Anatomy of a gynaecological cytology laboratory

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Year 1-2 Registrar Workshop

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Topics

Workforce

Reporting pathways for cytology samples

Quality Assurance in cervical cytology

The Workforce

Who are they?

Cytoscreeners: Cytoscientists

- 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

Cytoscreeners: Cytotechnicians

Qualified Medical Laboratory Technicians (QMLT)

QMLT qualification for cytoscreeners was withdrawn in 2014

- In-house laboratory training for 2 years
- NZ Institute of Medical Laboratory Science (NZIMLS) ran the programme and set the exam
- Registered with the Medical Sciences Council of NZ

Training with automated screening devices

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
- a additional minimum of 1500 FOV cases which are fully re-screened
  - 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.

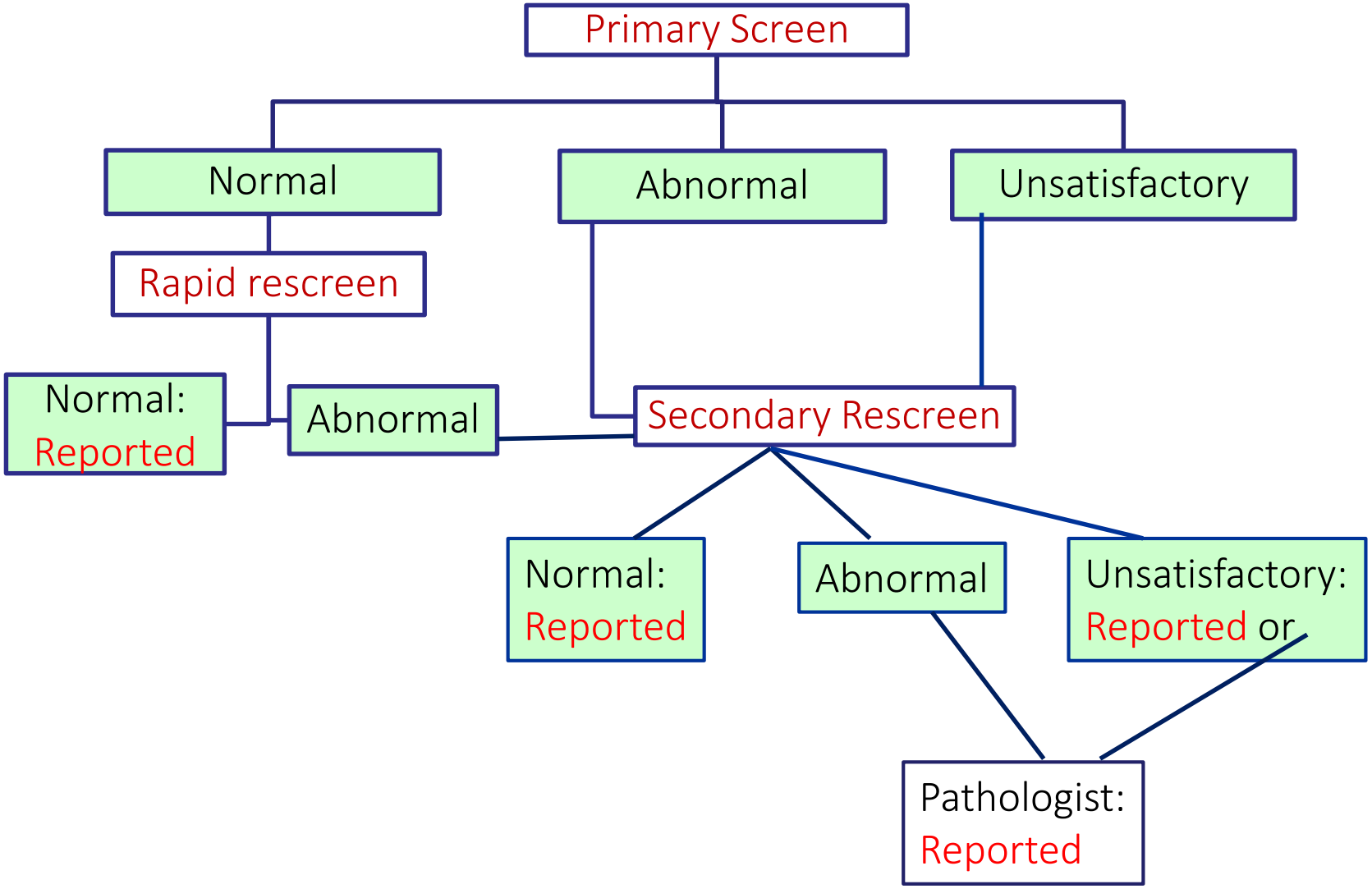
Cytopathologists = 25 approx.

- 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



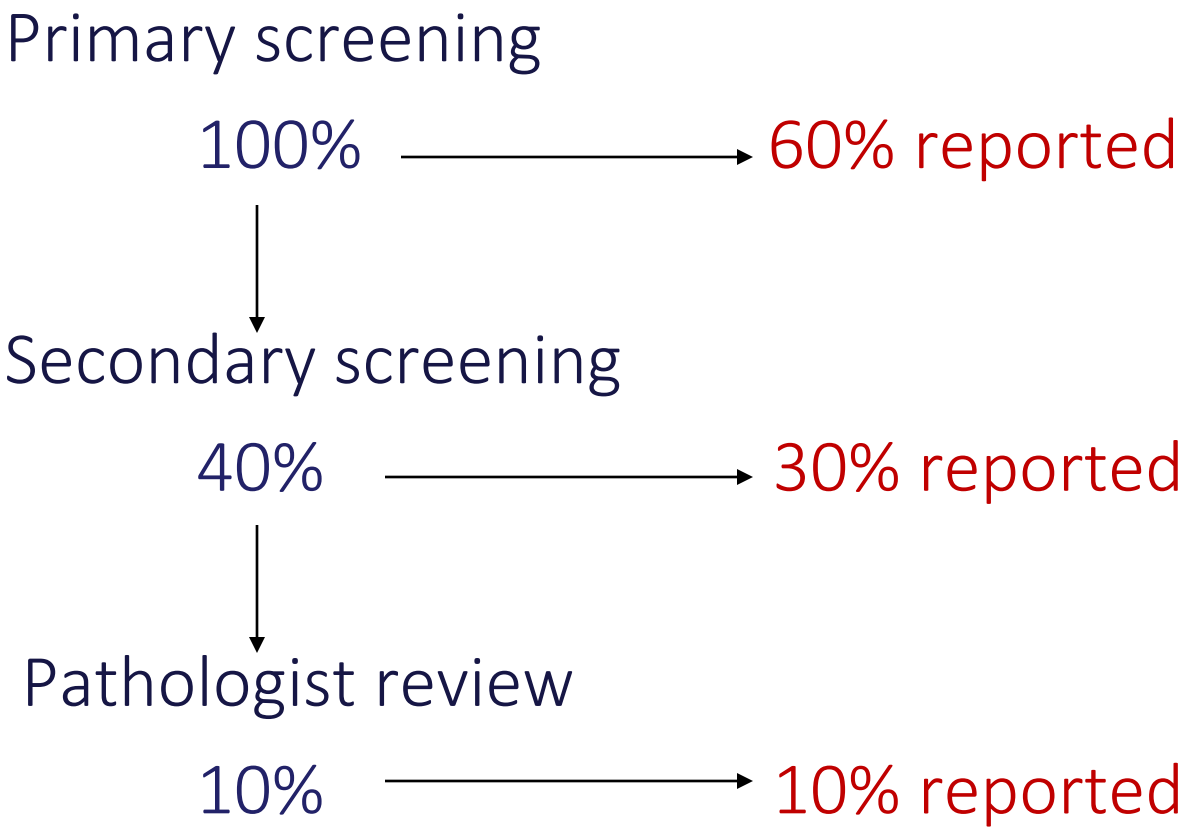
Who gets secondary re-screening?

- Abnormal or unsatisfactory result at primary screening
  - at primary screening or rapid re-screening
- Abnormal NCSP history
  - Some negative samples after previous low-grade or high-grade cytology
- Abnormal clinical history: abnormal bleeding, abnormal cervix, immune deficient, sexual health/colposcopy/oncology clinic cases

Pathologist review

A pathologist must report all abnormal gynaecological cytology

Cytology reporting: approx. volumes



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 etc is performed

Case 1

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

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- 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

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- 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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- 23 years
- 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

Quality Assurance in Cervical Cytology

“Attack and Defense”

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 individuals 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!