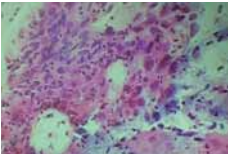
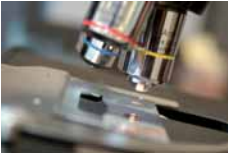


# Cervical Cytology





# Cervical Cytology

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## Introduction

In the 1950s George Papanicolaou obtained epithelial cells from cervical scrape samples and showed that it was possible to identify a range of cervical abnormalities from dysplasia to invasive cancer by cytological examination of the cells obtained.

Cervical cytology since that time has been used as a simple method to detect precancerous and cancerous lesions in asymptomatic women, and the smears were called “Pap” smears after the discoverer.

Human Papilloma Virus (HPV) infection is now known to be causally related to the development of cervical cancer and may be found in more than 93% of these cancers. The changes from HPV infection and increasing grades of dysplasia to invasive cancer, can be identified cytologically. There are more than 100 subtypes of HPV with specific subtypes being associated with benign and malignant cervical lesions. Subtypes 6 and 11 are commonly associated with condyloma acuminatum and some low grade lesions and are considered low-risk subtypes. Other less common low risk subtypes are 42, 43, 44 and 53. High risk subtypes are subtypes 16 and 18 (most prevalent) as well as 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 and 68.

Table 1 below sets out the terminology for dysplasia as it was previously used and the equivalent terms that are now more commonly utilised in cervical cytology and histology reporting.

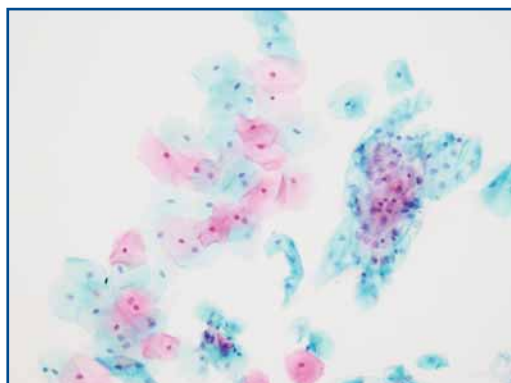
### Equivalent Terminology and Grades of Cervical Dysplasia

Terminology	Grades of Abnormality			
Dysplasia	Mild	Moderate	Severe (carcinoma-in-situ)	Invasive cancer
Cervical intraepithelial neoplasia (CIN)	CIN I	CIN II	CIN III	Invasive cancer
Cervical intraepithelial neoplasia (CIN)	Low grade	High grade		Invasive cancer
Squamous intraepithelial lesion (SIL)	Low grade SIL (LSIL)	High grade SIL (HSIL)		Invasive cancer

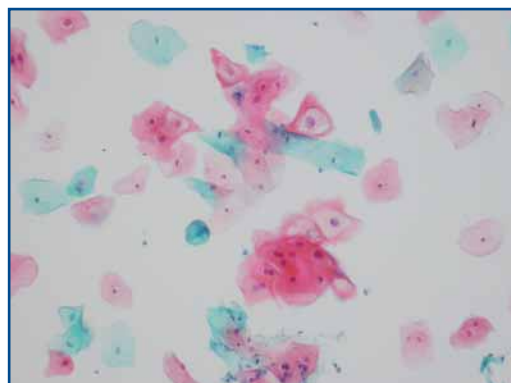
**Table 1** – Terminology and Grades of Abnormality

Adenocarcinoma which arises in the glandular epithelium of the cervix, is also causally related to HPV infection and may be recognised as atypical glandular epithelium, adenocarcinoma-in-situ or invasive adenocarcinoma in cervical smears. While the majority of cervical cancers are still squamous cell carcinoma, there has been a steady increase in the relative proportion of adenocarcinoma increasing from 5% of cervical cancers in the 1950s to 1960s, to 27% in a series from the period 1982-1985.

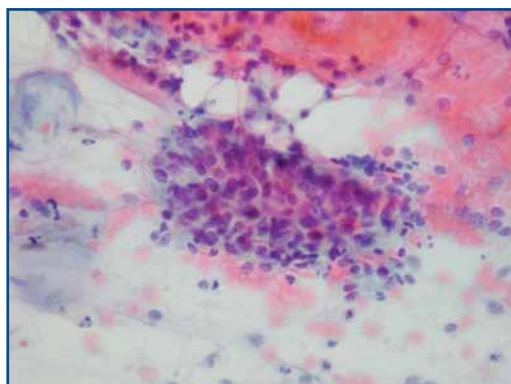
The development of an invasive cancer from the initial HPV infection through increasing grades of dysplasia takes a relatively long time, about 10-20 years. The aim of a cervical cancer screening programme is to detect the lesion in the asymptomatic pre-invasive or curable phase, before the development of invasive cancer.



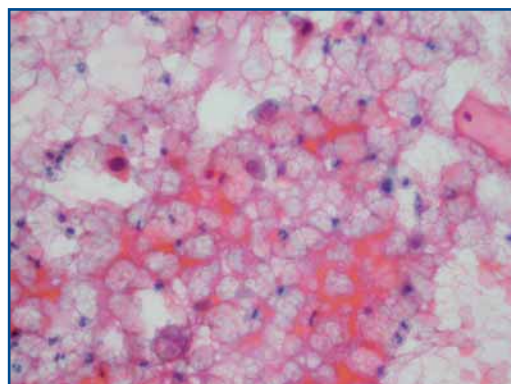
Normal Smear



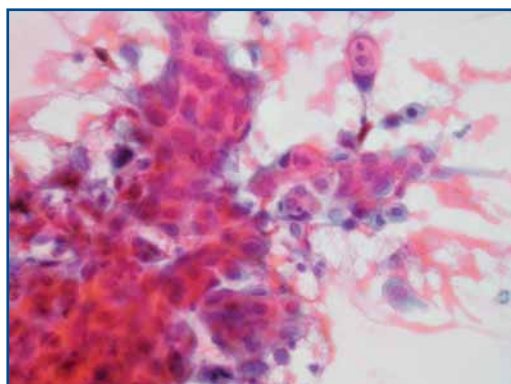
HPV-CIN1 Changes



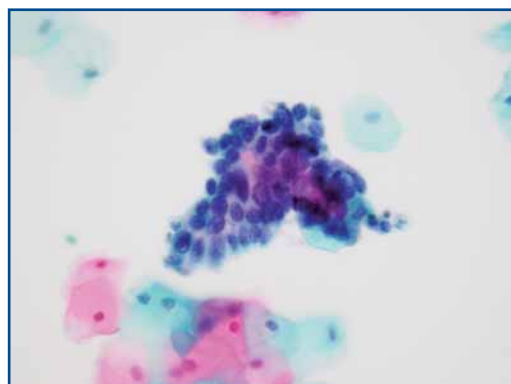
High Grade Lesions - CIN II-III



Invasive Squamous Cell Carcinoma



Invasive Squamous Cell Carcinoma



Adenocarcinoma-in-situ

The Pap smear, after more than 50 years, is still regarded as the best cancer screening test. It is simple, inexpensive, safe and non-invasive but the test has, however, low sensitivity. The benefits are derived from regular screening against a single smear.

In countries where there is a screening programme there has been a significant reduction of cervical cancer incidence. The mortality rate from cervical cancer in New Zealand is comparable to that of other screened populations in United Kingdom and Australia (Table 2).

**Age Standardised Rates Mortality Per 100,000 Women**

	NZ	UK	Australia
Registration of new cases of cervical cancer (incidence 1997)	8.8	9.3	8.0
Deaths from Cervical Cancer (Mortality) 1997	2.8	4.1	2.7

**Table 2** – Incidence of and Mortality from cervical cancer in New Zealand, United Kingdom and Australia in 1997<sup>1</sup>

The typical incidence of cervical cancer in an unscreened population is 30 - 50 per 100,000 women. In areas with no cervical cancer screening, such as sub-Saharan Africa and in parts of India, the incidence rates are up to five times higher than those countries with organised screening programmes. Cervical cancer in these countries, is the leading cause of death from cancer among women.

The National Cervical Screening Programme (NCSP) was established in 1990/1991, following the recommendations of the Cartwright Inquiry in 1988. Since then, the incidence of invasive cervical cancer in New Zealand has almost halved (Table 3), with a corresponding reduction in the mortality rates (Table 4).

**Age Standardised Incidence Rates for Invasive Cervical Cancer**

Year	Maori		Non-Maori		All	
	N	Rate	N	Rate	N	Rate
1995					232	10.2
1996	41	19.9	172	8.7	219	9.8
1997	45	18.9	172	7.6	218	8.9
1998	31	12.6	179	7.8	210	8.5
1999	40	16.0	178	8.2	222	9.2
2000					208	8.7
2001					191	8.2
2002					185	7.1

**Table 3** - Number (N) and age standardised incidence rates of invasive cervical cancer per 100,000 Maori, non-Maori and all women for the years 1995 – 2002<sup>2</sup>

## Age Standardised Mortality Rates for Invasive Cancer

Year	Maori		Non-Maori		All	
	N	Rate	N	Rate	N	Rate
1991					106	4.6
1992					84	3.6
1993					80	3.2
1994					77	3.3
1995					96	4.0
1996		11.8		2.6	82	3.4
1997	19	8.0	54	2.1	73	2.8
1998	17	9.2	60	2.4	77	2.9
1999	20	9.7	51	2.0	71	2.7
2000	17	8.1	49	1.9	66	2.5

**Table 4** - Number (N) and age standardised mortality rates for invasive cancer per 100,000 for Maori, non-Maori and all women for the years 1991-2000<sup>2</sup>

## New Zealand Cervical Cancer Audit 2004<sup>2</sup>

Following the recommendations of the Ministerial Inquiry into the under-reporting of cervical smears in the Gisborne Region in 2000, an audit of the New Zealand Cervical Screening Programme was conducted in the year 2004, more than 10 years after the establishment of the screening program. The audit, the first of its kind in the world, compiled the screening histories of individual women for the 7 years prior to the diagnosis of invasive cervical cancer from the period 1 January 2000 to 30 September 2002.

The key findings of the audit are summarised as follows:

- since the establishment of the NCSP, the incidence of cancer is almost halved
- about 50% of the women with invasive cancers had not had smears in the last 3 years to 6 months prior to diagnosis
- 80% had not had regular smears
- only 20% had a regular smear history
- women with lower stage disease were more likely to have had screening
- there is no systemic under-reporting of cervical smears by laboratories – overall false negative rate 18%, audit range 10-20%



The incidence of cervical cancer may be further reduced by increasing the coverage for screening for women having regular smears.

### Cervical Cancer in Maori Women

It is concerning however, that higher incidence and mortality rates are found among Maori women. The disparities between cervical cancer statistics between Maori and non-Maori women were clearly identified in the Cervical Cancer Audit and are listed below:

- the incidence of cervical cancer is two times higher in Maori than non-Maori women (16/100,000 against 8.2/100,000, Table 3)
- the mortality rate in Maori women is four times that in non-Maori (Table 4)
- Maori women are less well screened (42% vs 54%)
- more Maori women have later stage disease (FIGO stage 2+) at diagnosis
- Maori women are more likely to experience delays in diagnosis and treatment

Women with high deprivation indices, i.e. low income, low education, older age group were also less well screened.

### Prerequisites of a Successful Cervical Cancer Screening Programme

The results of the Cancer Audit reinforce the prerequisites of a successful screening programme:

1. Ensure as many women as possible who are or have been sexually active have **regular** (as opposed to random) cervical smears.
2. Ensure an adequate sample is taken of the cells lining the cervix to avoid as far as possible, a false negative result.
3. Ensure the sample is prepared and preserved to allow recognition of abnormal cells under the microscope.
4. Ensure timely follow-up and management of abnormalities identified.



## Specimen Collection

The specimen is collected by a spatula, a combination of spatula and cytobrush or a cervix broom.

The cells must be representative of the cells lining the cervix. Squamous cell cancer of the cervix, which accounts for 60-80% of invasive cancers, begins as cervical intraepithelial neoplasia (CIN) at the squamocolumnar junction. It is important to sample this site to detect early changes.

The ideal sample consists almost entirely of squamous cells which line the ectocervix and a small number of endocervical glandular cells to indicate that the squamocolumnar junction has been sampled.

There are two methods of specimen preparation:

1. Conventional Pap (Papanicolaou) test
2. Liquid Based Cytology (eg Thin Prep Pap test)

## Conventional Pap Test

Essentially unchanged for the last 50 years, this test has saved the lives of many women reducing mortality from cervical cancer by more than 70%.

### Preparation

1. On the frosted end of the slide, in pencil (HB is fine), write:
  - the woman's name (family name and initials of first or given names)
  - date of birth or NHI number as per Standard 407 (NCSP Interim Operational Policy and Quality Standards)
2. Have fixative (Cytifix or Cytospray) ready for use.

### Specimen Collection

Using a speculum, display the cervix and ensure the external os is accessible. Carefully wipe away excess mucus and inspect the cervix in good light. **If the cervix looks abnormal or there are abnormal symptoms the woman should be referred for colposcopic examination irrespective of the cytology report.**

The most common sampling devices are the combination of spatula and cytobrush or cervix broom. Both systems have similar efficacy and so the choice depends on practitioner preference.

#### i) Spatula and Cytobrush

The spatula specimen is collected first because of the tendency of the cytobrush to cause bleeding.

The tip of the spatula is inserted into the cervical canal and carefully rotated through 360° obtaining cells from the ectocervix, transformation zone and lower endocervix. The spatula must make sustained contact with the cervix throughout the whole rotation if segments are not to be missed.

While an adequate sample is often obtained just with a spatula, the addition of a cytobrush usually ensures the presence of endocervical cells and permits good sampling of the canal if this is where the squamocolumnar junction is situated. Adenocarcinoma of the endocervix and its precursor adenocarcinoma in situ (AIS) may also be detected in asymptomatic women.

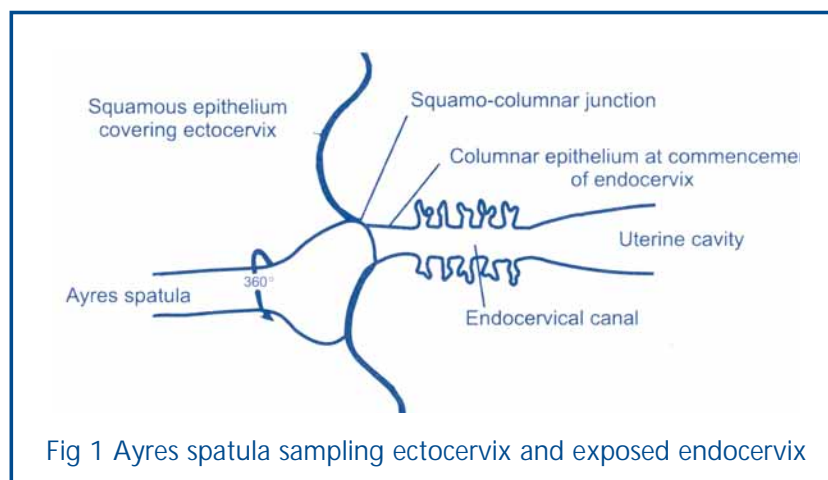


Fig 1 Ayres spatula sampling ectocervix and exposed endocervix

### Cytobrush Smear

Indications for cytobrush smears are:

- repeat smears on patients with abnormalities e.g. CIN (cervical intraepithelial neoplasia), HPV (human papilloma virus)
- where the anatomy of the canal has been altered by age as in post-menopausal women or by treatment such as cone or Lletz biopsy
- repeating a smear where previously no endocervical cells were obtained
- abnormal bleeding

### Cytobrush Method

The Cytobrush is gently inserted into the endocervix canal and rotated one full turn. The contents of the brush are transferred to the labelled slide using a rolling or rotary motion along the surface of the slide. Collection of the obligatory spatula smear must precede that of the cytobrush smear.

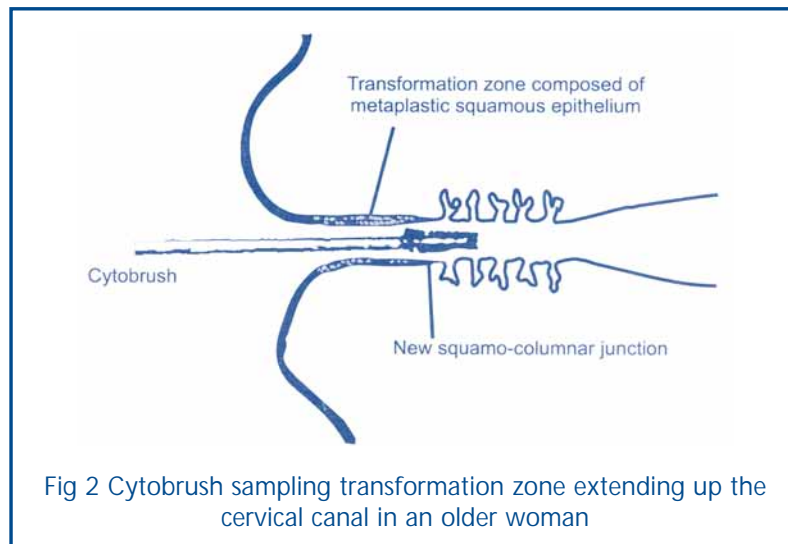
The specimen, once smeared, needs to be fixed within 4-5 seconds to prevent fixation artefact.

The cytobrush smear can be applied to the same slide as the spatula smear provided there is no delay in fixation.

Two methods to ensure there is no delay in fixation are:

- “Store” the spatula in the moist environment of the posterior vaginal fornix after the spatula smear has been taken while the cytobrush specimen is taken. Spread the smears on opposite halves of the slide in quick succession and fix immediately
- Spread the spatula specimen on one half of the slide. Immediately cover the other half with a layer of paper and spray the spatula smear taking care that no fixative runs under the paper or through it onto the unused half. If this happens cells will not stick to the slide and will be lost during processing. Now collect the cytobrush smear and spread it on the remaining half slide. Spray with fixative.

Sometimes it may be necessary to use two separate slides. Collection and fixation of the spatula smear is completed before collecting the cytobrush smear. While this doubles the screening time, for the woman’s sake we would rather have a good sample on two slides than a less than optimal sample on one slide.



## ii) Cervix Broom

This device is used alone. To collect the specimen:

- insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. Push gently and rotate the broom in a clockwise direction 2 to 3 times
- gently wipe the cell sample onto the glass slide as if one were using a paintbrush, first in one direction then in the other direction making sure all the bristles and both sides come in contact with the slide. Repeated brushing back and forth is not recommended as this will damage the cells
- fix the slide immediately

## Fixation

Two methods are commonly used.

### i) Coplin Jar

This is a glass or plastic jar with slots inside of the jar to ensure the slides stand up in the jar and do not touch their neighbours. The Coplin jar is filled with Cytofix.

It is important to keep the lid on the jar as this prevents evaporation of the Cytofix which should be changed every 3-4 days or up to 15 slides, whichever is sooner.

The slides need to be immersed for at least 15 minutes. Wet slides may then be placed in plastic slide mailers and sent to Diagnostic Medlab.



### ii) Cytospray

Cytospray is available in either 100ml or 200ml bottles with an environmentally friendly pump action sprayer. Cytospray is not the same as Cytofix. Cytospray is 95% alcohol with wax added to prevent rapid evaporation of the alcohol once sprayed onto the slide.

It is important to hold the spray bottle at least 20cm from the slide and produce a good powerful fine droplet spray. If the spray bottle is held too close to the slide or large droplets are created then the cells may be damaged and the slide rendered uninterpretable. The slide may be placed in the plastic slide mailers, sprayed and the mailer closed and sent to Diagnostic Medlab.

## Liquid Based Cytology (LBC)

This is a relatively new way of processing cells taken from the cervix utilising liquid based specimen collection.

Liquid Based Cytology (LBC) was introduced to Auckland in 1997 and since then more than 30% of Diagnostic Medlab's cervical screening samples are liquid based samples.

The sample for LBC is collected in the normal way but instead of smearing the specimen onto a slide, it is rinsed in a vial of preservative fluid, where the cells are stored. The nature of the fluid allows the cells to be safely stored for up to 4 weeks. In the laboratory a machine is used to filter out most of the blood and inflammatory exudate from the sample and prepare a slide of the smear with a thin even layer of cells (monolayer). The smear is then screened in the normal way by a cytology screener.



The advantages of this system are:

1. Nearly all the cells collected are transferred to the preservative fluid from which a representative homogeneous smear can be made.
2. Most obscuring blood and inflammatory debris are removed.
3. There are no preparation artefacts such as air drying.
4. Multiple slides can be prepared from one sample and part of the sample might be used for ancillary studies e.g. molecular probes for identifying Chlamydia, HPV, etc.
5. If the initial preparation is unsatisfactory, the LBC vial containing the sample can be re-examined and a second slide may be prepared.

Numerous clinical trials comparing liquid based cytology and conventional cytology have been published and in some, the LBC has been shown to have the following advantage<sup>3</sup>:

- it is more sensitive than the conventional pap test in detecting abnormalities
- it gives better quality slides leading to a decrease in the number of smears called unsatisfactory or less than optimal
- fewer smears are reported as atypical squamous cells of uncertain significance (ASCUS)

### Preparation

Instead of smearing the collected material on a glass slide the cells are rinsed into a vial of preservative fluid (PreservCyt® solution).

Label the LBC vial with the patient details as per the NCSP standards (specific instructions in Conventional section above), see page 8.

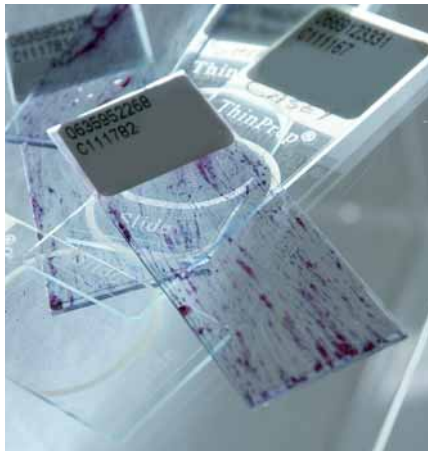
### Specimen Collection

1. The specimen is collected as for a conventional smear except if a spatula is used then a plastic spatula is used rather than a wooden one.
2. The collection device is rinsed vigorously in PreservCyt® solution. The cytobrush or cervix broom should be rotated at least 10 times in the solution and then discarded. The bristles of the cytobrush or cervix broom should be forced apart on the side and bottom of the collection vial.
3. The cap of the vial should be tightened so that the torque line on the cap passes the torque line on the vial.
4. Place the vial with the completed cytology request form in a biohazard bag for collection by Diagnostic Medlab.

At present liquid based cytology is not specially funded by the NCSP and a woman requesting a LBC examination of her smear sample will have to pay a fee for the vial required.

## Cervical Cytology Reports

### The Bethesda 2001 Reporting System<sup>4</sup>



In July 2005, as a requirement of the NCSP, all New Zealand Laboratories reporting Cervical Cytology adopted the updated Bethesda (2001) reporting system.

The new Bethesda system brings New Zealand laboratories in line with many of the major laboratories worldwide.

The changes in the Bethesda (2001) system resulted from international workshops of more than 400 participants representing more than 40 international organisations. Contributions also came from thousands of comments posted to a website specially set up for the review.

The Bethesda (2001) reporting system retains essentially the same categories of abnormalities as the previous Bethesda System but aims to simplify them and removes some of the ambiguity seen in the earlier system.

#### Adequacy of Specimen

##### Satisfactory

Satisfactory for evaluation (describe the absence of endocervical/transformation zone component and any other quality indicators, e.g. partially obscured by blood, inflammation, poor fixation/air drying artifact, etc.)

##### Unsatisfactory<sup>5</sup>

Unsatisfactory for evaluation due to... *insufficient squamous epithelial cells, obscured by blood, inflammation, etc.*

Unsatisfactory specimens that are processed and evaluated require considerable time and effort. Although such specimens cannot exclude an epithelial lesion, information such as the presence of organisms or endometrial cells in women 40 years of age or older may help direct further patient management. Note that the presence of benign endometrial cells does not make an otherwise unsatisfactory specimen satisfactory.

Specimens may be unsatisfactory and rejected i.e. not processed due to...*broken slide, empty vial or slide/vial received unlabelled.*

## Unlabelled Slides/Liquid Based Vials<sup>5</sup>

The NCSP 'Operational Policy and Quality Standards' – Providing a Laboratory Service:

General Requirements for Cytology:

The slides submitted for gynaecological cytology examination must be permanently marked in such a way as to ensure an unambiguous identification with the referral form.

Slides/Liquid Based Vials received unlabelled or mislabelled will not be processed until the laboratory receives confirmation from the smearer that the details on the specimen and referral form are correct.

### Minimum Squamous Cellularity Criteria

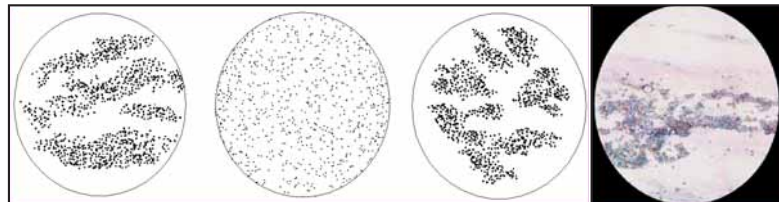
#### Conventional Smears

An adequate conventional specimen has an estimated minimum of approximately 8,000-12,000 well-preserved and well-visualised squamous epithelial cells.

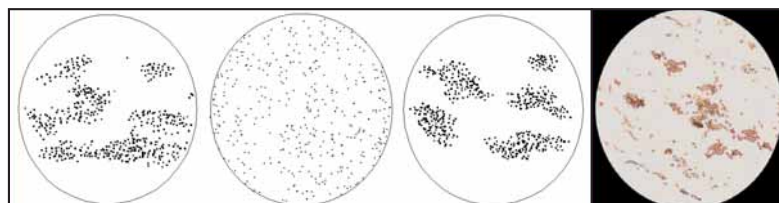
*Note: This minimum range is estimated and laboratories are not expected to count individual cells in a conventional smear.*

This range only applies to squamous epithelial cells; endocervical cells and completely obscured cells are excluded from the estimate.

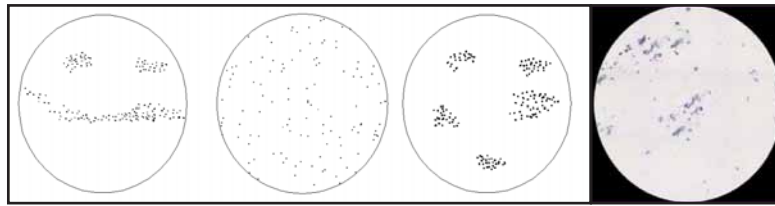
#### Under the Microscope: Minimum Squamous Cellularity <sup>6</sup>



- Microscope Objective Magnification x4
- Microscope Eyepiece FN22x10
- Total Cellularity of 10,000 cells
- Number of Cells per field = 1,000
- 10 fields minimum are required to be covered at this level of cellularity



- Microscope Objective Magnification x4
- Microscope Eyepiece FN22x10
- Total Cellularity of 10,000 cells
- Number of Cells per field = 500
- 20 fields minimum are required to be covered at this level of cellularity



- Microscope Objective Magnification x4
- Microscope Eyepiece FN22x10
- Total Cellularity of 10,000 cells
- Number of Cells per field = 157
- The entire slide would need to be covered at this level of cellularity

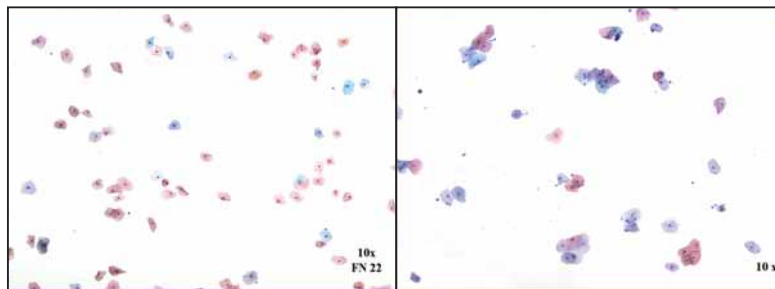
### Liquid Based Preparations

An adequate liquid based preparation (LBP) should have an estimated minimum of at least 5,000 well visualised and well preserved squamous epithelial cells.

In specimens with an apparent borderline or low cellularity, an estimation of total cellularity is obtained by performing representative field counts.

In some instances the cellularity on the prepared slide may not be representative of the collected sample. Slides with fewer than 5,000 cells are examined to determine if the reason for the scant cellularity is a technical problem in the preparation of the slide such as excessive blood in the specimen. When a technical problem is identified and corrected, a repeat preparation may yield adequate cellularity. The adequacy of each slide is determined separately and not cumulatively. The report should clarify whether blood, mucous or inflammation etc. contribute to an unsatisfactory sample or if it was due to low cellularity.

### Under the Microscope: Liquid Based Preparations - Satisfactory vs Unsatisfactory<sup>6</sup>



#### Satisfactory

- Eyepiece FN22 x10
- Objective magnification x10
- Number of cells per field = 60
- Minimum of 10 fields counted randomly along a diameter that includes the centre of the preparation (for 5,000 cells).
- "Holes" should be included in the field count

#### Unsatisfactory

- Eyepiece FN20 or FN22 x10
- Objective magnification x10
- Number of cells per field = 40
- Minimum of 10 fields counted randomly along a diameter that includes the centre of the preparation (for 5,000 cells).
- "Holes" should be included in the field count

## Endometrial Cells

Exfoliated endometrial cells are commonly seen in specimens obtained during the proliferation phase of the menstrual cycle. An individual women's risk factors for endometrial carcinoma, clinical symptoms, menstrual history, hormone replacement and menopausal status are often unclear, inaccurate or unknown to the laboratory. Therefore, endometrial cells observed in all women over 40 years will be reported. While endometrial cells may often be a normal finding, their presence in older women, particularly in the presence of symptoms, may be an indicator of endometrial pathology.

Overall, the new Bethesda system simplifies and reduces the number of reporting codes in all adequacy, interpretive and recommendation categories. Practices will notice changes to test name/description, particularly when receiving electronic results. The most obvious ones will be the heading of whether the sample is a conventional or liquid based smear.

## National Cervical Screening Programme (NCSP) Recommended Follow-up

The cytology report also includes a recommendation for follow-up and future management of the woman which takes into account the current findings and previous history.

### Immediate referral for Colposcopy and Biopsy

Women with an index smear showing any of the following need to be referred for colposcopy and biopsy:

- high-grade squamous intraepithelial lesion (HSIL) (CIN 2 or 3)
- cytological or clinical suspicion of invasive cancer
- atypical squamous cells of undetermined significance possible HSIL (ASC-H)
- atypical glandular cells of undetermined significance (AGC) where the features favour dysplasia
- adenocarcinoma in situ (AIS)
- endocervical adenocarcinoma

**Note:** A recent change in the recommendation is that all women with atypical glandular cells should have a biopsy and colposcopy.

### Repeat Smear at Six Months

A repeat smear at six months is required for women with an index smear showing:

- low-grade squamous intraepithelial lesion (LSIL) (CIN 1 and/or HPV)
- ASCUS – unqualified or LSIL
- AGUS – see above

If the follow-up smear is normal the smear needs to be repeated annually for two years. If both these annual smears are normal then the woman may return to three yearly smears until age 70 years.

If the follow-up smear is abnormal then the woman needs to be referred for colposcopy and biopsy.

If the histological diagnosis at the time of colposcopy and biopsy performed by an experienced colposcopist is LSIL or less and subsequent smears at six months then annually for two years are normal, the woman may revert to three yearly smears until 70 years.

If the histological diagnosis at colposcopy and biopsy is HSIL or AIS, then following treatment a smear is taken at six months and then followed by annual smears until age 70.

If any abnormal smears are reported following an abnormal index smear then the woman should be referred for colposcopy and biopsy.

### Special Cases

In the following cases the recommended frequency of screening differs from the normal interval; women who have had a hysterectomy for a benign condition, with complete removal of histologically normal cervical epithelium and who have no history of abnormal smears, do not need to continue to be screened. Immunosuppressed women should have annual rather than three yearly smears.

The present recommendations for the management of women with abnormal smears is being updated and the new recommendations will be released following wide consultation with appropriate bodies.

### Review of recommendations for management of women with abnormal smears

The recommendations for the management of women with abnormal smears are currently undergoing review by the NCSP and the proposed changes have been presented to all stakeholder groups for comment prior to their implementation in 2007.

# National Cervical Screening Programme (NCSP) Interim Operational Policy and Quality Standards<sup>5,7</sup>

In October 2000 the NCSP released the Interim Operational Policy and Quality Standards. In this publication it is stated:

Providers performing health services associated with the programme (health providers) shall comply with all of the provisions of this publication that relate to the provision of those health services. This publication sets out the minimum requirements that are to be met by health providers. All of the provisions of this shall be binding upon health providers from 1 October 2000 (with some exceptions for laboratory health providers and health providers performing colposcopy services to apply instead from 1 July 2001).

The following is a summary of the Operational Policy and Quality Standards as they relate to smertakers, general practitioners and the laboratory.

## Smertakers

**Smertakers are responsible for:**

- identification of women for whom screening is recommended and the maintenance of appropriate call and recall systems
- educating women about the benefits of screening, the NCSP and the NCSP Register, while at the same time ensuring the limitations of screening are understood
- educating women about the importance of regular smears
- explaining to women that regardless of a normal smear result, any signs or symptoms suggestive of cervical cancer need to be reported to their general practitioner immediately
- providing a smertaking service
- ensuring women are referred for specialist assessment and investigation when required and coordinating their ongoing care when investigations are complete
- sending a copy of the smear results to the woman's GP if the smertaker is not her regular GP, provided the woman has consented to this

**Smertakers must have in place mechanisms and protocols to:**

- ensure a result is received for each smear taken
- ensure women are recalled as appropriate for regular smears
- ensure women with abnormal smears receive appropriate follow-up
- monitor the screening coverage of their female population and their individual adequacy and abnormality rates by quantifying feedback from the laboratory or using the Quality of Smears report produced by the regional programme sites and by carrying out a smertaker/practice audit

## Education

All smertakers will complete a recognised educational course in smear taking practice prior to providing a smear taking service for women (Standard 401) and are expected to maintain their competency by taking smears on a regular basis and by continuing appropriate education.

## Infection Control

The smertaker's practice will have appropriate infection control procedures and facilities (Standard 405).

## Information for Patients

Smertakers, including specialists, will ensure women have been provided with the required information prior to taking a smear or a histology sample (Standard 406). Smertakers are required to ensure all women receive the following information:

- the purpose and benefits of the NCSP
- the purpose and benefits of the NCSP Register including the letters and information women will receive from the NCSP
- the authorisation under which the information is collected and the purpose of the collection
- importance of providing accurate ethnicity information
- who can access the information stored on the NCSP Register
- an explanation that unless the woman objects her results will be forwarded to the NCSP Register
- the NCSP information pamphlets including the appropriate language pamphlets e.g. Maori and Pacific Island

## Laboratory Requests

Prior to sending the specimen and request form to the laboratory, smertakers must ensure that:



- the woman's family name or surname and initials of her first or given names and date of birth or NHI number are on all cytology slides/LBC Vial (Standard 407)
- the minimum information required is supplied on a generic laboratory referral form or all details on the NCSP Laboratory Referral Form are completed (Standard 408). If the NCSP Laboratory Referral Form is correctly completed the minimum requirements will be met. If providers choose to have their own forms or electronic versions the minimum information requirements must be met (a full list of the minimum information is available in Chapter 4 – Information Required by Laboratory in the NCSP Operational Policy and Quality Standards).

## Communicating and Managing Results

Responsibilities of the smearer following taking a smear include:

- ensuring that 100% of women know how they will be notified of their results (Standard 409)
- checking that smear results have been received within 14 working days of the smear being taken
- ensuring women understand the process for receiving their results within 14 working days
- recall and referral of women with abnormal results or clinical indications that referral is required
- recalling women in accordance with the laboratory recommendations and clinical indications
- notifying the NCSP Register and the laboratory of the change of recall if the recall is not in accordance with the laboratory recommendation
- contacting women who require further investigation and fail to attend
- monitoring the NCSP Register reports, updating the information and returning to the NCSP Regional Site and wherever necessary making every attempt to contact women on the reports
- ensuring continuity of service to women by informing the NCSP Register of changes in women's clinical status or demographic information



## Laboratory Cytology and Histology Services

All laboratories contracted to screen cervical cytology slides must comply with the Operational Policy and Quality Standards of the NCSP. These laboratories must:

- be IANZ accredited
- employ appropriately qualified and trained competent cytopathologists and cytoscientists/technicians
- ensure continuing medical education of cytopathologists and cytoscientists/technicians
- comply with minimum and maximum workloads to ensure competency
- screen and re-screen smears in accordance with what is accepted as international best practice
- have systems in place to ensure the timely reporting of cervical cytology and histology to the referring smear takers and clinicians, the Cancer Registry and the NCSP Register
- correlate histology results with cytology results and review cases wherever a discrepancy exists between cytology and histology
- review previous negative, benign or reactive smears whenever a high-grade diagnosis is made on cytology or histology
- be able to review both previous and current histology and cytology slides whenever required

- hold regular multi-disciplinary meetings to review cases and in particular to discuss review outcomes and their impact on possible changes in patient management
- retain slides and records in accordance with international recommendations (14 years for cytology slides and 20 years for histology slides and tissue blocks) so that retrospective reviews may be conducted. It is very important to have ready access to previous and current cytology and histology slides. Review of these slides often has important patient management implications

#### Performance Indicators<sup>7</sup>

National Indicators and Targets provide a series of performance indicators and targets for health providers involved in the NCSP. While not a measure of a good provider or poor provider, such indicators and targets are useful as “early warnings” of a problem if providers consistently fall outside the “targets”.

## Cervical Cancer Screening at Diagnostic Medlab

Diagnostic Medlab is fully accredited to perform all aspects of laboratory testing including cervical cancer screening under contract with the National Cervical Screening Program. Diagnostic Medlab is the largest Cervical Cytology Screening Laboratory in New Zealand and processes an average of 130,000 annually. On average 62% conventional smears and 38% Liquid Based Cytology samples are received each year. Diagnostic Medlab use the Thin Prep Liquid Based Cytology Method.

Diagnostic Medlab have a staff of 31 cytoscientists/technicians, (with experience ranging up to 30 years) and 7 cytopathologists. All these staff members have been trained in cervical cytology and engage in regular internal and external quality assurance programs and continuing education through conferences and special courses. All pathologist and cytoscientists/technicians at Diagnostic Medlab who engage in reading liquid based samples are specially trained in this method of cytological appraisal.



Diagnostic Medlab, together with all other laboratories engaged in cervical cancer screening, are monitored by the Independent Monitoring Group through quarterly reports on the performance of laboratories, smertakers and clinical teams. This ensures that the performance of all groups within the cervical screening program falls within the accepted standards.

The findings of the 2004 Cervical Cancer Audit would suggest that laboratories meet these standards and have played an important part in reducing the cervical cancer incidence in New Zealand.

Further improvements, however, can and need to be made in targeting women who are not screened or only irregularly screened.

For any queries please contact:

**Dr Mee Ling Yeong**

Clinical Director of Cytopathology

Ph: 571 4000 or 027 476 4622

**Elizabeth Pringle**

Department Manager

Cytology Department

Ph: 571 6421

**Erin Retter**

Second in Charge

Cytology Department

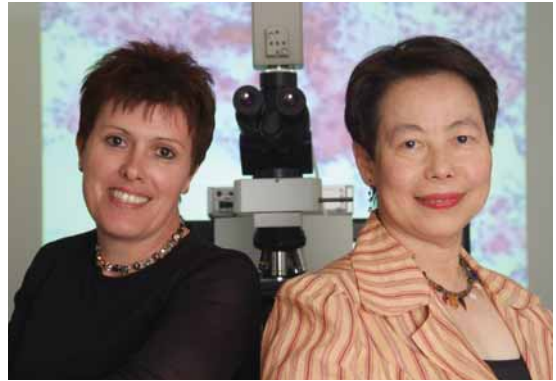
Ph: 571 6423

## Gynaecological Cytopathology Team



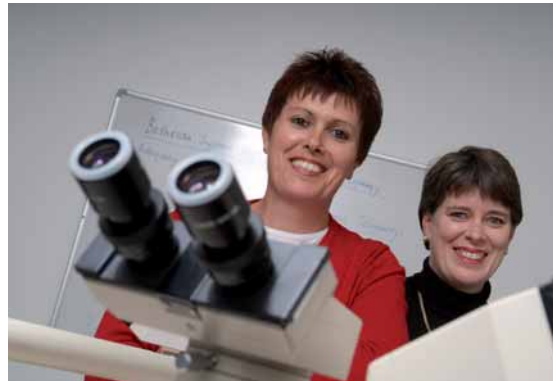
**Back L-R:** Reena Ramsaroop, Bill Williams, Paul Restall, Joy Judd  
**Front L-R:** Karen Chan (Registrar), Neville Angelo, Mee Ling Yeong  
**Inset:** Richard Lloyd

## Authors



Elizabeth Pringle & Dr Mee Ling Yeong

## Cytology Department Managers



Elizabeth Pringle & Erin Retter

# References

- <sup>1</sup> NZHIS, NHS Cervical Screening Program, Cancer in Australia 1997, AIHW and AACR 2000
- <sup>2</sup> Cervical Cancer Audit Report, Screening of Women with Cervical Cancer, 2000-2002
- <sup>3</sup> Lee KR, Ashfaq R, Birdsong GF, et al. *Obstet Gynecol* 1997; 90:278-84. Papillo JL, Zarka MA, St John TL. *Acta Cytol* 1998; 42:203-8
- <sup>4</sup> The Bethesda System for Reporting Cervical Cytology – Second Edition
- <sup>5</sup> National Cervical Screening Programme Interim Operational Policy and Quality Standards – Chapter 5
- <sup>6</sup> [http://bethesda2001.cancer.gov/terminology.html\\_ConventionalSmears](http://bethesda2001.cancer.gov/terminology.html_ConventionalSmears); <http://www.cytoc.com>; Bethesda 2001 Modified MOH July 2005
- <sup>7</sup> National Cervical Screening Programme Operational Policy and Quality Standards, Appendix 6

