Anatomy of a Gynaecological Cytology Laboratory

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YEAR 1-2 REGISTRAR WORKSHOP

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NCPTS

Topics

- Workforce
- Reporting pathways for cytology samples
- Quality Assurance in cervical cytology

The Workforce: Who are they?

- Staff working in a laboratory service include:
  - Pathologists
  - Medical laboratory scientists with:
    - specialist qualifications or training and competencies in molecular science
    - specialist qualifications in cytology (cytoscientists)
    - specialist qualifications in histology (histoscientists)
  - Medical laboratory technicians with:
    - expertise in hrHPV testing
    - specialised training in cytology (cytotechnicians)
    - specialised training in histology (histotechnicians)
    - laboratory assistants (unregistered)

Cytology workforce

- The term ‘cytoscreener’ refers to any qualified and registered cytoscientist or cytotechnician with a current annual practising certificate who screens, interprets and reports cervical and vaginal cytology samples.

- Cytopreparation staff process LBC samples to prepare slides for cytology screening and reporting and may be involved in initial sample preparation before hrHPV testing. These staff:
  - must have had specific training and demonstrated appropriate competence to perform the tasks required
  - may be laboratory assistants, medical laboratory technicians or medical laboratory scientists.

Cytoscreeners: Cytoscientist

- Bachelor of Medical Laboratory Science (BMLSc) or (BSc/NZ Certificate of Science/Medical Diploma in Cytology) – 4 year degree
- Registered with the Medical Sciences Council of NZ

- Must complete the Vocational Registration Programme in Cervical Cytology (VRPCC) in their first year of employment – usually takes 9 -12 months – before achieving sign-out

Training

- All staff must demonstrate their ability to detect abnormalities by completing:
  - a manufacturer's training course for the type of LBC
  - a test set of normal and abnormal cases
  - an additional minimum of 1500 FOV cases which are fully re-screened (FOV automated screening)

    - achieving sensitivity detection rates of at least 95% for high-grades and 90% for all abnormalities

Cytopathologists

- A pathologist working in gynaecological cytology or histology shall be a FRCPA or hold an equivalent qualification recognized by the Medical Council of NZ
- Have received subspecialty training in cytopathology
- Must hold a current Annual Practicing Certificate

Lead cytopathologist and Lead cytoscientist

- Report results
- Manage a quality assurance programme
- Provide in-service training
- Audit lab practice
- Liaise with clinicians and NCSP /NCSP-Register/NCSP regional services
- Monitor health and safety
- Facilitate a collaborative environment among staff
- Participate/organise multidisciplinary team meetings
- Manage the gynae cyto/histo/hrHPV service
- Assimilate new developments into the laboratory

Gynae cytology workforce in New Zealand

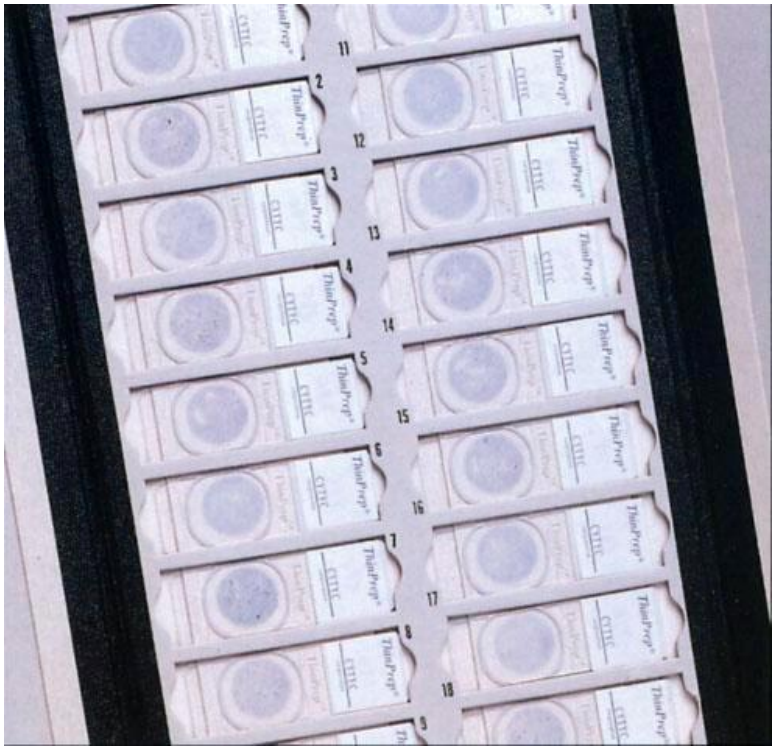
2020: Cytoscreeners = 45 approx

Majority are cytoscientists

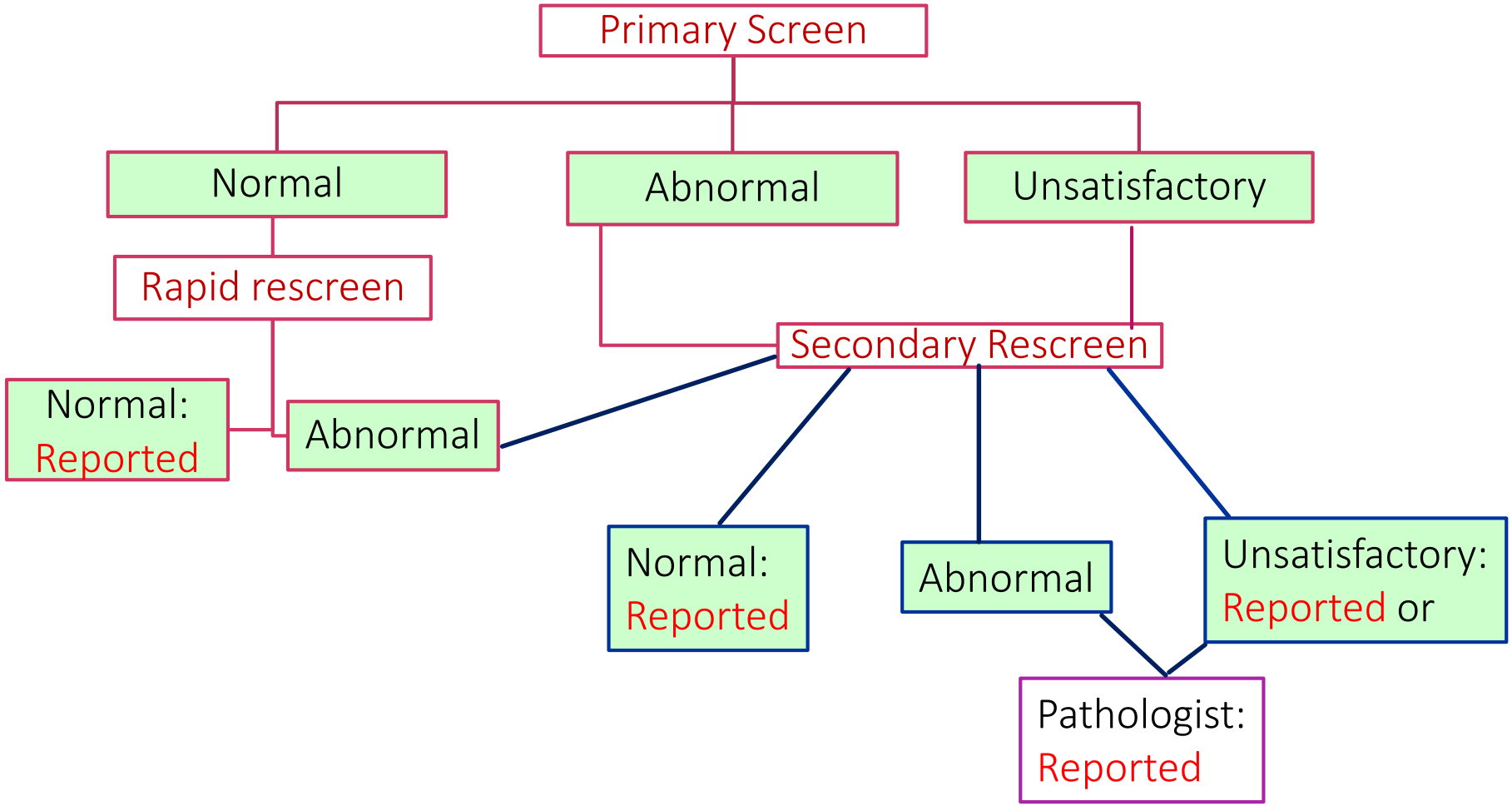
Cytopathologists = 25 approx.

- 6 laboratories report approx. 430,000 cervical cytology samples in New Zealand annually
  - 3 laboratories use ThinPrep, 3 use SurePath
- 91% of samples are reported in 4 community-based laboratories; 9% reported in 2 DHB-based laboratories

Reporting Pathways for Cervical Cytology Samples



Manual Screening



Cytology reporting: approx. volumes

Primary screening → 60% reported

100%

Secondary screening → 30% reported

40%

↓

Pathologist review → 10% reported

10%

Imager-assisted Screening (automation)

- Slides are screened by an imaging device
  - The ThinPrep Imager
  - The FocalPoint Profiler (SurePath)

- The primary screener examines imager-selected potentially abnormal fields of view (FOV)
  - If all FOVs are normal, the sample is reported
  - If any potentially abnormal cells are identified, then a full manual screen is performed

Case 1

- Age 29 years
- Clinical: Post-coital bleeding, cervix normal
- Cytology history: normal samples, complete record

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- Cytology history: normal samples, complete record

- Primary screener: Normal
- Secondary screener: ASC-US
- Pathologist review: reports Normal

Case 2

- 19 years
- Clinical: normal history, normal cervix
- First cervical cytology sample

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- 19 years
- Clinical: normal history, normal cervix
- First cervical cytology sample

- Primary screener: HSIL (CIN 2)
- Secondary screener: HSIL (CIN 2)
- Pathologist: reports HSIL (CIN 2)

Case 3

- 26 years
- Clinical: Intermenstrual bleeding; Cervical polyp visible on examination
- Cytology history: normal and complete

Case 3

- 26 years
- Clinical: Inter-menstrual bleeding; Cervical polyp visible on examination
- Cytology history: normal and complete

- Primary screener: LSIL
- Secondary screener: reported as reactive

Case 4

- 23 years
- Colposcopy clinic patient: Genital warts.
- Colposcopy impression is low-grade change
- Abnormal cytology history: previous two samples showed LSIL then ASC-US

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- Colposcopy clinic patient: Genital warts.
- Colposcopy impression is low-grade change
- Abnormal cytology history: previous two samples showed LSIL then ASC-US

- Primary screener: HSIL (CIN 2)
- Secondary screener: LSIL
- Pathologist: reported as LSIL

Why is Quality Assurance so important in cervical cytology?

- There is a significant reporting error rate because abnormal cells may not be in the sample examined
  - be present but not detected
  - be misinterpreted
- Finding errors when the incidence of disease is already low, requires a focused approach
- Cervical screening is only effective if there are multiple checks and systems in place to manage this significant risk of error

National Cervical Screening Programme (NCSP) Policies and Standards (NPQS)

- Covers the whole of the screening pathway
- *Section 5: Providing a laboratory service* sets out the policies and standards that all New Zealand cervical cytology laboratories are required to work to.

Internal Quality Assurance

Individual performance

- Primary screening: Rapid re-screening stats. Individual performance monitoring
- Secondary screening: Individual performance monitoring
- Pathologist reporting: Individual performance monitoring

Laboratory performance

- Accuracy of results: 1.Histo-cyto correlation reviews
  2. Prior negative case reviews
  3. Colposcopy meeting reviews

1. Histo-Cyto correlation case reviews

- All histology results must be correlated and documented with any cytology samples taken in the previous six months
  - Histology and cytology slides must be reviewed by a senior cytoscientist and/or pathologist where discrepancies have occurred
  - Slide reviews are mandatory if cytology is called high-grade and histology is not high-grade
  - Other categories are optional reviews that are recommended for education

2. Prior negative case reviews (42-month look-backs)

- Retrospective reviews of cytology samples taken prior to a high-grade or invasive diagnosis on histology
- Must review all cases reported as negative, benign/reactive or unsatisfactory in the 42 months prior to a high-grade or invasive squamous or glandular diagnosis on histology
- Number of slides reviewed, and the number upgraded to possible or definite HG cytology is recorded

3. Multidisciplinary case reviews

- Regional or practice-based case review sessions
- Colposcopy multidisciplinary meetings attended by colposcopists, pathologists, senior cytoscientists/cytotechnical staff, registrars

- Cases are usually chosen by clinicians because of discrepant results or management issues

External Quality Assurance

- Each laboratory must participate in an external Quality Assurance programme such as the RCPA Quality Assurance Programme
- Each individual reporting cervical cytology must participate in the Individual External Quality Assurance Programme (IEQA)

- External Laboratory Audits:
  - International Accreditation NZ (IANZ)
  - NCSP Independent Monitoring Group Reports
  - Invasive Cervical Cancer Audit

Concluding Comments

- a gynaecological cytology laboratory is a complex and busy place
- checks and reviews are necessary because of the subjectivity of reporting and significant false negative rate
- expect to have your work reviewed and to find mistakes - it's a learning experience!