

NCSP – Register Data Analysis

Analysis of NCSP-R data relating to the Management of Women with Abnormal Smears

National Cervical Screening Programme

28 November 2005

Contents

1. Background
2. Risk of HSIL in the 24 months following a first ASCUS smear in 2001
3. Risk of HSIL in the 24 months following a first LSIL smear in 2001
4. Estimated number of additional cancers per year resulting from change in recall interval from 6 to 12 months
5. Conclusion

1. Background

This analysis was undertaken at the request of the NCSP Guideline Development Team and is intended to contribute to the development of the guideline for the management of women with abnormal smears.

It addresses the issue of the optimal timing of recall in relation to a first abnormal smear. That is, it asks the question: can the NCSP safely extend the recommended time interval (currently 6 months) for recalling women following a first low grade smear (LSIL or ASCUS)?

The analysis is based on the data held in the NCSP-R (extracted by Rosalyn Braganza). The analysis was carried out by Mona Jeffreys (Centre for Population Health Research, Massey University) except for the calculation of incremental cancers expected from a change in average recall interval, which was done by Martin Tobias (Public Health Intelligence). The data extraction and analysis were independently peer reviewed by Craig Wright (Public Health Intelligence). The final report was collated by Hazel Lewis (NSU).

2. Risk of HSIL in the 24 months following a first ASCUS smear in 2001

Key Points

From analysis of women with a normal smear history and a first ASCUS in 2001, the following results were found:

- The two year risk of HSIL or worse histology was 16.4%.

- The longer the period between the ASCUS smear and the histology being taken, the higher the risk of HSIL.
- If colposcopy is delayed, the relative effect will be the same in young and older women, but the absolute risk of HSIL or worse will be greater in younger women, due to the higher underlying risk in this age group.

Methods

All women who had a previous normal smear history followed by an ASCUS smear in 2001 were identified through the NSCP-Register. The colposcopy outcomes for these women over the following 24 months were then examined. Outcome was classified as “HSIL or worse” or “other”.

Results

In 2001, 2,930 women who had an ASCUS smear following a previous normal smear history were identified. Of these, the time to next contact (smear or colposcopy) is shown in Table 1. Younger women (<30 years) were less likely to be followed up within nine months than older women (≥30 years), 25% vs. 14%, P<0.001, see Table 2.

Table 1: Time to next contact following an ASCUS smear

	n	Percent
0 to 8 months	2,372	81.0
9 to 15 months	414	14.1
16 to 23 months	99	3.4
24 or more months	45	1.5
Total	2,930	100

Table 2: Time to next contact following an ASCUS smear by age group

	<30 years	≥30 years
0 to 8 months	913 (74.6%)	1,459 (85.5%)
9 to 15 months	221 (18.1%)	193 (11.3%)
16 to 23 months	65 (5.3%)	34 (2.0%)
24 or more months	25 (2.0%)	20 (1.2%)

Risk of HSIL histology or worse

Of the 2,930 women, 647 (22%) who did not have colposcopy within the subsequent 24 months were excluded from subsequent analysis. Of the remaining 2,283 women, the risk of having an HSIL or worse outcome on histology in a 24 month period was 16.4%. Younger women (age < 30) were much more likely to develop a HSIL or worse abnormality in the two year follow up than older women (24.1% vs. 11.0%, p<0.001).

The longer the period between the ASCUS smear and the histology being taken, the higher the risk of HSIL (Table 3). Every extra month that the histology was delayed over the two year period was associated with a 9% higher risk of having a HSIL or worse outcome (odds ratio 1.09, 95% confidence interval 1.06 to 1.12, p<0.001).

The same pattern of higher risk with delayed colposcopy was evident in younger and older women, although the numbers were small. Although the relative risk of HSIL or worse outcome for women who waited 16 to 23 months compared with those who waited under 9 months were similar in younger and older women, the absolute numbers of HSIL or worse will be greater in younger women, due to the higher underlying risk in this group.

Table 3: Risk of developing HSIL or worse histology in the two years following an ASCUS smear by time delay between smear and colposcopy

	All women		Age < 30		Age 30+	
	n	Risk	n	Risk	n	Risk
0 to 8 months	285	14.7%	164	22.0%	121	10.1%
9 to 15 months	70	24.7%	46	29.5%	24	18.8%
16 to 23 months	19	35.9%	16	43.2%	3	18.8%
Total	374	16.4%	226	24.1%	148	11.0%

3. Risk of HSIL in the 24 months following a first LSIL smear in 2001

Key Points

From analysis of women with a normal smear history and a first LSIL in 2001, the following results were found:

- The two year risk of HSIL or worse histology was 22.7%.
- The longer the period between the LSIL smear and the histology being taken, the higher the risk of HSIL.
- If colposcopy is delayed, the relative effect will be the same in young and older women, but the absolute risk of HSIL or worse will be greater in younger women, due to the higher underlying risk in this group.

Methods

All women who had a previous normal smear history followed by an LSIL smear in 2001 were identified through the NSCP-Register. The colposcopy outcomes for these women over the following 24 months were then examined. Outcome was classified as “HSIL or worse” or “other”.

Results

In 2001, 2,659 women who had an LSIL smear following a previously normal smear history were identified. Of these, the time to next contact (smear or colposcopy) is shown in Table 4. Younger women (<30 years) were less likely to be followed up within six months than older women (≥30 years), 25% vs. 14%, p<0.001 (Table 5).

Table 4: Time to next contact following a LSIL smear

	n	Percent
0 to 8 months	2,108	79.28
9 to 15 months	394	14.82
16 to 23 months	96	3.61
24 or more months	61	2.29
Total	2,659	100.00

Table 5: Time to next contact following a LSIL smear by age group

	<30 years	>=30 years
0 to 8 months	1,255 (75.1%)	853 (86.3%)
9 to 15 months	292 (17.5%)	102 (10.3%)
16 to 23 months	74 (4.4%)	22 (2.2%)
24 or more months	50 (3.0%)	11 (1.1%)

Risk of HSIL histology or worse

Of the 2,659 women, 426 (16%) who did not have colposcopy within the subsequent 24 months were excluded from subsequent analyses. Of the remaining 2,233 women, the risk of having an HSIL or worse outcome on histology in a 24 month period was 22.7%. Younger women (age < 30) were much more likely to develop a HSIL or worse abnormality in the two year follow up than older women (26.2% vs. 17.1%, $p < 0.001$).

The longer the period between the LSIL smear and the histology being taken, the higher the risk of HSIL (Table 6). Every extra month that the histology was delayed over the two year period was associated with a 3% higher risk of having a HSIL or worse outcome (odds ratio 1.03, 95% confidence interval 1.00 to 1.06, $p = 0.043$).

The same pattern of higher risk with delayed colposcopy was evident in younger and older women, although the numbers were small. Although the relative risk of HSIL or worse outcome for women who waited 16 to 23 months compared with those who waited under 9 months were similar in younger and older women, the absolute numbers of HSIL or worse will be greater in younger women, due to the higher underlying risk in this group.

Table 6: Risk of developing HSIL or worse histology in the two years following a LSIL smear by time delay between smear and colposcopy

	All women		Age < 30		Age 30+	
	n	Risk	n	Risk	n	Risk
0 to 8 months	414	22.0%	286	25.9%	128	16.6%
9 to 15 months	79	25.6%	62	27.0%	17	21.8%
16 to 23 months	14	29.8%	11	32.4%	3	23.1%
Total	507	22.7%	359	26.2%	148	17.1%

4. How many additional invasive (including micro-invasive) cancers will occur if recall is delayed from 6 to 12 months (on average)?

LSIL

In 2001, 2659 women with a first LSIL smear were identified.

Had they all been recalled at 6 months, 22% would have been found to have progressed to HSIL over two years ie 585 women (assuming that the mean of the '0-8 month' category is 6 months).

Had they all been recalled at 12 months, 25.6% would have been found to have progressed to HSIL over two years ie 681 women (assuming that the mean of the '9-15 month' category is 12 months).

The number of additional HSIL cases over two years is therefore 96 (681 minus 585).

Alternatively, using the estimate that every extra month of delay is associated with a 3% higher risk of HSIL or worse (almost all of which are in fact HSIL), the expected number of cases based on recall at 12 months would be 698 (585×1.194) rather than 681.

The number of additional HSIL cases over two years using this method is therefore 113 (698 minus 585) rather than 96.

The former estimate is used in the calculation below as it is the more conservative.

The expected number of cases of HSIL per year (following a change in the recommended recall interval) is half the number over two years ie 57 cases ($113 / 2$).

The risk of progression of HSIL to invasive (or micro-invasive) cancer is 0.5% per year (McIndoe 1984).

The number of excess cancers is therefore estimated to be 0.3 per year (57×0.005).

ASCUS

In 2001, 2930 women with a first ASCUS smear were identified.

Had they all been recalled at 6 months, 14.7% would have been found to have progressed to HSIL over two years ie 431 women (assuming that 6 months is the mean of the '0-8 month' category).

Had they all been recalled at 12 months, 24.7% would have been found to have progressed to HSIL over two years ie 724 women (assuming that 12 months is the mean of the '9-15 month' category).

The number of additional HSIL cases over two years is therefore 293 (724 minus 431), or 147 'excess' cases per year.

Alternatively, using the estimate that every extra month of delay is associated with a 9% higher risk of HSIL or worse (almost all of which is in fact HSIL), the expected number of cases based on recall at 12 months would be 723 women (431 x 1.677).

The number of additional HSIL cases over two years using this method is therefore 292 (723 minus 431), or 146 'excess' cases per year rather than 147. That is, the two methods yield virtually identical estimates.

The risk of progression of HSIL to invasive (or micro-invasive) cancer is 0.5% per year (McIndoe 1984).

The number of excess cancers is therefore estimated to be 0.7 per year (147 x 0.005).

The total number of additional cancers (micro-invasive plus invasive) expected per year following a change in recommended recall interval from 6 to 12 months is therefore approximately 1 case per year (0.3 women with first LSIL + 0.7 women with first ASCUS).

5. Conclusion

This report uses data from the NSCP-R to address the question whether the recall interval following a first abnormal smear (LSIL or ASCUS) can safely be extended from 6 to 12 months.

The analysis suggests that such a change in recommended recall interval would result in approximately one additional case of micro-invasive or invasive cervical cancer per year. This corresponds roughly to one - two additional deaths every ten years, assuming an average survival of 75% (NZHIS estimate). Furthermore, this estimate is conservative.

This risk should be weighed against the benefits to women and the Programme of extending the recall interval. These benefits include:

- less frequent smears
- fewer referrals to colposcopy
- less anxiety experienced by women
- lower Programme costs with resources freed for other uses

This information will assist with the further development of the revised guideline for the management of women with abnormal smears.