYTOLOGY / HISTOLOGY

4.1 Technically unsatisfactory smears

Definition: This measure records the number and percentage of Pap tests, not women, reported as technically unsatisfactory for cytological diagnosis. Thus the data can include multiple smears performed on an individual woman. Smears of women whose age was unknown were excluded from the calculation.

Period: 1 January 1998 - 31 December 1998.

4.1.1 Technically unsatisfactory smears by 5-year age group

During the reporting period 665,853 Pap tests were recorded on the NSW Pap Test Register for women in the target age group (20 - 69 years). Of these smears, 13,921 smears were reported as being technically unsatisfactory for cytological diagnosis, representing 2.1% of all tests recorded at the NSW Pap Test Register during this period. The proportion of Pap tests reported as being technically unsatisfactory was highest for women aged 25 - 29 years (2.4%); lowest for women aged 50 - 54 and 65 - 69 years (1.7%); and did not exceed 2.4% for any five-year age group in the State. (Table 4.1) There is a statistically significant trend of decreasing proportion of technically unsatisfactory smears with increasing age (p -value < 0.001).

**Table 4.1 Technically unsatisfactory smears by 5-year age group
For the reporting period 1 January 1998 - 31 December 1998**

Age group (years)	Number of cervical smears	Technically unsatisfactory
20 - 24	68,185	1,545 (2.3)
25 -29	100,184	2,355 (2.4)
30 - 34	99,869	2,274 (2.3)
35 - 39	100,549	2,202 (2.2)
40 - 44	85,278	1,683 (2.0)
45 - 49	71,553	1,407 (2.0)
50 - 54	56,459	936 (1.7)
55 - 59	37,162	664 (1.8)
60 - 64	27,126	529 (2.0)
65 - 69	19,488	326 (1.7)
20 - 49	525,618	11,466 (2.2)
50 - 69	140,235	2,455 (1.8)
20 - 69	665,853	13,921 (2.1)

4.1.2 Technically unsatisfactory smears by NSW Area Health Service and age group

In the 20 - 69 year age group, the proportion of Pap tests reported as being technically unsatisfactory was highest in the Macquarie Area Health Service (3.2%) and lowest in the Northern Rivers Area Health Service (1.4%). In all other Area Health Services the proportion of technically unsatisfactory smears ranged from 1.6% to 3.0%. There was a statistically significant difference in proportions of technically unsatisfactory smear (p -value <0.001) across different Area Health Services in this age group. (Table 4.2)

In the 20 - 49 year age group, the highest proportion of technically unsatisfactory smears was observed in the Macquarie Area Health Service (3.5%) and the lowest in the Northern Rivers Area Health Service (1.5%). (Table 4.2) The difference in proportion of technically unsatisfactory smears in this age group across all Area Health Services was statistically significant (p -value <0.001).

In the 50 - 69 year age group the proportion of technically unsatisfactory smears was highest in the Southern Area Health Service (2.8%) and lowest in the Northern Rivers Area Health Service (1.1%). The differences in proportion of technically unsatisfactory smears across all Area Health Services in this age group was not statistically significant (p -value=0.52).

The proportion of technically unsatisfactory smears was significantly higher in the 20 - 49 year age group (2.2%), compared to the 50-69 year age group (1.8%) (p -value < 0.001).

Table 4.2 Technically unsatisfactory smears by NSW Area Health Service by age group (1 January 1998 - 31 December 1998)

Area Health Service	Age 20 - 49 years		Age 50 - 69 years		Age 20 - 69 years	
	Number of cervical smears	Technically unsatisfactory (%)	Number of cervical smears	Technically unsatisfactory (%)	Number of cervical smears	Technically unsatisfactory (%)
Central Coast	21,820	432 (2.0)	6,219	103 (1.7)	28,039	535 (1.9)
Central Sydney	42,291	980 (2.3)	9,887	182 (1.8)	52,178	1,162 (2.2)
Far West	2,616	41 (1.6)	789	14 (1.8)	3,405	55 (1.6)
Greater Murray	17,734	290 (1.6)	4,763	78 (1.6)	22,497	368 (1.6)
Hunter	39,959	811 (2.0)	10,248	202 (2.0)	50,207	1,013 (2.0)
Illawarra	25,544	699 (2.7)	7,109	129 (1.8)	32,653	828 (2.5)
Macquarie	7,209	250 (3.5)	2,137	46 (2.2)	9,346	296 (3.2)
Mid North Coast	16,719	274 (1.6)	6,116	94 (1.5)	22,835	368 (1.6)
Mid Western	12,486	332 (2.7)	3,521	96 (2.7)	16,007	428 (2.7)
New England	13,466	299 (2.2)	4,099	64 (1.6)	17,565	363 (2.1)
Northern Rivers	17,190	260 (1.5)	5,269	58 (1.1)	22,459	318 (1.4)
Northern Sydney	71,612	1,257 (1.8)	22,171	322 (1.5)	93,783	1,579 (1.7)
South Eastern Sydney	71,309	1,478 (2.1)	18,298	291 (1.6)	89,607	1,769 (2.0)
South Western Sydney	59,211	1,343 (2.3)	13,018	223 (1.7)	72,229	1,566 (2.2)
Southern	10,994	339 (3.1)	3,668	102 (2.8)	14,662	441 (3.0)
Wentworth	23,873	546 (2.3)	5,284	101 (1.9)	29,157	647 (2.2)
Western Sydney	48,619	1,317 (2.7)	12,422	222 (1.8)	61,041	1,539 (2.5)
AHS not available	9,931	205 (2.1)	2,102	48 (2.3)	12,033	253 (2.1)
Non-identified tests	13,035	313 (2.4)	3,115	80 (2.6)	16,150	393 (2.4)
Total Unsatisfactory	525,618	11,466 (2.2)	140,235	2,455 (1.8)	665,853	13,921 (2.1)

4.1.3 Technically unsatisfactory smears by NSW laboratory location

Laboratories processing cervical smears were categorised on the basis of their location category in Sydney, or outside Sydney or outside NSW.

The proportion of technically unsatisfactory smears in the 20 - 69 year age group by laboratory location showed considerable variation between NSW laboratories and laboratories outside NSW. (Table 4.3)

Table 4.3 Technically unsatisfactory smears by NSW laboratory location
(1 January 1998 - 31 December 1998)

Laboratory location	Number of cervical smears	Technically unsatisfactory smears (%)
Total within Sydney	604,568	12,971 (2.1)
Total outside Sydney	34,829	793 (2.3)
Total NSW	639,397	13,764 (2.2)
Outside NSW	47,433	619 (1.3)
Total Laboratories	686,830	14,383 (2.1)

4.2 Endocervical component

Definition: This measure records the number and percentage of technically satisfactory smears which include an endocervical component.

Period: 12 month reporting period from 1 January 1998 - 31 December 1998.

4.2.1 Number and proportion of technically satisfactory smears containing an endocervical component by 5-year age group

Endocervical cells have been proposed as an indicator of quality of smear taking. It is an objective way of knowing how well the cervix has been sampled. There are a variety of clinical circumstances whereby endocervical cells are not sampled the absence of endocervical cells does not necessarily mean the sample is inadequate, a 100% rate is therefore rarely possible. Generally a rate of 80 - 85% is expected.

In the 20 - 69 year age group, 88.0% of all technically satisfactory smears included an endocervical component. In the 20 - 49 year age group 89.6% of technically satisfactory smears contained an endocervical component, compared to 81.8% in women 50 - 69 year age group. (Table 4.4)

The proportion of smears containing an endocervical component decreased steadily with age, especially in women aged 45 years and above, from a maximum of 90.7% among screened women aged 20 - 24 years to 78.3% of smears among women aged 65 - 69 years. There was a statistically significant trend of decreasing proportion of technically satisfactory smears containing an endocervical component with increasing age (p -value < 0.001).

Table 4.4 Endocervical component by 5-year age group

Age group (years)	Number of cervical smears ¹	Endocervical component
20 - 24	66,653	60,465 (90.7)
25 - 29	97,856	88,231 (90.2)
30 - 34	97,618	88,037 (90.2)
35 - 39	98,380	88,672 (90.1)
40 - 44	83,618	74,423 (89.0)
45 - 49	70,166	61,082 (87.1)
50 - 54	55,538	46,810 (84.2)
55 - 59	36,503	29,833 (81.7)
60 - 64	26,601	21,115 (79.4)
65 - 69	19,165	15,006 (78.3)
20 - 49	514,291	460,910 (89.6)
50 - 69	137,807	112,764 (81.8)
20 - 69	652,098	573,674 (88.0)

¹Technically satisfactory

4.2.2 Technically satisfactory smears containing an endocervical component by Area Health Service and age group

In the 20 - 69 year age group, the proportion of technically satisfactory smears containing an endocervical component was highest in the New England Area Health Service (90.1%) and lowest in the Macquarie Area Health Service (85.1%). In this age group, the proportion of technically satisfactory smears containing an endocervical component across all Area Health Services differed significantly (p -value < 0.001) . (Table 4.5)

In the 20 - 49 year age group, 91.5% of technically satisfactory smears in the New England Area Health Service contained an endocervical component (highest) compared to 86.8% in the Macquarie Area Health Service (lowest). In this age group, the difference observed in the proportion of technically satisfactory smears containing an endocervical component across the Area Health Services was also significant (p -value < 0.001). (Table 4.5)

In the 50 - 69 year age group, 85.6% of technically satisfactory smears in the New England Area Health Service contained an endocervical component (highest) compared to 78.8% in the Northern Rivers Area Health Service (lowest). The proportion of technically satisfactory smears containing an endocervical component across the Area Health Services in the 50 - 69 year age group did not differ significantly (p -value=0.12).

The proportion of technically satisfactory smears containing an endocervical component was significantly different between the 20 - 49 year age group (89.6%) and 50 - 69 year age group (81.8%). (p -value < 0.001)

Table 4.5 Endocervical component by NSW Area Health Service and age group (1 January 1998 - 31 December 1998)

Area Health Service	Age 20 - 49 years		Age 50 - 69 years		Age 20 - 69 years	
	Number of cervical smears ¹	Endocervical component (%)	Number of cervical smears ¹	Endocervical component (%)	Number of cervical smears*	Endocervical component (%)
Central Coast	21,387	19,236 (89.9)	6,119	4,981 (81.4)	27,506	24,217 (88.0)
Central Sydney	41,292	36,754 (89.0)	9,726	7,811 (80.3)	51,018	44,565 (87.4)
Far West	2,572	2,291 (89.1)	775	625 (80.6)	3,347	2,916 (87.1)
Greater Murray	17,446	15,744 (90.2)	4,684	3,849 (82.2)	22,130	19,593 (88.5)
Hunter	39,143	35,164 (89.8)	10,045	8,353 (83.2)	49,188	43,517 (88.5)
Illawarra	24,878	22,132 (89.0)	6,985	5,648 (80.9)	31,863	27,780 (87.2)
Macquarie	6,958	6,041 (86.8)	2,091	1,656 (79.2)	9,049	7,697 (85.1)
Mid North Coast	16,448	14,824 (90.1)	6,021	5,087 (84.5)	22,469	19,911 (88.6)
Mid Western	12,157	11,035 (90.7)	3,426	2,856 (83.4)	15,583	13,891 (89.1)
New England	13,169	12,044 (91.5)	4,035	3,453 (85.6)	17,204	15,497 (90.1)
Northern Rivers	16,932	14,879 (87.9)	5,210	4,108 (78.8)	22,142	18,987 (85.8)
Northern Sydney	70,356	63,248 (89.9)	21,851	17,953 (82.2)	92,207	81,201 (88.1)
South Eastern Sydney	69,838	62,511 (89.5)	17,985	14,641 (81.4)	87,823	77,152 (87.8)
South Western Sydney	57,890	41,583 (89.1)	12,801	10,314 (80.6)	70,691	61,897 (87.6)
Southern	10,661	9,647 (90.5)	3,569	3,009 (84.3)	14,230	12,656 (88.9)
Wentworth	23,333	21,007 (90.0)	5,184	4,255 (82.1)	28,517	25,262 (88.6)
Western Sydney	47,355	42,498 (89.7)	12,207	10,082 (82.6)	59,562	52,580 (88.3)
AHS Not Available	9,747	8,714 (89.4)	2,055	1,667 (81.1)	11,802	10,381 (88.0)
Non-identified tests	12,729	11,558 (90.8)	3,038	2,416 (79.5)	15,767	13,974 (88.6)
Total satisfactory smears	514,291	460,910 (89.6)	137,807	112,764 (81.8)	652,098	573,674 (88.0)

¹ Technically satisfactory

4.2.3 Technically satisfactory smears containing an endocervical component by NSW laboratory location.

Overall, laboratories within Sydney (88.1%) had a statistically significantly higher proportion of technically satisfactory smears containing an endocervical component than laboratories outside Sydney (87.3%) (p -value < 0.001). (Table 4.6) This difference was not substantial.

**Table 4.6 Endocervical component by NSW laboratory location
(1 January 1998 - 31 December 1998)**

Laboratory location	Number of cervical smears ¹	Endocervical component (%)
Total within Sydney	573,099	504,893 (88.1)
Total outside Sydney	33,300	29,081 (87.3)
Total NSW	606,399	533,974 (88.1)
Outside NSW	45,699	39,700 (86.9)
Total laboratories	652,098	573,674 (88.0)

¹ Technically satisfactory

4.3 CYTOLOGY RESULTS

This section of the report summarises screening of information in terms of results recorded on the NSW Pap Test Register for the reporting period 1 January 1998 - 31 December 1998.

Like other States of Australia, inclusion on the NSW Pap Test Register is voluntary. However, the NSW Pap Test Register differs from other States, as the test results of women who choose to opt-off remain on the Register excluding identifying details. Accordingly, tests on the NSW Pap Test Register can be divided into two groups:

- C tests identified with a client
- C tests that are de-identified.

For all NSW women, the breakdown of identified and unidentified Pap tests reported to the NSW Pap Test Register in 1998 is presented in Table 4.7. The number of women with a test in the reporting period excludes women who have opted-off the Pap Test Register.

Table 4.7 Participation in screening by NSW women for the reporting period 1 January 1998 - 31 December 1998

Year	Number of cytology tests	Number of identified tests ¹	Number of de-identified tests ¹	Number of women ²
1998	710,037	690,829	19,208	648,867

¹ Tests refer to cytology, Pap tests only

² Women who have opted-off the PTR are excluded from this count

Cytology results received by the NSW Pap Test Register for all women in NSW are coded according to the following five categories which form the main components of a Pap test report:

- C Squamous cell code
- C Human papilloma virus code
- C Endocervical code
- C Other (non-cervical) cell code
- C Recommendation code

In the following tables the range is the highest and lowest proportions for individual laboratories that registered a minimum 500 smears during 1998. All Pap tests for all laboratories beyond this threshold are included irrespective of the type of provider requesting the test.

4.3.1 Squamous cell code

In NSW, cytology reports must be coded with one of 11 possible squamous cell codes including "Code not applicable". "Code not applicable" may be used when there is an endocervical or other non-squamous abnormality present. Table 4.8 shows the distribution of cytology reports for the 11 squamous cell codes during 1998.

In total, 14,891 smears (2.1%) were reported as unsatisfactory. During 1998, 5.0% of smears were reported as low grade squamous epithelial abnormality (less than CIN 2), and the percentage of smears reported as high grade squamous epithelial abnormality (CIN 2 or higher) was 0.6%. (Table 4.8)

Table 4.8: Distribution of cytology reports of squamous cell codes in NSW women for the reporting period of 1 January - 31 December 1998

Description	Count	% of Total	Range (%)
Unsatisfactory	14,891	2.1	0.0 - 5.3
No abnormal squamous cells	635,242	89.5	64.2 - 95.1
Minor reactive and inflammatory changes	17,738	2.5	0.0 - 21.4
Low grade squamous epithelial abnormality			
Mild atypia	29,401	4.1	0.5 - 17.9
Mild dysplasia (CIN 1)	6,017	0.9	0.3 - 6.8
Inconclusive	2,411	0.3	0.0 - 2.3
High grade squamous epithelial abnormality			
Moderate dysplasia (CIN 2)	1,655	0.2	0.0 - 1.4
Severe dysplasia (CIN 3)	2,341	0.3	0.0 - 1.4
Suspicious of malignancy or micro-invasion (CIN 3 at least)	143	<0.1	0.0 - 0.2
Squamous cell carcinoma	91	<0.1	0.0 - 0.1
Code not applicable ¹	107	<0.1	0.0 - 0.4
Total	710,037	100	-

¹ Used where there is an endocervical or other non-squamous abnormality present

4.3.2 Human Papilloma Virus Cell Code

In NSW, cytology reports are coded with one of four possible Human Papilloma Virus (HPV) codes including "Code not applicable". "Code not applicable" may be used when the test is reported as unsatisfactory. Table 4.9 shows the distribution of cytology results according to cytological evidence of HPV.

Table 4.9: Distribution of reports according to cytological evidence of human papilloma virus for NSW women (1 January 1998 - 31 December 1998)

Description	Count	% of Total	Range (%)
HPV cell changes absent	681,737	96.0	82.2 - 99.9
HPV cell changes possible	2,404	0.3	0.0 - 5.0
HPV cell changes present	13,031	1.8	0.0 - 9.5
Code not applicable ¹	12,865	1.8	0.0 - 5.2
Total	710,037	100	-

¹ may be used when test is reported as unsatisfactory and no assessment could be made

In 1998, HPV cell changes were present in 13,031 (1.8%) smears and considered possible in 2,404 smears (0.3%) were categorised as HPV cell changes possible.

4.3.3 Endocervical cell code

In NSW, cytology reports are coded with one of nine possible endocervical cell codes including "Code not applicable". "Code not applicable" may be used when the test is reported as unsatisfactory.

Categories of high and low grade endocervical intra-epithelial abnormality are consistent with dysplasia or glandular intra-epithelial abnormality (GIN nomenclature). Table 4.10 shows the distribution of cytology reports for the codes relating to the endocervical component.

Table 4.10: Distribution of cytology reports for codes relating to the endocervical cells, (1 January 1998 - 31 December 1998)

Description	Count	% of Total	Range (%)
No endocervical component present	85,558	12.0	0.0 - 26.7
Normal endocervical component present	609,789	85.9	70.6 - 98.7
Minor reactive and inflammatory changes	1,529	0.2	0.0 - 6.7
Low grade intra-epithelial endocervical abnormality	392	< 0.1	0.0 - 0.3
Inconclusive endocervical abnormality	149	< 0.1	0.0 - 0.3
High grade intra-epithelial endocervical abnormality	71	< 0.1	0.0 - 0.1
Suspicion of invasion	27	< 0.1	0.0 - 0.0
Invasive	26	< 0.1	0.0 - 0.1
Code not applicable ¹	12,496	1.8	0.0 - 5.2
Total	710,037	100	-

¹ may be used when test is reported as unsatisfactory and no assessment could be made

In 1998, 85,558 (12.0%) smears were reported as containing no endocervical cells. Normal endocervical cells were present in 609,789 smears (85.9%). A total of 612 (0.1%) smears were reported as either a low grade endocervical intra-epithelial abnormality, inconclusive, or high grade endocervical intra-epithelial abnormality.

4.3.4 Other (non-cervical) codes

In NSW, cytology reports are coded with one of seven possible codes for other, non-cervical entities, including "Code not applicable". "Code not applicable" may be used when the test is reported as unsatisfactory. The code "Abnormal cells present" includes reporting of intra-uterine contraceptive device (IUCD) cells and endocervical hyperplasia, while the code "Malignant cells present - other" includes reporting of metastatic disease. Table 4.11 shows the distribution of other (non-cervical) codes.

Table 4.11: Distribution of cytology reports of cell codes relating to other (non-cervical) component, for NSW women (1 January - 31 December 1998)

Description	Count	% of Total	Range (%)
No other abnormal cells	695,075	97.9	45.24 - 100.0
Abnormal cells present ¹	1,726	0.2	0.0 - 53.1
Malignant cells present - uterine body	37	< 0.1	0.0 - 0.1
Malignant cells present - ovary	0	0.0	0.0 - 0.0
Malignant cells presents - vagina	2	< 0.1	0.0 - 0.0
Malignant cells present - other ²	13	< 0.1	0.0 - 0.1
Code not applicable ³	13,184	1.9	0.0 - 5.2
Total	710,037	100	-

¹ IUCD cells, endometrial hyperplasia

² Includes metastatic malignancy

³ May be used when test is reported as unsatisfactory and no assessment could be made.

In 1998, there were 52 cases of non-cervical malignancies reported. Of these, 37 reported malignant cells of uterine origin, 2 from the vagina and 13 reports of other malignant cells.

4.3.5 Reporting of Recommendation codes

In NSW, cytology reports are coded with one of ten possible recommendation codes including "Other". Table 4.12 shows the distribution of these report categories.

**Table 4.12 Distribution of recommendation codes for NSW women
(1 January - 31 December 1998)**

Recommendation Codes	Count	% of Total	Range (%)
No recommendation	276,700	39.0	0.0 - 97.3
Repeat smear - 3 years	13	< 0.1	0.0 - 0.2
Repeat smears - 2 years	296,511	41.8	0.0 - 88.2
Repeat smear - 1 year	55,834	7.9	0.0 - 76.0
Repeat smear - 6 months	31,419	4.4	0.0 - 37.6
Repeat smear - 3 months	15,462	2.2	0.0 - 10.2
Repeat smear - 4 weeks or less	4,991	0.7	0.0 - 12.3
Referral for specialist opinion	12,562	1.8	0.0 - 7.8
Further investigation advised	7,285	1.0	0.0 - 11.0
Other	9,260	1.3	0.0 - 21.3
Total	710,037	100	-

Not all laboratories make a recommendation at the time of reporting the Pap test. In total 276,700 (39.0%) smears included no recommendation.

4.4 HISTOLOGY FINDINGS

4.4.1 Histology Results

Cervical histology results were received by the PTR for 25,727 women during 1998 (Table 4.13). The NSW PTR does not collect colposcopy results. Cervical histology results are stored on the PTR as SNOMED International Codes. The NSW Pap Test Register accepts a subset of SNOMED International codes relevant to cervical histology. These codes have been categorised into clinical groups that have been audited by practising histopathologists. However, SNOMED International does not distinguish between CIN 2 and CIN 3 but reports these lesions together as a high grade intra epithelial abnormality. As a result, in the correlation tables where histology is compared to cytology, the cytology has also been combined into a single category, "high grade intra epithelial abnormalities". When considering these tables please note that the groupings incorporate both squamous and glandular abnormality.

Table 4.13: Distribution of histology findings in NSW women (1 January - 31 December 1998)

Histology Findings	Number of tests	%
Negative, benign	10,883	42.3
Atypical or abnormal not otherwise specified	1,177	4.6
Low grade intra epithelial abnormality		
HPV effect alone	3,052	11.9
CIN 1 ± HPV	3,675	14.3
CIN / Dysplasia not graded	358	1.4
High grade intra epithelial abnormality		
CIN 2, CIN 3 ± HPV	5,665	22.0
Micro-invasive cancer	23	0.1
Cervical Cancer	408	1.6
Diagnosis not applicable ¹	486	1.9
Total	25,727	100

¹ diagnosis not related to cervical screening

Table 4.14: Correlation between cytology and histology tests, NSW⁽¹⁾
Reporting period 1 January 1998 - 31 December 1998

Histology Findings	Cytology Prediction									
	Low grade						High grade			
	Mild Atypia		HPV ²		CIN 1		Inconclusive		CIN 2, CIN 3 & Cancer	
	No.	%	No.	%	No.	%	No.	%	No.	%
Negative, benign	858	31	260	21	390	16	252	20	198	7
Atypical / abnormal not otherwise specified	210	8	103	9	143	6	60	5	47	2
Low grade intra epithelial abnormality										
HPV effect alone	558	20	276	23	363	15	144	11	134	5
CIN1 ± HPV	615	22	331	27	835	34	190	15	257	9
CIN / dysplasia not graded	31	1	16	1	33	1	27	2	64	2
High grade intra epithelial abnormality										
CIN 2, CIN 3 ± HPV	429	16	212	18	671	27	555	44	1,872	69
Micro-invasive cancer	0	0	0	0	0	0	3	< 1	14	1
Cervical cancer	10	< 1	2	< 1	5	< 1	25	2	111	4
Diagnosis not applicable ³	28	1	11	1	20	1	8	1	13	1
Total	2,739	100	1,211	100	2,460	100	1,264	100	2,710	100

¹ tests are included in this table when histology is performed on or within 6 months of the smear test date

² the tests listed in this category had HPV alone, no co-existing CIN lesion existed

³ diagnosis not related to cervical screening

During 1998, 20.7% of women with a histology test who had a cytologically determined low grade result (CIN 1 or less) had a high grade epithelial abnormality on histology. Additionally, 23.5% of women with a histology test where the preceding Pap test was a low grade result (CIN 1 or less) had a negative histological finding. Of the 2,710 women with a high grade epithelial abnormality on their Pap test, 74.2% were confirmed as high grade epithelial abnormality on histology.

4.4.2 Histologically confirmed cytology reports of CIN 2 or worse

Definition This measure reports histology findings performed within 6 months of cytology reports of CIN 2 or worse.

This measure is developed to measure trends in the predictive value of positive cytology reports in the reporting period.

Period 1 January 1998 - 31 December 1998

4.4.2.1 Histologically confirmed cytology reports of CIN 2 or worse by 5 - year age groups

Of the 2,810 cytology results of CIN2 or higher in 1998, 74.2% were histologically confirmed as a high grade epithelial abnormality. Histological confirmation was significantly more likely for women in the 20-49 year age group (75.1%) than for women in the 50-69 year age group (63.0%) (p -value < 0.001). There was a statistically significant trend of a decreasing proportion of women with histologically confirmed high grade epithelial abnormality with increasing age (p -value < 0.001). (Table 4.15)

Women aged 50-69 years with high grade epithelial abnormality cytology results were significantly more likely to be negative after histological diagnosis (14.2%) than women in the 20-49 age group (6.2%) (p -value < 0.001). As age increased, the proportion of false positive cytology result increased (p -value < 0.001), with a sharp increase for women older than 45-49 years (although low in the 60-64 year age group). (Table 4.15)

Table 4.15: Distribution of histological findings performed within 6 months of cytology reports of CIN 2 or worse, by 5-year age groups. (Reporting period 1 January 1998 - 31 December 1998)

Age group (years)	Total	Negative		Other non-specific histologic abnormalities ¹		Low Grade				Ungraded Dysplasia	High Grade						
						HPV alone		CIN1 ±HPV			CIN 2 or CIN 3 ± HPV		Micro-invasive cancer		Cervical cancer		
		Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)	Number and proportion of women (%)		
20-24	521	31	6.0	7	1.3	23	4.4	80	15.4	13	2.5	366	70.2	0	0.0	1	0.2
25-29	767	42	5.5	13	1.7	33	4.3	63	8.2	20	2.6	589	76.8	3	0.4	4	0.5
30-34	555	32	5.8	13	2.3	30	5.4	48	8.6	7	1.3	405	73.0	5	0.9	15	2.7
35-39	396	29	7.3	5	1.3	19	4.8	32	8.1	7	1.8	291	73.5	3	0.8	10	2.5
40-44	218	17	7.8	3	1.4	15	6.9	23	10.6	7	3.2	138	63.3	1	0.5	14	6.4
45-49	142	9	6.3	5	3.5	7	4.9	11	7.7	2	1.4	84	59.2	2	1.4	22	15.5
50-54	95	18	18.9	2	2.1	5	5.3	7	7.4	3	3.2	53	55.8	2	2.1	5	5.3
55-59	54	7	13.0	2	3.7	2	3.7	7	13.0	1	1.9	29	53.7	0	0.0	6	11.1
60-64	44	3	6.8	4	9.1	5	11.4	5	11.4	1	2.3	19	43.2	1	2.3	6	13.6
65-69	18	2	11.1	0	0.0	0	0.0	3	16.7	1	5.6	7	38.9	0	0.0	5	27.8
20-49	2,599	160	6.2	46	1.8	127	4.9	257	9.9	56	2.2	1873	72.1	14	0.5	66	2.5
50-69	211	30	14.2	8	3.8	12	5.7	22	10.4	6	2.8	108	51.2	3	1.4	22	10.4
20-69	2,810	190	6.8	54	1.9	139	4.9	279	9.9	62	2.2	1981	70.5	17	0.6	88	3.1

¹ The lesions included in this category contain morphologic abnormalities and cellular atypia not consistent with a dysplasia.

Notes:

Eligible cytology reports for this table include both squamous and endocervical evidence of CIN 2 or worse. Cytology cases where the squamous or endocervical component was inconclusive have been excluded. Both squamous and endocervical findings on histology have been taken into account.

4.4.2.2 Histologically confirmed cytology reports of CIN 2 or worse by Area Health Service

For women in the target age group of 20-69 years, there were significant differences between Area Health Services for histologically confirmed high grade epithelial abnormality (p-value < 0.001) and false positive cytology results (p-value < 0.003).

However, Area Health Service results were derived from multiple laboratories, of which some are located outside the geographical boundary of the Area Health Service. (Table 4.16)

Table 4.16: Distribution of histological findings performed within 6 months of cytology reports of CIN 2 or worse, by Area Health Services. (Reporting period 1 January 1998 - 31 December 1998)

Area Health Services	Total	Negative		Other non-specific histologic abnormalities ¹		Low Grade				Ungraded Dysplasia		High Grade					
		HPV alone		CIN 1 ± HPV		CIN 2, CIN 3 ±HPV		Micro-invasive cancer		Cervical cancer							
		Number and proportion of women	Number and proportion of women	Number and proportion of women	Number and proportion of women	Number and proportion of women	Number and proportion of women	Number and proportion of women	Number and proportion of women	Number and proportion of women							
Central Coast	126	8	6.3	0	0.0	4	3.2	9	7.1	26	20.6	76	60.3	0	0.0	3	2.4
Central Sydney	228	20	8.7	9	4.0	12	5.4	22	9.5	3	1.5	155	68.1	0	0.0	6	2.8
Hunter	286	22	7.7	5	1.7	16	5.6	27	9.4	5	1.7	200	69.9	0	0.0	11	3.8
Illawarra	165	14	8.5	1	0.6	0	0.0	13	7.9	3	1.8	125	75.8	1	0.6	8	4.8
Northern Sydney	367	25	6.8	13	3.5	17	4.6	32	8.7	4	1.1	266	72.5	0	0.0	10	2.7
South Eastern Sydney	422	20	4.8	10	2.3	23	5.4	47	11.2	9	2.0	297	70.3	2	0.5	15	3.5
South Western Sydney	256	19	7.4	7	2.7	12	4.7	16	6.3	2	0.8	190	74.2	2	0.8	8	3.1
Wentworth	116	4	3.4	3	2.6	12	10.3	15	12.9	1	0.9	76	65.5	3	2.6	2	1.7
Western Sydney	234	16	6.8	1	0.4	13	5.6	29	12.4	2	0.9	165	70.5	4	1.7	4	1.7
Metropolitan	2,200	148	6.7	49	2.2	109	5.0	210	9.5	55	2.5	1,550	70.5	12	0.5	67	3.0
Far West	26	2	7.7	0	0.0	2	7.7	2	7.7	0	0.0	19	73.1	0	0.0	1	3.8
Greater Murray	132	10	7.6	0	0.0	2	1.5	19	14.4	2	1.5	95	72.0	0	0.0	4	3.0
Macquarie	57	1	1.8	0	0.0	3	5.3	5	8.8	0	0.0	44	77.2	2	3.5	2	3.5
Mid North Coast	93	6	6.5	2	2.2	5	5.4	9	9.7	0	0.0	69	74.2	0	0.0	2	2.2
Mid Western	70	6	8.6	0	0.0	5	7.1	11	15.7	1	1.4	44	62.9	0	0.0	3	4.3
New England	71	7	9.9	1	1.4	2	2.8	10	14.1	1	1.4	49	69.0	1	1.4	0	0.0
Northern Rivers	65	6	9.2	2	3.1	4	6.2	8	12.3	0	0.0	42	64.6	1	1.5	2	3.1
Southern	39	3	7.7	0	0.0	2	5.1	0	0.0	2	5.1	27	69.2	1	2.6	4	10.3
Rural	553	41	7.4	5	0.9	25	4.5	64	11.6	6	1.1	389	70.3	5	0.9	18	3.3
AHS not available	57	1	1.8	0	0.0	5	8.8	5	8.8	1	1.8	42	73.7	0	0.0	3	5.3
NSW total	2,810	190	6.8	54	1.9	139	4.9	279	9.9	62	2.2	1,981	70.5	17	0.6	88	3.1

¹ Lesions included in this category contain morphologic abnormalities and cellular atypia not consistent with a dysplasia.

Notes: Eligible cytology reports for this table include both squamous and endocervical evidence of CIN 2 or worse. Cytology cases where the squamous or endocervical component was inconclusive have been excluded. Both squamous and endocervical findings on histology have been taken into account.

4.4.2.3 Histologically confirmed cytology Reports of CIN 2 or worse by laboratory location.

There were no significant differences observed between laboratory locations.

Overall differences between laboratories within Sydney (73.8%) and laboratories outside Sydney (76.3%) were not statistically significant (p -value=0.49).

Table 4.17: Distribution of histological findings performed within 6 months of cytology reports of CIN 2 or worse by laboratory location in the 20 - 69 year age group. (Reporting period 1 January 1998 - 31 December 1998)

Laboratory location	Total	Negative		Other non-specific histologic abnormalities ¹		Low grade				Ungraded Dysplasia		High grade					
						HPV alone		CIN 1 ±HPV				CIN 2, CIN 3 ±HPV		Micro-invasive cancer		Cervical Cancer	
		no	%	no	%	no	%	no	%	no	%	no	%	no	%	no	%
Total within Sydney	2,499	165	6.6	51	2.0	134	5.4	247	9.9	57	2.3	1,754	70.2	15	0.6	76	3.0
Total outside Sydney	161	16	9.9	1	0.6	4	2.5	13	8.1	4	2.5	115	71.4	1	0.6	7	4.3
Total NSW	2,660	181	6.8	52	2.0	138	5.2	260	9.8	61	2.3	1,869	70.3	16	0.6	83	3.1
Outside NSW	160	10	6.3	2	1.3	1	0.6	21	13.1	3	1.9	116	72.5	1	0.6	6	3.8
Total Laboratories	2,820	191	6.8	54	1.9	139	4.9	281	10.0	64	2.3	1985	70.4	17	0.6	89	3.2

¹ The lesions included in this category contain morphologic abnormalities and cellular atypia not consistent with a dysplasia.

Notes: Eligible cytology reports for this table include both squamous and endocervical evidence of CIN 2 or worse. Cytology cases where the squamous or endocervical component was inconclusive have been excluded. Both squamous and endocervical findings on histology have been taken into account.

4.4.3 Histologically confirmed cytology reports of CIN of any degree or worse

4.4.3.1 Histologically confirmed cytology reports of CIN of any degree or worse by 5-year age groups

Definition This measure reports the number and proportion of women with cytology reports of CIN of any degree where histology performed within 6 months confirms the abnormality as being CIN of any degree or worse. Eligible cytology and histology cases for this measure include both squamous and endocervical evidence of CIN. Cytology cases reported as inconclusive were excluded.

Period 1 January 1998 - 31 December 1998.

The numerator for this measure is the number of women, with histologically confirmed CIN of any degree or worse whose histology was performed on the same day or up to and including 6 months from the cytology request date. The denominator population for this measure is the number of women with a cytology report during the reporting period of CIN of any degree, and who have had cervical histology performed on the same day or up to and including six months from the date of the request for a cytology test.

Table 4.18 Number and proportion of women with cytology reports of CIN of any degree or worse confirmed histologically within 6 months by 5-year age group (1 January 1998 - 31 December 1998)

Age group (years)	Number of women with cytology report of CIN of any degree	Women with histologically confirmed CIN of any degree	
		Number	Proportion (%)
20 - 24	1,212	907	74.8
25 - 29	1,342	1,041	77.6
30 - 34	891	665	74.6
35 - 39	628	470	74.8
40 - 44	379	247	65.2
45 - 49	245	148	60.4
50 - 54	158	90	57.0
55 - 59	86	46	53.5
60 - 64	61	33	54.1
65 - 69	28	12	42.9
20 - 49	4,697	3,478	74.0
50 - 69	333	181	54.4
20 - 69	5,030	3,659	72.7

Note: Eligible cytology and histology cases for this Table include both squamous and endocervical evidence of CIN. Cytology cases reported as inconclusive are excluded.

During the reporting period a total of 5,030 women had a cytology report of CIN of any degree and histology performed within 6 months in the target age group of 20 - 69 years. Of these, 3,659 (72.7%) women had abnormality confirmed as being CIN of any degree. The proportion of women with histologically confirmed CIN or worse was highest in the 20 - 49 year age group (74.0%) and lowest in the 50 - 69 year age group (54.4%). There was a significant trend of decreasing proportion of women with histologically confirmed CIN of any degree or worse with increasing age (p -value < 0.001).

4.4.3.2 Histologically confirmed cytology reports of CIN of any degree or worse by Area Health Services

In the 20 - 49 year age group, the proportion of women with histologically confirmed CIN of any degree or worse was highest in the Macquarie Area Health Service (83.1%) and lowest in the Southern Area Health Service (63.4%). In all other Area Health Services the proportion of histologically confirmed CIN of any degree or worse ranged from 67.2% to 82.5%. There was no statistical evidence of significant differences across the different Area Health Services in this age group (p -value=0.73).

In the 50 - 69 year age group, the proportion of women with histologically confirmed CIN of any degree or worse was highest in the Mid Western Area Health Service (72.7%) and lowest in the Far West and Macquarie Area Health Services (0%). There was no statistically significant difference in proportion of histologically confirmed CIN of any degree or worse (p -value= 0.77) across all Area Health Services.

In the 20 - 69 year age group, the highest proportion of women with histologically confirmed CIN of any degree or worse was observed in the Mid North Coast Area Health Service (79.9%), and the lowest in the Southern Area Health Service (60.5%). There was no statistically significant difference (p -value=0.33) in the proportion of women with histologically confirmed CIN of any degree or worse across different Area Health Services.

The proportion of women with histologically confirmed CIN of any degree or worse was significantly different between the 20 - 49 year age group (74.0%) and the 50 - 69 year age group (54.4%) (p -value < 0.001).

However, Area Health Service results were derived from multiple laboratories, of which some are located outside the geographical boundary of the Area Health Service.

Table 4.19 Number and proportion of women with cytology reports of CIN of any degree confirmed by histology, by Area Health Service for the reporting period 1 January 1997 - 31 December 1997

Area Health Service	Age 20 - 49 years		Age 50 - 69 years		Age 20 - 69 years	
	Number of women with cytology report of CIN of any degree	Women with histologically confirmed CIN of any degree (%)	Number of women with cytology report of CIN of any degree	Women with histologically confirmed CIN of any degree (%)	Number of women with cytology report of CIN of any degree	Women with histologically confirmed CIN of any degree (%)
Central Coast	188	138 (73.4)	18	9 (50.0)	206	147 (71.4)
Central Sydney	384	275 (71.8)	26	17 (67.4)	410	293 (71.5)
Hunter	433	319 (73.7)	31	18 (58.1)	464	337 (72.6)
Illawarra	332	246 (74.1)	22	14 (63.6)	354	260 (73.4)
Northern Sydney	618	457 (73.9)	48	20 (41.7)	666	477 (71.6)
South Eastern Sydney	717	527 (73.4)	43	22 (50.0)	760	548 (72.1)
South Western Sydney	438	331 (75.6)	26	14 (53.8)	464	345 (74.4)
Wentworth	195	131 (67.2)	15	9 (60.0)	210	140 (66.7)
Western Sydney	371	283 (76.3)	23	11 (47.8)	394	294 (74.6)
Metropolitan	3,676	2,707 (73.6)	252	134 (53.2)	3,928	2,841 (72.3)
Far West	39	28 (71.8)	2	0 (00.0)	41	28 (68.3)
Greater Murray	226	167 (73.9)	16	11 (68.8)	242	178 (73.6)
Macquarie	83	69 (83.1)	6	1 (16.7)	89	70 (78.7)
Mid North Coast	137	113 (82.5)	22	14 (63.6)	159	127 (79.9)
Mid Western	127	86 (67.7)	11	8 (72.7)	138	94 (68.1)
New England	126	101 (80.2)	8	5 (62.5)	134	106 (79.1)
Northern Rivers	122	93 (76.2)	7	5 (71.4)	129	98 (76.0)
Southern	71	45 (63.4)	5	1 (20.0)	76	46 (60.5)
Rural	931	702 (75.4)	77	45 (58.4)	1,008	747 (74.1)
AHS not available	90	69 (76.7)	4	2 (50.0)	94	71 (75.5)
NSW Total	4,697	3,478 (74.0)	333	181 (54.4)	5,030	3,659 (72.7)

Note: Eligible cytology and histology cases for this Table include both squamous and endocervical evidence of CIN. Cytology cases reported as inconclusive are

excluded.

4.4.3.3 Histologically confirmed cytology reports of CIN of any degree or worse by laboratory location

Overall comparison between Sydney laboratories (72.2%) and laboratories outside Sydney (72.8%) showed no significant difference (p - value=0.62).

Laboratories outside NSW (79.0%) had a significantly higher (p -value <0.03) proportion of histologically confirmed CIN of any degree than laboratories within NSW (72.3%).

Table 4.20 Number and proportion of women with histologically confirmed CIN of any degree by laboratory location (1 January 1998 - 31 December 1998)

Laboratory location	Number of women with cytology report of CIN of any degree	Women with histologically confirmed CIN of any degree	
		Number	Proportion
Total within Sydney	4,348	3,141	72.2
Total outside Sydney	353	257	72.8
Total NSW	4,701	3,398	72.3
Outside NSW	348	275	79.0
Total Laboratories	5,049	3,673	72.7

Note: Eligible cytology and histology cases for this Table include both squamous and endocervical evidence of CIN. Cytology cases reported as inconclusive are excluded.

4.5 Histologically verified low grade and high grade intra epithelial abnormalities

4.5.1 Histologically verified low grade intra epithelial abnormality

Definition Detection rate for histologically verified low grade intra epithelial abnormalities per 1,000 women screened in a 12-month period by 5-year age group and for the target age group. A low grade intra epithelial abnormality is defined as a lesion that is warty atypia (HPV effect), atypia, equivocal CIN, possible CIN, CIN 1 or endocervical dysplasia NOS.

Period 1 January 1998 - 31 December 1998

This indicator provides a broad indication of the sensitivity of screening for low grade lesion. It will be useful to look at trends in this measure over time.

The detection rate for low grade abnormalities was 9.4 per 1,000 screened women for the target age group 20 - 69 years. This ranged from 2.7 to 22.1 per 1,000, with a significant trend of a decreasing rate with increasing age (p -value <0.001).

Table 4.21 Histologically verified low grade intra epithelial abnormalities per 1,000 women by age group in NSW (1 January - 31 December 1998)

Age group (years)	No of women with	No of women	Per 1,000 screened
20 - 24	1,336	60,493	22.1
25 - 29	1,336	90,174	14.8
30 - 34	928	91,587	10.1
35 - 39	714	92,835	7.7
40 - 44	564	79,030	7.1
45 - 49	360	66,475	5.4
50 - 54	239	52,429	4.6
55 - 59	123	34,382	3.6
60 - 64	98	25,105	3.9
65 - 69	48	17,878	2.7
20 - 69	5,746	610,388	9.4

¹ Defined as a lesion that is warty atypia (HPV effect), atypia, equivocal CIN, possible CIN, CIN 1, or endocervical dysplasia NOS

4.5.2 Histologically verified high grade intra-epithelial abnormality

Definition Detection rate for histologically verified high grade intra epithelial abnormalities per 1,000 women screened in a 12-month period by 5-year age group and for the target age group. A high grade intra epithelial abnormality is defined as a lesion that is CIN1/2, CIN 2, CIN 3 or adeno-carcinoma in situ.

Period 1 January 1998 - 31 December 1998

This new National indicator provides a broad indication of the sensitivity of screening for high grade lesion. It will be useful to look at trends in this measure over time.

The detection rate for high grade intra epithelial abnormality was 6.4 per 1,000 women screened for the target age group of 20 - 69 years. It ranged from 1.0 to 13.9 per 1,000, with a significant trend of a decreasing rate with increasing age (p -value <0.001).

Table 4.22 Histologically verified high grade intra epithelial abnormalities per 1,000 women by age group in NSW (1 January - 31 December 1998)

Age group (years)	No of women with high grade intra epithelial abnormality ¹	No of women screened	Per 1,000 screened women
20 - 24	841	60,493	13.9
25 - 29	1,172	90,174	13.0
30 - 34	746	91,587	8.1
35 - 39	526	92,835	5.7
40 - 44	279	79,030	3.5
45 - 49	162	66,475	2.4
50 - 54	100	52,429	1.9
55 - 59	50	34,382	1.5
60 - 64	36	25,105	1.4
65 - 69	17	17,878	1.0
20 - 69	3,929	610,388	6.4

¹ Defined as a lesion that is CIN 1/2, CIN 2, CIN 3, or adeno-carcinoma in situ

4.5.3 Ratio of histologically verified low grade intra epithelial to high grade intra epithelial abnormalities by age group in NSW

Definition Number of women with a histologically reported low grade intra epithelial abnormality in a 12-month period as a ratio of the number of women with a histologically reported high grade intra epithelial abnormality in the same period.

Period 1 January 1998 - 31 December 1998

This indicator provides a broad indication of the sensitivity of screening for high grade lesions. The higher the ratio, the lower the specificity. The ratio of low-grade to high grade abnormality detection was 1.5 for the target age group of 20 - 69 year. This ratio ranged from 1.1 to 2.8.

Table 4.23 Ratio of histologically verified low grade to high grade intra epithelial abnormalities by age group in NSW (1 January - 31 December 1998)

Age group (years)	Low grade intra epithelial abnormality ¹	High grade intra epithelial abnormality ²	Ratio
20 - 24	1,336	841	1.6
25 - 29	1,336	1,172	1.1
30 - 34	928	746	1.2
35 - 39	714	526	1.4
40 - 44	564	279	2.0
45 - 49	360	162	2.2
50 - 54	239	100	2.4
55 - 59	123	50	2.5
60 - 64	98	36	2.7
65 - 69	48	17	2.8
20 - 69	5,746	3,929	1.5

¹ Defined as a lesion that is warty atypia (HPV effect), atypia, equivocal CIN, possible CIN, CIN 1, or endocervical dysplasia NOS

² Defined as a lesion that is CIN ½, CIN 2, CIN 3, or adenocarcinoma in situ

