Reports for 2024 Courses and Conferences

Conference: Australian Society of Cytology 51st Annual Scientific Meeting
Dates and Venue: October 2024, RACV City Club, Melbourne
Report provided by: Katherine Clearwater, Cytoscientist. Awauni, Dunedin.

There were a few of us who attended the ASC this year so I choose to write my report on the talk I found the most interesting. This was the first talk of the day on Sunday given by Professor Marion Saville and titled Cervical Screening Update.

This talk was about changes to the Australian cervical screening programme, the work she had done to support a number of other countries screening programmes including Malaysia and some of the Pacific Islands and she also covered the WHO Cervical Cancer elimination agenda. Professor Marion Saville covered what elimination means in relation to cervical cancer. Unlike some other infections we cannot ever eradicate cervical cancer we can only eliminate, as we will never to be able to reach zero cases worldwide or stop screening. Even once elimination is achieved there will still need to be continued screening of woman and vaccination of girls to maintain this, otherwise there would be cohorts of woman left behind. Interestingly she said 2 HPV tests in a lifetime, 10 years apart can greatly reduce cervical cancer incidence. Even one HPV test in a lifetime with proper follow up, can half cervical cancer in a country. To be successful though there has to be follow up and treatment of the woman who are detected.

The WHO Cervical Cancer elimination agenda is aiming to eliminate cervical cancer worldwide by having a goal of every country reaching <4 per 100,000 women within next 100 years. Australia currently has an age standardised rate, against other countries, of 6.3/100,000 and are on track to reach the WHO goal by 2035. However, they are wanting to get there equitably. To try and assist this Australia has recently more widely made available HPV self-testing following a meta-analysis that showed the HPV results were very close to LBC sample if a PCR based assay was used and that the self-swab stability was good in high temperatures, which is obviously important for certain parts of Australia. The launch of more HPV self-testing availability was combined with a new marketing campaign to increase uptake called "Own It" which was the first Australia has had in decades. I found this one of the more interesting talks of the meeting and I think it could have been longer than its short half an hour, to expand more on the work being done in other countries and by WHO.

It was a great experience for me attending my first ASC meeting. I would like to thank the NCPTS for continuing to make these scholarships available for people to be able to attend the ASC.

CONFERENCE: ASC 51st Annual Scientific Meeting 2024
DATE AND VENUE: October 11-15th 2024, RACV City Club Melbourne, Victoria Australia.
REPORT PROVIDED BY: Janet Trusler CT(IAC), CytoScientist, Pathlab BOP, Tauranga, New Zealand

I was so delighted to obtain last minute funding from the NCPTS to attend the 51st ASC scientific meeting and tutorials held in Melbourne at the RACV city club, Oct 11th to 15th 2024. As there were other New Zealand professionals attending the Saturday / Sunday portion of this conference, I will highlight the Gynaecological

portions of Friday's and Tuesday's Tutorials A & B. Attendees were supplied with links to virtual images as well as questionaries regarding the unknown scanned slide sets weeks before the conference dates.

Dr Prudence Russell, from VCS Pathology, presented ASC Tutorial A – Gynae Cytology: Normal, abnormal and some infections. Dr. Russell spoke about the current findings of the Australian screening program and provided these stats: 92% of those screened are found to be HPV negative – these people are classified on reports as being "Low Risk" and are rescreened in 5 years; 2% of those screened are found to be HPV 16/18 positive – these people are classified on reports as being "High Risk" and referred directly to colposcopy; 6% of those screened are found to be HPV (not 16/18) positive – these people are classified on reports as being "Intermediate Risk" and triage with LBC with various outcomes possible.

Dr. Russell then spoke about who gets a co test, there are 3 scenarios: 1. Diagnostic test – symptoms and signs; 2. Test of Cure – Following treatment of high-grade abnormality; and 3. Surveillance test – those considered at ongoing higher risk of developing a cervical abnormality. Further in-depth examples were provided for: A) adequacy of samples; B) cytological features and visual examples of: normal, abnormal and common Gynaecological infections; and C) Australian Composite Reporting, 6 points are required to be cover when reporting - Risk Classification is one of these 6 required reporting points.

Some bullet point advice from Prudence:

- "in reality, what is pHSIL to one cytologist or pathologist can vary.., Clinicians are only really interested in the "index of suspicion" for HSIL. Ie the prediction of true HSIL… particularly when faced with discordant colposcopic & biopsy findings"
- "The key is to think of squamous cell carcinoma when you are looking at an LBC with HSIL plus debris, free keratin and cytological variability etc"
- "Note that the most consistent & "striking" feature of AIS in LBCs is cellular crowding, where the nuclei are elongate & "moulding" against one another - this also causes nuclei to stratify"

Dr. Fong Seen Koh is a clinical examiner and lecturer at the Post Graduate Medical Program, University of Wollongong, she presented ASC Tutorial B – The Good, Bad and Ugly, Covering the following topics:

- Failure of detection – Insufficient cellularity, heavily blood stained, heavily inflamed, abundant hyperkeratosis with an underlying HG/SCC, Scant abnormal material – being distracted by another component but fail to detect the abnormality. Not thinking or knowing an entity. Lack of concentration. Technically poor material – slow down overlap fields
- Misinterpretation- over / under calling, not identifying primary siter of the lesion, Lack of key clinical information ex IUCD or history of radiotherapy, don't assume all groups are the same. Learn the differential diagnoses.
- "The good, bad, and ugly"- Mimickers of LSIL, HSIL, malignancy
- Histological and Cytological correlation
- Hyperchromatic group
- Features of invasion
- The importance of clinical history

This was such a rewarding event, and I highly recommend that everyone who can take up the opportunity to attend high calibre conferences do so, apply for the NCPTS Scholarships to help in facilitating your attendance. The next ASC scientific meeting is in September 2025.

Conference: Australian Society of Cytology 51st Annual Scientific Meeting

Dates and Venue: October 2024, Melbourne, Australia

Report provided by: Kervin Govender, Senior Medical Laboratory Scientist. APS Auckland

Cytology Histology and Molecular Genetic Correlation: Presented by Dr Sinchita Roy-Chowdhuri

Integrating Cytology, Histology, and Molecular Genetics offers a powerful approach to improve the diagnostic, prognostic, and therapeutic decision-making process, particularly in cancer and other complex diseases. The combination of these techniques enhances clinical outcomes, facilitates better productivity, and enables personalised medicine. Dr Roy-Chowdhuri explained how these fields are integrated and specifically focused on ROSE (Rapid On-Site Evaluation) FNA (Fine Needle Aspiration) using Next-Generation Sequencing (NGS).

1. Integration of Cytology, Histology, and Molecular Genetics

The integration of these three disciplines enables a comprehensive approach:

- **Diagnostic Integration**: Cytology using cell morphology may first suggest the presence of abnormal cells, histology examining tissue architecture and cellular patterns confirms tissue-level changes, and molecular genetics analysing genetic alterations, such as mutations, gene amplifications, and translocations identifies the genetic drivers of disease.
- **Prognostic Integration**: Histological features like tumour grade and stage can be combined with molecular genetic information (e.g., mutations, gene expression profiles) to predict the course of the disease and the likelihood of metastasis or recurrence.
- **Therapeutic Integration**: Combining molecular findings (like identifying specific mutations) with histological diagnosis helps in selecting targeted therapies e.g., Epidermal growth factor receptor (EGFR) inhibitors for lung cancer or Human epidermal growth factor receptor 2 (HER2) targeted therapies for breast cancer.

2. ROSE FNA with NGS Resources

Role of ROSE in FNA:

- **Rapid Diagnosis**: ROSE provides immediate feedback during the FNA procedure, ensuring that the sample is adequate for diagnostic purposes. If the sample is insufficient, additional aspiration can be performed in real time, reducing the need for repeat procedures.
- **Cellular Morphology Assessment**: ROSE allows for the evaluation of the cellular features of the aspirated sample, guiding the clinician in determining whether the aspirate is diagnostic.

Next-Generation Sequencing :

- **Enhanced Molecular Profiling**: NGS allows for the analysis of many genes or even the whole genome simultaneously. This technology can identify mutations, gene fusions, and gene alterations, which are critical for cancer diagnosis and treatment.
- **NGS from FNA Samples**: ROSE FNA samples, often limited in size, can be utilised for genetic analysis through NGS. Despite the small sample size, advanced molecular techniques, such as NGS, can extract DNA or RNA and perform comprehensive profiling, including:
    - **Targeted Sequencing**: NGS panels that focus on specific genes or mutations associated with cancer (e.g., EGFR and HER 2) can be used for personalised treatment options.
    - **Comprehensive Genomic Profiling**: NGS allows for the analysis of mutations across multiple genes and provides insight into tumour heterogeneity, offering a broader view of the genetic profile.

Advantages of Combining ROSE FNA with:

Diagnostic precision, increased sensitivity, minimally invasive procedure, faster turnaround time.

Conclusion

The integration of cytology, histology, and molecular genetics, with advanced techniques such as ROSE FNA and NGS, has the potential to transform diagnostic accuracy, productivity, prognosis, and therapeutic strategies in pathology. This combination ensures a more precise, personalised approach to patient care, enabling clinicians to tailor treatments based on the unique profile of each patient's disease. The use of NGS in conjunction with FNA

samples offers a rapid, minimally invasive, and comprehensive diagnostic tool, particularly for detecting genetic mutations and informing therapeutic decisions.

I would like to express my sincere gratitude to the NCPTS for the opportunity to attend the Australian Society of Cytology 51st Annual Scientific Meeting**.** It was a truly enriching experience, and I am grateful for the valuable insights shared by the speakers. The discussions and presentations have deepened my understanding and knowledge.

Reports for 2023 Courses and Conferences

Conference: *Australian Society of Cytology 50th Annual Business and Scientific Meeting*
Dates and Venue: *November 2023, Gold Coast*
Report provided by: *Christl Kirstein, Cytoscientist. APS Auckland*

HPV primary screening in Australia
The following comments are taken from three talks at the conference, delivered by Megan Smith, Shane Byrne and Professor Marion Saville.

ELIMINATION OF CERVICAL CANCER BY 2035 – THE GOAL OF AUSTRALIA

To achieve this vision Australia transitioned to primary HPV testing on 1/12/2017.
A new register was brought into being to:

- maximize participation.
- Facilitate timely diagnosis.
- provide national consistent data.
- create a connected and improved digital health experience.

Initially self-collected samples were not an option for all patients. This was restricted to:

- patients who had not been screened before
- patients who were more than 2 years overdue

However, as of 1/7/2022 self-collection was extended to all screening participants, to improve participation and give patients choice. Also, by then it was established that the sensitivity of a self-collected sample was equivalent to a clinician-collected sample, which was not clear when Australia first transitioned to HPV primary screening in 2017.
From 1/12/2017 to 30/6/2023 a rapid increase in screening uptake was noted. 162,051 self-collected samples have been taken in this time frame. Unsatisfactory rates (probably meant Invalid HPV tests) are higher in self-collected samples from never or under-screened patients. A possible reason for this could be that no specimen was deposited into the vial.
Second round of HPV primary screening
Australia is now in the second screening round after transition to HPV primary screening and are able to make some comparisons:
- HPV infections remain extremely common
- HPV 16 and HPV 18 rates are low compared with HPV Other rates, regardless of age.
HPV Other Detected cases - are common especially in the age group of 25-29 years:
-In the first round the incidence was 9%: this has dropped to 7% in the second round
-Clearance is the most common outcome with a clearance rate of 40-45%
-What has also become apparent is that the longer an HPV Other infection persists, the less likely it is to clear.

HPV Clearance and Persistence

After 7 years the outcome of all HPV positive patients in Australia has been as follows:

- 92% cleared
- 2.7% progressed
- 5.3% persisted.

A patient's destiny becomes apparent after 3 years.

- Variation in clearance depends on the HPV type
- Progression rates are highest in the first three years
- Clearance rates are initially quick – especially in the first three years

HPV 16 has the highest progression rate
HPV 18 and 45 continued to progress
HPV 31, 33, 35, 52, 59 also showed progression
HPV 39, 51, 56, 59, 60 showed virtually no progression.

The important thing in patient management is knowing what type of HPV it is, and for how long the infection has been present. HPV Other Detected on 2 consecutive tests appeared to arise mainly from a new infection. However, if this was due to a persistent infection, this patient now fell into the high-risk category.

What about **Reactivated infections**?

This is very much like any other new infection, except in patients who have had many positive results, these become high risk, even if there have been a few negatives in between, even if the initial infection was as far back as 2008.

The molecular tests for HPV available today are highly target specific. They have exquisite sensitivity and target specificity.

False positives: Potential issues arise with contamination.

False positives – are they truly false positive? – difficult to determine.

True false positives arise mainly from contamination

- this could be occurring in the lab
- it is easier to spot at higher levels
- in patients with no sexual history (i.e., patients who have had no sexual contact, but have tested positive for HPV). They have had such cases. The most likely explanation discussed was that contamination was occurring in the practice or clinic where the self-sampling was undertaken.

False negatives: are a problem.

Keeping a very close watch on results is extremely important to ensure that the test is reliable. The lab needs to be sure that they are not reporting false negatives.

Methods to identify false negatives:

One way to test this, would be to add a small amount of known HPV (low positive control) to a sample that had tested negative. Various known combinations of HPV could be added to the negative sample. This is then retested, and the outcome compared to what was introduced with close monitoring.

Potential reasons for HPV false negative results:

- not every bit of the sample is tested
- the virus must be present in the vessel (so could be a sampling error)
- the specimen has not been adequately homogenised – vortexing is good, but does not overcome the problem – lysis of the specimen, resulting in freeing the HPV virus from being trapped in the cell, would lead to more accurate results

Continuous monitoring, cleaning and swabbing of the laboratory area is of extreme importance to ensure that the results issued are correct.
It was interesting and quite unexpected to be informed by Shirley George, the Cytology Manager at Douglass Hanly Moir in Sydney that on a daily basis, they still deal with phone calls from general practitioners and sample takers who are confused about what they are meant to be doing.
I wish to thank the NCPTS for allowing me the opportunity to attend this conference.

Conference: *Australian Society of Cytology 50th Annual Business and Scientific Meeting*
Dates and Venue: *November 2023, Gold Coast*
Report provided by: *Nirup Kumar, Cytoscientist, APS Auckland*

Firstly, the location was really very special as it was held at "The Home of Traditional Arts" HOTA centre in Gold Coast which was located by the river.
Overall, it was a great and a very interesting meeting, and amazing presentations by great presenters.
It is very hard to pick a topic, however the WHO Thyroid cytology Histo/Cyto Correlation took my special interest. I will talk about a case from this group of cases.
A 14-year-old girl presented with an enlarged diffused thyroid glands with a history of chronic Hashimotos`s thyroiditis.
USS – showed heterogenous thyroid with increased vascularity and microcalcifications.
FNA – showed lymphocytes, nuclear clearing, Psammoma bodies, multinuclear histiocytes, nuclear grooves and microcalcification.
So, a diagnosis of Papillary cancer with calcification and diffuse vascularity was given.
Histology – was confirmed as Diffuse sclerosing thyroid cancer (DSVPTC)
Diffuse sclerosing variant of papillary thyroid carcinoma (DSVPTC)

- Is an aggressive and rare subtype of Papillary Thyroid Carcinoma (PTC) which involves lymph node metastasis.
- Is recognised to have a high female to male ratio and a young patient age.
- Has aggressive pathological features such as bi-lateral lesions, extra thyroidal extensions.
- Recurrence rate is high during 1st 5 years; therefore, a careful ongoing surveillance is required.

Risk factors include - Family history, Iodine deficiency, Radiation exposure, Genetic syndrome.
In conclusion DSVPTC is a multifocal, less frequent with worst prognosis and recurrence and high mortality.

Reports for 2022 Courses and Conferences

CONFERENCE: ASCCP 27TH Scientific Meeting 2022
DATE AND VENUE: 16-19 June 2022, Sheraton Grand Sydney, Hyde Park, Australia
REPORT PROVIDED BY: Lorna Laquindanum, HistoScientist, Surgical Pathology Lab. NSH

This is the ASCCP's FIRST HYBRID Scientific meeting wherein the participants can attend either virtually or in person. The meeting has taken place after it was postponed last year due to the Covid lockdown. It was a welcoming experience for me, and it was a great pleasure meeting the participants and speakers. I attended in person and have reviewed two talks of particular interest to me.

Evidence for Latent Papilloma Virus Infections and their Regulations

Speaker: John Doorbar

Human papilloma virus (HPV) and herpes simplex virus (HSV) can cause chronic infection. One of their characteristics is the need for a cellular reservoir for their survival. In the case of HPV, the cellular reservoir is in the epithelial basal layer. Due to this, the infected cell can only produce viral particles when the basal cells mature and differentiate.

In the virus life cycle, latency phase is after initial infection proliferation of various particles ceases. However, the viral genome is not eradicated and the virus can reactivate. It can begin producing large amounts of viral progeny at different times during the host aging. Without the host becoming re-infected by an external source, the virus can still stay within the host indefinitely. Viral latency is one form of clinical infection.

Latency is long-term viral DNA persistence in a dormant state without the production of infection. This is important for the interpretation of HPV DNA testing during cervical screening. Other types of HPV are the Beta and Gamma Papillomavirus. These infect the skin epithelium, not genital sites, can be found in the hair and hair follicles and may contain the virus L1 and E4 protein. However, in an immunocompetent person the virus life cycle is under control.

Project ECHO Telementoring to increase Workforce Capacity for Cervical Cancer Screening Diagnosis and Treatment of Pre-Invasive Disease
Speaker: Kathleen Schmeler

Project ECHO stands for Extension for Community Healthcare Outcomes. It was initiated in 2003 by Dr. Sanjeev Arora in response to Hepatitis C crisis in New Mexico. People from rural areas are unable to travel to the University specialist. Additionally, rural providers are not comfortable treating HCV with complex medications due to adverse effects. So, the telementoring project started. The ECHO project has more than 3,000 programs, and focusses on diabetes, mental health, covid, autism, and more. There are 9,000 participating cities in 180 countries. Its goal is to demonopolize knowledge, build capacity locally, and reduce disparities.

The ECHO project at MD Anderson Cancer Centre was launched in 2014 at Rio Grande Valley (RGV) along the Texas Mexico border. It provides expert clinical advice remotely to areas that wouldn't otherwise have access to specialist services. The area was chosen since only about 10% of women are receiving cervical cancer screening. Cervical cancer rates are 30% higher compared with non-border counties in Texas. Women here are twice as likely to die of cervical cancer compared with the rest of the US. Also, there are limited medical providers.

I would like to thank the NCPTS for their generosity and the funding they provided for me to attend this conference.

Conference: ASCCP Scientific meeting 2022 Australia
Dates and Venue: Attended virtually June 17th – June 19th 2022
Report provided by: Gabriella Saleh, Medlab-Histology, Palmerston North

I recently had the opportunity to attend the ASCCP scientific meeting which was a three day event. The topics covered all areas related to women's health such as gynaecological cancers and discussed how Australia is moving towards eliminating cervical cancer in the next decade. Every single individual who spoke at this conference was motivational and I came away with a greater understanding in all areas relating to cervical cancer and women's health.

The talk that particularly captivated me was presented by Antonia Jones, Patricia Guzman, and Simon Hyde. Their talk was titled "Stranger things: a series of incredible stories". As I am currently undertaking my postgraduate diploma in histological dissection, it was great to see examples of pathology I have

never seen before and how these samples were dissected. There were four case studies presented, all were unique with differing outcomes for the women involved.
The first case study was a 47 year old woman who was complaining of excess vaginal discharge, and post coital bleeding. A video showed the woman holding up a menstrual cup which was filled with thin, clear fluid; 50-100ml per day. A pelvic MRI was requested, the findings showed an enlarged cervix with multiple nabothian cysts, with nothing else of significance. Colposcopy was performed, chronic cervicitis was found, she was HPV negative and the material showed positive staining for mucin. No cancer was found in the cervical biopsy so further investigations were done. The endometrium was sampled and showed atypical intestinal type mucinous proliferation. A hysterectomy was recommended but not performed, however a cone biopsy was done. This showed lobular endocervical glandular hyperplasia and resulted in a total hysterectomy being done. The final diagnosis was endocervical adenocarcinoma: HPV-independent gastric type. The vaginal discharge resolved after the hysterectomy. This disease is usually found when advanced and accounts for 10-15% of all adenocarcinomas of the cervix worldwide.
The next case was a 49 year old female who had never been screened. Liquid based cytology showed malignant glandular cells with origin from the endometrium a possibility. At colposcopy there was no evidence of cervical carcinoma but a family history showed that her grandmother died of cervical cancer and her mother had breast cancer. She underwent a hysterectomy and the right fallopian tube showed high grade serous carcinoma. She was tested for BRCA mutation and had type 1. She went on to have a prophylactic mastectomy and is now in remission.
The third case was a 68 year old perimenopausal female. Cytology showed lots of blood and small high N:C ratio cells with salt and pepper chromatin. She was later diagnosed with diffuse large B cell lymphoma (DLBCL) due to primary lymphoma of the cervix. This entitiy is easily confused with the small cell type of SCC in cytology preparations. The patient passed away not long after diagnosis.
The fourth case was a 78 year old female who had a previous hysterectomy. A PAP smear showed poorly differentiated malignancy. On examination a dark lesion in the vagina was biopsiedshowing primary malignant melanoma, very aggressive and sunlight independent. The patient died of the disease shortly after diagnosis.
I found this presentation incredibly interesting as I have never seen these cases before even though I have done histological dissection for more than 5 years. I have heard of serous carcinoma of the fallopian tube and understand that is why we submit fallopian tube and fimbriae in benign settings but had never seen a case. I found this conference incredibly eye opening. New Zealand is also aiming to eliminate cervical cancer in the next 1-2 decades. I appreciate being given the opportunity to attend and look forward to attending more in the future.

Conference: International Academy of Cytology Tutorial
Dates and Venue: Online attendance on ZOOM 3rd April 2022
Report provided by: Janet Trusler, PathLab Tauranga

I recently had the opportunity to attend all 3 days of the IAC virtual Tutorial 2022. Those 3, 10-hour days were full of great lectures/presentations that covered a wide range of topics. I will write about the Sunday sessions regarding the 2 Gynecological cytopathology lectures present by Dr. Michael Thrall from Houston Methodist Hospital: 1. Squamous Lesions of the cervix and the common pitfalls that we encounter when evaluating cervical pap specimens, and 2. Glandular lesions and the possible pitfalls; and then comment on Professor Marion Saville's tutorial regarding the impact of HPV Vaccination and primary HPV testing in Australia.
Dr. Michael Thrall is a Co-editor of the textbooks DIAGNOSTIC PATHOLOGY: CYTOPATHOLOGY with the 3rd edition about to be released in September 2022. He mentioned this web link in his talk, **https://bethesda.soc.wisc.edu/index.htm**, which will take you to the Bethesda

System online atlas. This site has a self-test resource as well as informational links to: adequacy, non-neoplastic, endometrial over 45, ASC-US vs ASC-H etc.
When Dr. Michael Thrall talked about Adequacy, specifically identifying unsatisfactory slides due to inadequate cellular material, he commented that it would be acceptable for postmenopausal women, vaginal or vault samples to be considered adequate for evaluation so long as they contained a minimum of 2,000 cells rather than the well-known minimum of 5,000 cells. He equated this to be about 2 cells per high power field for ThinPrep preparations and 4 for cells per high power field for SurePath preparations. He commented that the spread of the minimum number of cells required for adequacy do not have to be strictly seen in the 10 fields of view and that even an uneven spread of cellular material upon the slide can still produce a slide that is satisfactory for evaluation:" the rule isn't to make something unsatisfactory when it clearly meets the minimum number of cells on the overall slide".
Michael also stated:

> "If cytologists waited for perfect abnormal cells, Pap test sensitivity would dramatically drop".
> "HSIL is puzzling to many non-cytologists because it seems to "break the rules" – the cell size and nuclear size of HSIL are smaller than LSIL."
> "LEEP has long been thought to increase the risk of pregnancy loss, but now this is being challenged on the basis of socioeconomic status adjustment."
> "Lesions that look endocervical but are not very AIS-like may be better categorized as ASC-H instead."

Many atypical glandular cell cases will be benign as there is so much overlap between reactive and malignant features. The cervical smear test is principally a screening method for the detection of squamous intraepithelial lesions to prevent squamous cell carcinoma as glandular findings have poor sensitivity and specificity. Our main goal as screeners is to identify HSIL, SCC, AIS, and Adenocarcinoma even though the glandular detection rate is less than for squamous lesions.
Professor Marion Saville is the executive director of the Australian Centre for the prevention of cervical cancer.
Marion informed us that the cervical program had experienced a reduction of 50% in incidence and deaths since 1991 but that the program was seeing a plateau phase since the early 2000's. Due to new knowledge, technologies, and implementation of vaccinations, there has been a renewal of the screening program so as to ensure that the program successfully continues to reach all women and that the program is based on best practices and current evidence. Longitudinal studies for screen negative women using either cytology or HPV screening were reported in 2008 by Dilner, J et al. Joint European Cohort Analysis. BMJ 2008;337:a1754. These studies show that 6 years after a negative screening test, the cumulative incidence of CIN3+ after HPV screening alone, was about 25 per 10000 women in the study compared with a rate of 100 per 10,000 women after a negative cytology screen. If both HPV screening and cytology were both used and both were negative, the cumulative rate of CIN3+ after 6 years was 20 per 10,000 women. Further studies looking at the impact on invasive cancer incidence, showed that HPV based screening provides 60-70% greater protection against invasive cervical carcinomas compared with cytology screening. Ronco et al, Lancet 2014. In the short term the cervical pre-cancer rates have steadily increased in each of the 3 years after the implementation of primary HPV screening in Australia. This jump in detection numbers is due to the increased sensitivity of the HPV test as well as the attendance of more overdue women being screened. It was indicated that the guidelines will evolve as alternate triage strategies are being investigated, such as extended genotyping and dual stain (p16/Ki67). Marion provided this web link for reference:
https://www.cancer.org.au/clinical-guidelines/cervical-cancer-screening/?title=Guidelines:Cervical_cancer/Screening

From the 1st of July 2022, all current restrictions for self-collection eligibility in Australia will be removed and all participants can choose to have a clinician-collected or self-collected screening test.
I look forward to evaluating New Zealand's performance once we change over to HPV primary testing in 2023.
I am so grateful to the New Zealand NCPTS for providing full funding to cover my registration / attendance costs.

Conference: International Academy of Cytology Virtual Tutorial (Sydney, 2022)
Dates and Venue: Online attendance on ZOOM 3rd April 2022
Report provided by: Cathy Rowberry, Medlab Central Palmerston North

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As an existing member of the IAC, it was fantastic to be able to attend one of their international conferences, even if it was virtual only. Michael Thrall, Cytopathologist and general surgical Pathologist and part author of Diagnostic Pathology from Texas spoke on Squamous Lesions and pitfalls. The Pap Test is one of the most successful screening programs in the world.
HPV has over 200 genotypes and 40 anogenital with types 16 and 18 being detected in other cancers around the body.

WHAT ARE THE PITFALLS?

IN ASC-US/LOW GRADES:
Pseudohalos can be caused by inflammation, Radiation
Nuclear enlargement can be a vitamin deficiency and atypical parakeratosis could be caused by a pessary in atrophic women.
Missing individual high-grade cells in the background!

ASC-H:
When few cells suggest HG but not definite usually the biopsy is HG
Atypical categories are accepted as a necessary component of the classification system.

High Grades:
Hyperchromatic crowded groups differential being is it high-grade, endocervical or endometrial.
Hypochromatic cells are a major pitfall in Thin Preps as the Imager won't pick them up as they are so pale.
Individual high-grade cells blending into their background.
Keratinizing dysplasia usually seen as small metaplastic type cells.
Endometrial cells or IUCD cells can mimic high grade.

High Grades in a Gland:
Can be confused with an AIS hyperchromatic crowded groups that have rounded up
Look for individual high-grade cells.

High Grade vs Invasive Carcinoma:
Usually highly cellular with marked pleomorphism, prominent nucleoli, diathesis and keratinization favor invasion.

Atrophy:
Similar sized cells but high grade should look distinctly different.
Granular debris from scraping of the mucosa.
Large amounts of blood and a red rim around the edge of a slide are a Red Flag!

Radiation:
Multinucleation, prominent nucleoli (but usually pale), cytoplasm increased in proportion to nucleus and pseudo keratinization (two tone cytoplasm)

Pregnancy:
Decidualized cells look like high grade cells.

GLANDULAR CELLS
Tubal metaplasia, micro glandular hyperplasia and endocervical polyps can show atypical glandular features especially if combined with inflammation or repair.
IUCD effects.
Menstrual endometrium especially when fresh can mimic AIS or Small Cell carcinoma these are seen as splattered geometric groups not rounded up.
Reactive endocervical cells are usually cellular with nucleoli and chromocenters common, some atypia present with abundant cytoplasm "school of fish appearance" usually associated with acute inflammation.

Micro glandular Hyperplasia:
Reactive appearing associated with hormones/birth control. Higher N/C ratio with enlarged nuclei sometimes multinucleated, jumbled but round and pale with prominent nucleoli lacking terminal bars and cilia.

Tips for AGC
Always think about squamous dysplasia. If it doesn't look like AIS or squamous dysplasia it's probably benign/reactive. Tubal metaplasia features, terminal bars and cilia are often absent. Endometrial in older women. HPV is of limited value. Don't be too aggressive using AGC as treatment plan is more serious.

Small Cell Carcinoma:
This is rare aggressive and usually fatal associated with HPV types 16 and 18.
Difficult to distinguish from metastases and often a younger age.

Gastric – type Adenocarcinoma:
Recently recognized as a distinct entity by the WHO. Derived from gastric (pyloric) metaplastic mucosa not HPV derived. Hyper cellularity with complex architecture and hyper mucinous with abundant cytoplasm.

ENDOMETRIAL (low grade)
Endometrial cells in a woman over 55 should be considered suspicious regardless of benign appearance. Deceptively small nuclei with little blood or diathesis.
PCOS, obesity and Lynch Syndrome are a factor in endometrial cancer in younger women.

Endometrial Stroma:
Directly sampled these are hypercellular with a high N/C ratio mitotically active and atypical looking. Following a LLETZ some women have the lower Uterine growing down into the endocervix which will show as extensive direct sampling.

Professor Marion Saville Executive Director of the Australian Centre for Cervical Cancer Prevention
The Impact of HPV vaccination and HPV primary testing
This presentation was mostly showing the statistics that prove how successful vaccination and HPV primary testing has been in Australia. The HPV primary test has picked up more high-grade lesions as it is so sensitive. The self-collection test had mixed results especially the ones sent out as some participants did not participate so the tests collected by the clinicians had better results.

Thank you NCPTS. I found this tutorial a great educational experience.
Cathy Rowberry, Medlab Central Palmerston North

Reports for 2019 Courses and Conferences

Conference: 20th International Congress of Cytology, 5th – 9th May 2019
Venue: International Convention Centre, Darling Harbour, Sydney
Report by: Ashika Bissoon, Cytoscientist, Pathlab Bay of Plenty

The conference content was predominantly based on non-gynaecological cytology but there was also focus on the important aspects of gynaecological cytology. It highlighted the close association between cytopathology and molecular pathology in improving patient care.
It was a privilege to listen to the lectures delivered by experts from all over the world.

I attended a Urine Symposium and Dr Eva Wojcik highlighted that bladder carcinoma was on the rise in the USA and the implications on patients and healthcare. Costs are in the region of 4 billion US dollars. It is the 4th most common cancer in men and 9th most common in females. There were more than 80 000 new cases in 2018 with about 17 240 deaths.
She discussed the spectrum of changes in the progression of bladder carcinoma and the categories of the Paris system of reporting as follows:

Adequacy : There is no well defined criteria. Voided urine volume should be a minimum of 30mls for Surepath and 25mls for Thinprep samples.
Satisfactory – The presence of any atypical cells.
Unsatisfactory - Urothelial cells completely obscured by lubricant or inflammation.
HGUC (high grade urothelial carcinoma) – minimum of 5 to 10 viable malignant cells.N/C ratio should be 0.7 or greater with nuclear hyperchromasia, irregular nuclear membranes and coarse chromatin.
HGUC – (squamous differentiation) – keratinisation and pleomorphism.
LGUN (Low grade urothelial neoplasia) – They have a high prevalence and is readily visualized by cystoscopy. The fibrovascular core is the key feature.

The Paris system has resulted in improved detection of HGUC together with improved biopsy correlation. Some of the challenges of the system include: An overestimation of the N/C ratio by morphologists, degenerative changes that can lead to an indeterminate diagnosis and under classification of malignant cells when the high threshold for malignancy is strictly applied.

Another area of interest was on primary HPV screening in the UK by Professor John Smith.
The UK will adopt primary HPV screening by the end of 2019. There will be restructuring of lab services and the need for high quality cytological interpretation.
Global data to 2014 reflected a 2/3rd reduction in HPV 16/18 in the 13 to 19 year old women.
In England, HPV 16/18 in the 16 to 18 year age group reduced from 17.6% in 2008 to 1.6% in 2016.
In Scotland there was a reduction in the 20 to 21 age group for women born in 1988 from 30% to 4.5% for women born in 1995. There was evidence of herd protection in the unvaccinated group.

The slide session on Anal cytology by Miss Deborah Ekman was of great interest .She shared information on the SPANC study(study of the prevention of anal cancer) that was done in Australia

at each of 5 visits over 3 years. 600 anal samples were evaluated.The CINtec PLUS (P16 and Ki67) tool which is a highly specific triage tool for targeting surveillance and treatment was employed.
P16 and Ki67 highlights neoplastic cells.
The normal components in an anal smear comprise of squames, anucleates, rectal cells, metaplasia and the background.
With regards to adequacy, less than 2 squamous cells per high power field, excess blood, bacterial or faecal matter is rendered unsatisfactory. The transformation zone is a quality indicator.
Immature metaplasia of the anal canal is more challenging than the cervix even for the anoscopist.
The epithelium appears thickened and reactive with abnormal vascularity.
Papillary immature metaplasia is a low grade lesion that can mimic high grade.

An increase in Positive predictive value (PPV) was noted at each visit during the study.
Small, focal lesions were not identified at the initial visit but grew larger over 6 to 12 months.
New lesions appeared over time.

HPV/HSIL is highly prevalent in sexually active gay men. There are high rates of 1 year cumulative incidence and clearance. Detection of HrHPV infection has a limited value in predicting cancer (about 70% positive).
Some of the risk factors for anal cancer involve receptive anal intercourse, multiple partners, multiple viruses, immune suppression and HIV.
When a patient is immunocompromised it is easy to acquire HPV16 through the genital tract and anal canal. This has the potential to develop into cervical AIS and invasive cancer if not treated and extensive anal disease over time. An inability to clear the virus results in genital/anal transfer, integration, oncogenic pathway activation, uncontrolled proliferation and mutation and invasion.

This was an extremely informative and educational conference. I am extremely grateful for the sponsorship that I received from the NCPTS.

Conference: 20th International Congress of Cytology, 5th – 9th May 2019
Venue: International Convention Centre, Darling Harbour, Sydney
Report by: Bing Liang, Cytoscientist, Anatomic Pathology Services

To whom this may concern
5-9 May 2019, 20th International Congress of Cytology, ICC Sydney Australia
I was very pleased and very lucky to attend this international congress. This comprehensive scientific program highlighted the close association between cytopathology and molecular pathology in improving patient care. I had this opportunity to reach expert cytopathologists coming from every part of the world.
The programme included symposia, videomicroscopy and slide seminars, companion meetings and breakfast sessions.
The following topics which I like more:

1. **Molecular biomarkers for urine cytological diagnosis of urothelial cancer**
   Speaker: Jianyu Rao, UCLA, Los Angeles, CA, USA.

Urine cytology is a widely used diagnostic tool for the diagnosis of urothelial cancers
Urine cytology is quite effective in detecting high grade urothelial carcinoma, with around 70% sensitivity and over 95% specificity
However, the overall accuracy for low grade urothelial carcinoma is low by cytomorphological analysis alone
Molecular biomarkers have been extensively studied as potential adjunct markers to improve the sensitivity of the urine cytological diagnosis of urothelial carcinomas, especially low grade malignancy. The presentation reviewed progresses in urine biomarker studies, focusing on cellular biomarkers as well as liquid-based molecular biomarkers.

Inconclusion: no single biomarker or combination of biomarkers can replace the combination of cytology and cystoscopy for urothelial cancer detection, most biomarkers require prospective field testing and validation, Next Generation Sequencing, Nanotechnology, combined with machine learning may provide a promising approach for the future.

2. **Exfoliative Cytology: Does it still Have a Role in the Diagnosis of Pulmonary Lesions?**

   Speaker: Associate professor Elizabeth Salisbury, department of tissue pathology and diagnostic oncology, Royal Prince Alfred hospital Sydney Australia

Changes in the diagnosis, classification, molecular analysis and subsequent treatment of lung cancer have led to an inevitable shift in the types of radiological techniques, and therefore tissue and cellular specimens, utilised in these patients. High quality FNA samples and core biopsies have become the standard frontline investigation for many lung tumours and with correct triaging and specimen handling, have proven to be a powerful platform for tumour sub-classification and mutation testing. However, exfoliative respiratory cytology remains an important diagnostic modality in the investigation of respiratory disease beyond cancer diagnosis and can provide useful material for mutation testing as well as a wide range of other ancillary tests.

Certain groups of patients, particularly those at risk from lower respiratory tract infections (eg. Immunocompromised patients, paediatric populations) frequently require cytological examination of lower tract specimens such as lavages or washings, and expertise in the interpretation of these specimens remains an important component in diagnostic respiratory cytology. In addition, exfoliative samples such as bronchial brushings have a high level of diagnostic sensitivity and have been demonstrated to provide useful material for mutation testing. Careful triaging of these specimens and collaboration with radiologists and respiratory physicians greatly increases the diagnostic utility of these specimens, which remain an essential component of the suite of investigative tools for lung cancer and other respiratory diseases.

3. **IAC AWARDS 1 (Maurice Goldblatt Award Lecture 2017)**

   Speaker: Dr John Smith, Royal Hallamshire Hospital, Sheffield UK

Understanding of the pivotal role of persisting high risk human papillomavirus (HR-HPV) infection in the aetiology of cervical neoplasia informed randomised trials which clearly demonstrated that cervical screening for HR-HPV achieves greater sensitivity than cytology in the detection of cervical intraepithelial newplasia and greater protection against cervical cancer. As a result of this greater sensitivity screening intervals can be safely extended and the savings derived partly mitigate the higher cost of the molecular test.

However, HR-HPV testing has reduced specificity compared with cytology due to the High prevalence of HR-HPV, but excessive referral for colposcopy can be mitigated by triage of positive HR-HPV test results by the use of reflex liquid-based cytology.

As a consequence, many developed economies with established cytology-based screening programs are moving to primary HPV testing with secondary triage to cytology. In this scenario maintenance of cytology specificity will be crucial to avoid excessive referral for colposcopy and associated excessive unnecessary costs. This mandates continuing appropriate training of cytotechnologists, cytopathologists and colposcopists, supported by internal and external quality assurance, examples of were described in the lecture. Arguably, high quality cytological interpretation will be as important, if not more so, in the era of HPV primary screening and must be maintained.

Furthermore, the transition of the laboratory component of cervical cancer screening from a primary morphological to molecular based test has implications for the organisation of future service delivery in order to achieve the most cost-effective use of laboratory resources, which may present organisational challenges.

4. **ATYPICAL GLANDULAR CELLS FAVOR NEOPLASTIC ASSOCIATES TO IUD**

   Speaker: Dr ESPERANZA TEUZABA

   Universidad del Rosario, Bogotá Colombia

We present the case of a 46 years old woman, who goes to a gynecological appointment for the screening program for cervical cancer. Her Pap's tests for the last 5 years, had been negative. Inspection of the cervix shown congestion and signs of inflammation, liquid base cytology is taken.

By this time, the HPV test within the screening scheme had not been formalized in the country, therefore, it was not performed.
The cytology report showed:
Atypical glandular cells present, favor neoplastic. Note: The findings may represent changes due to IUD, however a glandular neoplastic lesion cannot be excluded. If is clinically indicated, further investigation is recommended.

Later, a biopsy was performed, the result of which showed chronic cervicitis with immature squamous metaplasia.
The patient also presents dysfunctional uterine hemorrhage, so considering the entire clinical picture, the attending physician decides to practice hysterectomy. The pathology report showed, chronic cervicitis with squamous mature and immature metaplasia with reactive and reparative changes, chronic endometritis, adenomyosis,
Atypical glandular cells, whether indeterminate or favor neoplastic, are of utmost importance, both endocervical and endometrial can reflect changes associated with many benign processes of the endocervix and the endometrium. Of these, many do not become specific for a particular entity, but enough to cause atypia that can simulate a glandular neoplasm.
Here we find all the associated changes with IUD, appreciating the severe atypia, presence of tridimensional groups, enlarged nucleus, and especially the cytoplasmic vacuolization.
The correlation with the histology's study showed in addition to changes associated to IUD, immature squamous metaplasia, and micro glandular hyperplasia. Also the changes observed in endometrial cells by chronic inflammation. No neoplastic process was found, but the origin of the AGC was clarified.
Reviewing several studies on the main morphological diagnostic criteria for the diagnosis of AGC, we find that the first and most frequent found is feathering, followed by coarsely granular chromatin, enlarged nuclei, increased nuclear /cytoplasmic ratio, loss of polarity and papillary groups. Even though the highest percentage of AGC will be negative in the biopsy, we must report it and make sure that the patient does not have any neoplastic lesion.
In summary, the message is that there is never enough knowledge about the AGC regarding its relationship with neoplastic process, morphological changes that help us to make a more accurate diagnosis and not over diagnosis.
All women with AGC should undergo a comprehensive initial examination regardless of the status of HPV. The presence of HPV identifies a group of women at higher risk of cervical disease that must be followed closely. Women positive for human papilloma virus with recurrent AGC and ASC / SIL have an even higher risk.

5. **HPV Primary Screening in Australia: The First Year Experience**

Speaker: Professor Annabelle Farnsworth
Douglass Hanly Moir Pathology
Sydney, Australia

Population screening is a complex process with many steps in the screening pathway, all of which need to be optimized. There are also many ethical issues, as well women are invited into a program with a known error rate. If this complexity and ethical issues are ignored or underestimated the overall success of these public health programs will be compromised.
Although Australia had a highly successful cervical screening program for over twenty-five years based on two yearly conventional Pap tests, a renewed cervical screening program was commenced on December 1st 2017. The impetus for change was the success of the National HPV vaccination program and development of new technologies.

The new program uses Oncogenic HPV testing with partial genotyping as the screening test, offered to women every five years commencing at 25 years of age. The renewed screening program also included special provisions for symptomatic women particularly those with abnormal bleeding, women in follow-up for known cervical abnormalities and other specialised clinical situations. These are categorised as Non-Screening tests. Douglass Hanly Moir (DHM) a large community based laboratory situated in Sydney NSW has analysed results from the first 6 months of testing,

December 1st 2017 – May 31st 2018. Oncogenic HPV positivity was 8% in 157,000 women with primary screening tests and 21% in 38,000 women designated as 'non-screening', a significant difference which justifies this categorisation, as they are at higher risk. Also of note is the ratio of screening to non-screening tests is the same in the renewed and old program.

HPV detection in older women and referral rates to colposcopy have also created some issues. The DHM data shows the referral rate to colposcopy was 2.6% in the screening population, compared to an approximate 1% in the previous program. These substantially higher rates of referral include women with longstanding normal screening histories. This has been reflected in the increased demand for, and complexity of colposcopy and management of these women.

A Self-Collect option was included because of the importance of recruitment of under or poorly screened women into the new program. Unexpected problems arose with laboratory accreditation for this testing, which limited access. Currently, only two Australian laboratories have validated this testing but more will follow to allow this crucial test platform to be more widely available.

To underpin the new program a National Cancer Screening Register (NCSR) was created to replace the previous state-based Registers. Some of the important roles of the NCSR are to provide patient histories, recruit women and provide data for monitoring the program. The functionality of the NCSR has been suboptimal since the new program started. The accumulated state-based patient files were successfully transferred in the middle of 2018; however there are ongoing issues with patient identification and provision of histories to both laboratories and clinicians. In the renewed program it is compulsory for colposcopists to submit colposcopy and treatment data to the NCSR. Originally this was to be through electronic desk based portals but remains a paper based system. The NCSR is planning to send out accumulated data to individual colposcopists at the end of March 2019.

The importance of providing accumulated data to allow appropriate monitoring of the program for the safety of women is yet to be addressed. Consideration should be given for education of both medical professionals and women involved in screening to address ethical issues.

There were so many interesting topics including each part of gynae and non-gynae cytopathology and the use of molecular tests in the diagnosis, prognosis, patient treatment and patient management.
I think I have learnt a lot during the conference. It gave me an opportunity to update knowledge and skills in cytopathology and molecular techniques which will be useful and helpful for my work environment.
There are too many people to thank individually! I would like to thank National Cervical Pathology Training Service (NCPTS) Scholarship and Dr Margaret Sage, and LabPlus financially supporting me to attend this congress.

Conference: *20th International Congress of Cytology*
Dates and Venue: 5-9 *May 2019, Sydney, Australia Convention Centre*
Report provided by: Fahimeh Rahnama, Molecular Scientist, LabPlus, Auckland City Hospital

Dr Margaret Sage
Vaccination and Screening in New Zealand

Dr Sage talked about the different ethnicities in NZ and the gap between European and Maori population both for screening and cancer rates. HPV primary screening is planned to start in 2021. Immunisation against HPV commenced with Gardasil-4 in 2008. Approximately 70% of both boys and girls in the school-based cohort of 11-12 year olds were immunised in 2017 but immunisation rates in older age groups are lower. The recommenced age to commence screening will rise to 25

years in 2019. It is expected that with HPV Primary Screening the incidence of cancer will fall, particularly for women aged 25-55 and the first peak is likely to fall from the 30-34 age range into the 25-30 age range. Predicted incidence reduction rate is: 11.7 – 15.7%. Mortality reduction rates: 11.9 – 16.5%. Trials are going on for self-testing in NZ which seems to be very popular in unscreened women. In a study conducted by Peter Sykes and his research group, HPV was detected in 88.5% of cervical cancer cases. This means that with vaccination and HPV primary screening, NZ will get closer to the goal of eliminating cervical cancer.

Prof Ritu Nayor

A snapshot of Cervical Cancer Prevention in the USA

US have 6.4 rate of Cervical Cancer. US is stable for number of incidence and death for recent years. Vaccination started in 2006, not school based and without good success at achieving population coverage.
Primary HPV screening was approved by the FDA in 2014, but has seen minimal uptake in the US. Self-sampling to reach unscreened women has been discussed but not yet implemented. Cobas4800 and Oncolarity are two FDA approved tests in US. Adenocarcinoma rates are rising in the US as in other places.

Prof Takuma Fujii

Crossroad for Primary and Secondary Cervical Cancer Prevention in Japan

The HPV vaccine was approved for use in Japan in 2009 and launched in October 2010, but suspended due to adverse reactions in June 2013. Patient groups that claim to have been adversely affected by the vaccination have demanded compensation and sued both pharmaceutical companies and government. So far, the Ministry of Health, Labour, and Welfare has suspended recommendations for HPV vaccination. 9-valent vaccine has not yet been approved in Japan. Vaccination coverage among adolescent Japanese women has dropped from around 70% in those born 1994–1999 to only 1% in those born after 2000. Screening remains the only way currently to reduce the cancer rate. Screening is not nationally organised in Japan therefore widespread good quality screening has not been established.

Prof Annabelle Farnworth (Douglass Hanly Moir Pathology)

HPV Primary Screening in Australia: The First Year Experience

A renewed cervical screening program was commenced on December 1st 2017. The new program uses Oncogenic HPV testing with partial genotyping as the screening test, offered to women every five years commencing at 25 years of age. HPV detection in older women and referral rates to colposcopy have also created some issues. The DHM data shows the referral rate to colposcopy was 2.6% in the screening population, compared to an approximate 1% in the previous program. These substantially higher rates of referral include women with longstanding normal screening histories. This has been reflected in the increased demand for, and complexity of colposcopy and management of these women. To underpin the new program a National Cancer Screening Register (NCSR) was created to replace the previous state-based Registers. In the renewed program it is compulsory for colposcopists to submit colposcopy and treatment data to the NCSR.

Dr Karin Denton

Current and future status of Cx Cancer Prevention in the UK

Starting HPV screening in 2020; IT is a major issue, UK is not going to require human internal control for its primary testing technology. Coverage for screening is falling. They have reached a plateau in cancer incidence.

I would like to thank the NCPTS for the opportunity the scholarship funding provided.

Conference: 20th International Congress of Cytology
Dates and Venue: 5-9 May 2019, ICC, Sydney Australia
Report provided by: Lisa Ding, Cytology Scientist, APS, ADHB

I was very fortunate to be awarded the scholarship allowing me to attend the 20th International Congress of Cytology in Sydney, Australia on May 2019. This was the first time that I have attended an international conference. I was fascinated by all the powerful speakers delivering so many educational lectures. It really was an eye-opening experience. All the symposia and seminars were very interesting, informative, and applicable. I have learned a lot that I would like to share with my colleagues.

In this report, I will focus on the Urine Symposium that I attended. Most of the presentations in the Urine Symposium were about The Paris System (TPS) for Reporting Urine Cytology. I particularly enjoyed the talk by Dr.Eva Wojcik from Loyola University Medical Centre, USA on '*What Led to the Paris System for Reporting Urine Cytology and Creation of a New Diagnostic Paradigm?*'. Dr. Eva Wojcik is a member in the TPS Working Group which was formed in the 2013 International Congress of Cytology in Paris. They are composed of cytopathologists, surgical pathologists and urologists. She explained, in detail, the need to have a universally acceptable and globally utilized reporting system for urine cytology. She also explored the background of how the standardised reporting system was proposed and published. The major goal of TPS is to clarify the ill-defined category of "atypia" as much as possible, to minimise the reporting rate of this category, and to have improved detection of High Grade Urothelial Carcinoma (HGUC). TPS for Reporting Urine Cytology includes specific diagnostic categories and cytomorphologic criteria for the reliable diagnosis of HGUC. The published diagnostic categories include:

1. Non-diagnostic or Unsatisfactory
2. Negative for High Grade Urothelial Carcinoma
3. Atypia
4. Suspicious for High Grade Urothelial Carcinoma
5. Low Grade Urothelial Neoplasia (LGUN)
6. High Grade Urothelial Carcinoma (HGUC)
7. Other malignancies, primary and metastatic

The Non-diagnostic or Unsatisfactory category indicates that the urine sample is compromised due to degenerative changes stemming from overgrowth of contaminant microbes or cells obscured by blood, exudate or other artefacts. Negative for High Grade Urothelial Carcinoma implies there is an absence of atypical, suspicious or malignant cells in an adequate sample. The criteria for Atypia include non-superficial and non-degenerated urothelial cells with a N/C ratio greater than 0.5 in addition to hyperchromasia or irregular clumped chromatin or irregular nuclear membranes. Atypia should be reminiscent of HGUC but in very small numbers and does not include papillary clusters suggestive of LGUN. If there is a cause for "Atypia", i.e. inflammation, treatment related changes etc.- it is negative. The criteria for Suspicious for High Grade Urothelial Carcinoma include non-superficial and non-degenerated urothelial cells (less than 10) with a N/C ratio greater than 0.7 and hyperchromasia plus irregular clumpy chromatin or irregular nuclear membranes. LGUN is the combined cytologic term for low grade papillary urothelial neoplasm and flat low grade intra-urothelial neoplasm. Cytologic diagnosis of LGUN can only be made in the presence of a fibrovascular core. LGUN may be considered in correlation with cystoscopic or biopsy findings. For HGUC, the diagnostic morphological features include a minimum of 5 to 10 abnormal urothelial cells with an N/C ratio of 0.7 or greater, with cells showing moderate to severe hyperchromasia, coarse chromatin

and irregular nuclear membrane. Not all malignant cells in urine are urothelial carcinoma. Other malignancies include squamous cell carcinoma and adenocarcinoma and melanoma.

Our lab processes huge numbers of urine samples. We have been discussing changing our system to TPS for Reporting Urine Cytology. With a new system, we hope that reported atypical groups will be more clinically meaningful. Also, the number of atypicals being reported will be reduced.

I would sincerely like to thank the NCPTS for providing me with the scholarship to attend such a memorable conference. I am truly grateful for this learning opportunity.

Conference: 20th International Congress of Cytology 2019.
Dates and Venue: 5-9 May , Sydney, Australia.
Report provided by: Lois Barnett, Cytotechnician, Pathlab BOP. Tauranga.

I was fortunate to be awarded a Scholarship to attend the ICC Congress of Cytology Conference 2019 in Sydney. The Conference theme was 'Cytology at the Molecular Frontier'.
The venue was wonderful, easy to get too, access, and a truly scenic place to be. Lecture rooms were very comfortable and well sign-posted, with someone always on hand to direct you in the right direction.
With more than 48 Symposia and slide presentations to choose from, it was at times hard to decide which lecture to attend.
The future of Cytology is definitely moving into the future with Molecular Pathology. And to quote Associate Professor Andrew Field "This is an era of personalised medicine and rapid translation of scientific discoveries into new diagnostic and treatment regimens. All of us working in Cytopathology need to understand these new developments."
The symposia covered Gynae and non-gynae topics. They were all very well organised, and kept interesting with multiple speakers. Questions were always answered fully and enthusiastically. It was interesting to hear about, and see slides on rare and unusual cases and also techniques that we don't often see in smaller laboratories. Cell blocks are increasingly being used routinely with immunohistochemistry to improve diagnosis.
It was interesting to note we all have similar diagnostic difficulties so the advances taking place in the molecular field will be very welcome, and improve diagnosis, and so, patient care
Digital pathology is also developing and becoming part of the future of Personalize healthcare .Histology slides are a little easier to deal with, as the cellular material is usually less than a cell thick, so it is a lot easier to image the whole slide, takes a lot less time and less storage. Cytology preparations are often many cells thick so it takes a lot longer to image the slide, and storage of the image is a much larger file. But, in the future, image analysis will make for easier colleague collaboration and second opinions, improve workflow efficiency and earlier diagnosis for better patient car.
Standardising of reporting is continuing to be developed and adopted, with the Application of the Milan System for reporting Salivary Gland Cytopathology, the Paris System for reporting Urine Cytology, the 2017 Bethesda System for reporting Thyroid Cytopathology , and the IAC Yokohama System for reporting Breast FNAB cytology all being discussed.
The Gynae symposiums were great, as we got to hear about screening in other parts of the word, and the difficulties and challenges faced, and HrHPV primary screening experiences.
This was a wonderful conference to be able to attend, and I know I have returned with some very valuable diagnostic tools .But also with the knowledge that continued education in the molecular fields is essential for all of us.
Many thanks to the NCPTS and to Pathlab BOP.

Conference: 20th International Congress of Cytology
Dates and Venue: 5-9 May 2019, Sydney, Australia
Report provided by: May Du, APS Cytology, ADHB

Thanks to the NCPTS for awarding me a scholarship to attend this conference. It was an intensive four and a half day conference with so many interesting topics presented from speakers of all over the world. I found it interesting to learn about cervical cancer screening outside New Zealand and definitely some good experiences for us to learn. Following is my summary about cervical screening programme of overseas countries.

Cervical Screening outside New Zealand

USA[1]:

- Has an opportunistic cervical cancer screening program.
- Primary HPV screening was approved by the FDA in 2014. Both cytology (predominantly liquid-based) and high-risk HPV testing are used at the moment.
- The American Society of Colposcopy and Cervical Pathology (ASCCP) 2012 guidelines are currently being used to manage abnormal screening results. An updated guideline is expected to be released in 2020
- Self-sampling to reach unscreened women has been discussed but not yet implemented.

Europe[2]

- Out of the 28 Member States of the EU, 22 have well organized cervical cancer screening programs.
- HPV test as primary screening test is in Denmark, Finland, Italy, Netherlands and Sweden;
- HPV test with co-testing cytology are used in Romania and Malta;
- Both HPV test and co-testing with cytology are used in Portugal, where HPV based screening starts at women aged 30 years and cytological screening is recommended for women under 30.
- In France, 3 yearly pap smear in women of 25-65 years old, pilot study towards primary HPV screening has done.

Australia[3,4]

- A National Cancer Screening Register (NCSR) was created to replace the previous state-based Registers
- HPV test as primary screening was implemented on December 1st 2017
- Issues raised during transition period, there were delay in transferring patient files from state-base Register to newly formed NCSR at the beginning; ongoing issues with patient ID and provision of histories from NCSR to both laboratories and clinicians.
- Data of first 6 months collected from Douglass Hanly Moir(DHM) showed referral rate to colposcopy has increased from 1% to 2.6% in older women.
- Important lessons learnt –communications and engaging with the concerns of all stakeholder groups including the Government, pathology providers, cytologists, clinicians, patients are important for a more smoothy implemantation.

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Conference: ASCCP XXVI Scientific Meeting 2019
Dates and Venue: 28th-31st March 2019 at Grand Millennium Auckland, New Zealand
Report provided by: Melody Mao, Histoscientist, Anatmic Pathology Services

It consisted of three days of conference. ASCCP had invited keynote speakers Prof Walter Prendiville (IARC, WHO), and Prof Yin Ling Woo (University of Malaya).
There were 10 sessions in this meeting, which were as following:
Session 1: Preventing cervical disease in our regions
Session 2: The burden of cervical cancer in our region
Session 3: Solutions
Session 4: Proffered papers
Session 5: Challenges in management of cervical disease in the era of HPV primary screening
Session 6: Challenges in management of cervical disease in the era of HPV primary screening (continued)
Session 7: Vulval disease
Session 8: Problems and solutions
Session 9: Fast and furious
Session 10: Open tumour board; Meet the experts
This whole meeting was organized well, which had good location venue, nice food, friendly staff, and knowledgeable speakers. I liked the quiz of vulval disease most. It is worthwhile to attend a scientific meeting like this.

Conference: 20th International Congress of Cytology
Dates and Venue: 5-9 May 2019, Sydney, Australia
Report provided by: Nirup Kumar, APS Cytology, ADHB
I am very fortunate and grateful to be awarded this scholarship to attend the ICC for 6 days in Sydney, Australia. Molecular diagnostics has almost taken over the traditional reporting techniques and this was one of the most highlighted points of the conference.
Firstly I would like to mention that the location was ideal, in a beautiful setting surrounded by lots of eatries and bars. The welcome cocktail party, the dinner and the morning and afternoon teas and the lunches were all awesome.
I paid a lot of attention to thyroid, lymph node and head and neck symposium, however at times it was quite difficult to decide which one to attend as often they were running simultaneously. The salivary gland, pancreas, lung, breast and gynae were equally interesting, so I tried to give a bit of time to all of these sessions.
The Paris Reporting System (TPS) for urine cytology took a bit of priority as we at Auckland Pathology Services (APS) are now going to use this system. The urine symposium was very informative and mainly about:
* What led to The Paris System(TPS) for reporting urine cytology and the creation of a NEW Diagnosti Paradigm
* What does malignancy mean in cytology and how TPS affects the indetermine categories such as Atypical and Suspicious.
* Overall a standardised reporting system will be introduced.
The slide sets and cases presented were of good quality and beneficial in categorising the urine atypias.
It was also a great pleasure meeting all those famous speakers, most of who have been the authors of a lot of our text books. Overall all the topics were extremely well covered and presented.

Lastly I would like to convey my sincere thanks to NCPTS for kindly sponsoring and giving me the apportunity to attend the International Cytology Congress (ICC).
I have learnt a lot by attending this conference and will certainly apply these diagnostic criteria in my day to day working carrier in cytology.

Conference: Australian Society for Colposcopy and Cervical Pathology 26th Scientific Meeting
Dates and venue: March 2019, Grand Millennium Hotel, Auckland
Report provided by: Ruth Williams, Histoscientist, Medlab Central, Palmerston North

This meeting was held over three days and contained 10 sessions, each session with multiple speakers. I have chosen to report on the success Australia has seen following the implementation of their vaccination schedule, the variety of challenges that are still faced in the Pacific countries and the situation in Malaysia, which seems to be somewhere in between.

The topic of the first session was 'Preventing Cervical Disease in our Regions'. Julia Brotherton (National HPV Vaccination Program Register, East Melbourne, VIC, Australia) opened this session with an overview of the Australian HPV vaccination schedule, implementation, monitoring and challenges. The vaccination schedule appears to have been a great success since it commenced in 2007, with 80% coverage for three doses in females. It was noted that the coverage for vaccination is higher than the coverage for cervical screening. Data collected from 2007 onwards shows a decline in the prevalence of HPV infection, genital warts and cervical lesions. The prevalence of HPV infection in unvaccinated women has also declined, known as herd immunity. In 2018 there was a move to a two dose only vaccination, however it was implied that one dose may be sufficient for protection against HPV and hope for the future that every girl and boy could be vaccinated in childhood as part of routine immunisations.

The topic of Session Two was ' The burden of Cervical Cancer in our Region'. This session gave an overview of the prevalence of cervical disease in Papua New Guinea (PNG), Cook Islands and Fiji. PNG has one of the highest incidences in the world for cervical disease. There is currently no screening programme or vaccination schedule, and very limited laboratory services. The Cook Islands currently follow the New Zealand Guidelines for cervical screening; the liquid based cytology samples collected are also sent here to be screened. In 2011 a vaccination programme was introduced for girls aged 9 to 13 covering HPV type 16 and 18. As of 2015 there was 95% uptake for the vaccine in the target group. Plans for the future in the Cook Islands include shifting to primary HPV testing in 2021 along with New Zealand, introducing a new vaccine which covers more HPV subtypes and establishing their own screening unit which will make testing more affordable. Fiji faces challenges within the population that directly affects the prevalence of cervical disease. There is a lack of sexual health education including knowledge of cervical cancer and screening, and they face the issue of disempowerment of women. In 2012 a vaccination programme was introduced with coverage of approximately 50-60%, however there is no screening program in place. Screening was shown to reach less than 10% of women and if abnormalities were seen, less than half would return for follow up appointments. A common factor seen in these locations is the geographical barrier. There are women living in rural isolated areas which limits access to screening, and treatment if needed. A potential solution for women in these areas (and other low resource countries) was outlined by Andrew Vallely (The Kirby Institute UNSW, Sydney) which involved self collected HPV DNA samples, testing of these samples and same day treatment via cervical ablation.

One of the speakers I found most interesting was Professor Woo Yin Ling (University of Malaya, Malaysia) who gave a three part talk on the topics of HPV vaccination, HPV primary testing and cervical screening in Malaysia. In 2010 a government funded, school-based vaccination program was introduced for all 13 year old girls, which was very successful with 90% coverage. Due to more than 50% of the population being Muslim, they faced the challenge of obtaining Halal certification. Although the implementation of the vaccination program has been successful, screening is still an issue. Malaysia currently has a screening program established however the number of women participating is very low. This can be due to many factors e.g time constraints for patient and provider, family commitments, patient fears and cultural barriers. A solution is needed and from there Project ROSE (Removing Obstacles to Cervical Screening) was developed. This project is a pilot primary HPV testing program, with the goal to increase the number of women participating in cervical screening and lower costs for patients. This was to be achieved by introducing self collection of samples, HPV DNA test as opposed to cervical cytology and an electronic tracking system for patients. The self collection of samples seems to be widely accepted, requires minimal space, and offers privacy and empowerment for women. The screening areas are totally mobile and the HPV testing is done on site which gives the ability to obtain same day turnaround of results. Approximately 60% of the population in Malaysia have a mobile device, this was taken advantage of when developing a simple and effective way to track patients, results and referrals for treatment. Participants registered their details at the time of screening and any results and follow up communication came directly back through their mobile phone. With this technology 91% of women with abnormal results were able to be tracked and followed up. Through the planning, design, staff training and hard work gone into developing project ROSE, they have found a way to overcome barriers that are contributing to the lack of women participating in cervical screening.

As a histology scientist I don't often have the opportunity to hear about cervical disease from the colposcopy point of view. I found that attending this conference has been very valuable for my own learning and understanding how we are all contributing to eliminate cervical disease in our region. I would like to thank the NCPTS for the scholarship funding that allowed me to attend this conference.

Conference: The 20th International Congress of Cytology
Dates and Venue: May 5-9 2019 International Convention Centre, Sydney, Australia.
Report provided by: Sheryl Worthington, Cytoscientist. ADHB – APS, Mt.Wellington Auckland.

I was lucky enough to attend the 20th International Congress of Cytology held at the International Conference Centre, Sydney in May this year. It was the biggest Cytology conference I had attended, and had several lectures in different rooms going on at the same time, so it was a juggling act to decide which ones to attend throughout the day!

The lectures started at 8am each day and ran for 1 hour 45 minutes each, leaving half an hour for morning and afternoon tea breaks and a two hour lunch break. This is when you could have your lunch, socialise with other attendees, browse the exhibits set up or attend a lunchtime seminar – which is what I did. The lunchtime seminars were catered so you got your own lunchbox to eat while listening to the speaker. Each day then finished at 6pm.

The conference dinner was also held in the International Conference Centre and was a fun night with good food, a loud band playing plenty of Ausie hits and a lot of dancing. It was a fantastic

conference with an abundance of cytological knowledge being passed on via the lectures and also the many group and one on one conversations before and after.

The highlight for me would be listening to several international speakers presenting their experiences with HPV testing in their laboratories and country, as this is a topic playing on all our minds here in New Zealand.

If you have the opportunity to attend the next International Congress of Cytology, I would jump at the chance. I wish to thank the NCPTS for the opportunity the scholarship funding has provided in allowing me to attend this conference.

Conference: The 20th International Congress of Cytology
Dates and Venue: May 5-9 2019 International Convention Centre, Sydney, Australia.
Report provided by: Christine Hide, Cytology Technician, Path Lab, Bay of Plenty.

The 2019 ICC provided a plethora of educational material for attendees, with the main focus on Non Gynaecological and Molecular presentations with a smaller Gynaecological content.

I found two papers interesting, the first was given by Professor Ritu Nayar MD MIAC from Northwestern University, Chicago, USA. " A Snapshot of Cervical Cancer Prevention in the USA." The following is a summary of that report. The cervical cancer rate in the USA is 6.4/100,000; comprising 0.8%of all new cancer cases (13,240 new cases in 2018) with the majority cancers occurring in unscreened or women not screened in the last five years. The total number of HPV - positive cases in the US is approximately 33,000. HPV vaccination was implemented in 2006 with the first generation, VLP Gardasil quadrivalent vaccine for females 11-12 years and females 13 through 26 years if not previously vaccinated. In October 2009, the Cervarix bivalent vaccine was licensed and in October 2011, HPV vaccination was approved for males. In 2014 Gardasil 9 was approved and since 2017, is the only vaccine marketed in the USA.

Uptake has been slower than expected due to many reasons and there is a lack of a school based program. As of 2017, 69% of females and 62% of males eligible have received at least one dose of vaccine, with the eligibility extended to 27 - 45 year old females and males in 2018.HPV vaccine coverage is increasing, although remains lower than for other vaccines and has not reached the Healthy People target of 80% coverage in the 13 - 15 yr age group, however a decline in genital warts and CIN has been observed. Concentrated efforts are ongoing at all levels, to improve vaccination rates. The US has an opportunistic cervical cancer screening programme.

Both cytology (predominantly liquid based) and HrHPV testing are used, with co-testing still the preferred option. Primary HPV testing was approved by the FDA in 2014, but has seen minimal uptake in the US. There are 5 high risk HPV testing platforms FDA approved, 4 DNA based and 1 mRNA; two are approved for Primary testing and partial genotyping is used in patient management. Development of additional biomarker testing and automation is underway. Self- sampling to reach unscreened women has been discussed, but not yet implemented. The development of the next generation of American Society of Colposcopy and Cervical Pathology (ASCCP) Risk based management Guidelines for abnormal screen results and prevention of cervical cancer is currently underway and expected to be released in 2020.

The second interesting paper was by; JC van der Linden, Cytopathologist, MD PhD, Dr AJC van den Brule, PhD, and Dr CJJ Huijsmans PhD, Clinical Molecular biologists. The Dutch Nationwide cervical screening programme based on primary HrHPV screening with cytology triage and introduction of self - sampler. In 2017 the nationwide cervical screening programme was completely remodelled. Previously delivered by liquid based cytology as primary screening, followed by HrHPV Triage,

performed in 50 laboratories, by over 150 cytotechnicians and at least 100 Pathologists. Starting in 2017, the HrHPV primary screening was performed in 5 laboratories using one test (Cobas 4800 HPV test, Roche Diagnostics) and one liquid based cytology test (PreservCyt, Hologic), followed by cytology triage for positive samples. Besides a dozen Molecular technicians and clinical molecular biologists responsible for the HrHPV testing, around 25 cytotechnicians and pathologists are now responsible for the Cytology. Food for thought ??

I thank the NCSP for providing me with the funds to attend this conference. A great learning experience.

Reports for 2017 Courses and Conferences

Conference: **Australian Society of Cytology 47th Annual Scientific and Business Meeting**
Dates and Venue: **October 2017, QT Hotel Canberra**
Report provided by: **Savannah Young, Cytoscientist. Medlab Central, Palmerston North**

The 2017 conference was held in Canberra, which I have deemed the Palmerston North of Australia; a laid back big city. A large focus was on the standardisation of reporting systems for both cytology and histology. This is an important part of ensuring clinicians can clearly understand our results and ensuring results are transferrable in a global context. Professor Lyndal Anderson (Royal Prince Alfred Hospital, Sydney) discussed a recently published protocol for reporting cervical histology, which aligns better with the Australian National Cytology Screening Programme terminology. Professor Michael Henry (College of Medicine, Mayo Clinic) focussed on the updated version of the Bethesda System for Reporting Thyroid Cytology. Particularly of note in the 2016 edition was a focus on use of molecular ancillary testing, for example detection of mutations in *BRAF* and *RAS* genes. Finally, Professor William Faquin (Harvard Medical School, Boston) introduced The Milan System for Reporting Salivary Cytopathology. Within this system each category includes an associated risk of malignancy, for example "Non-diagnostic" aspirates are associated with a 25% risk of malignancy. Estimation of risks can therefore guide clinical interventions.

A particular highlight for me was Michael Henry's presentation on High risk Human Papillomavirus (HrHPV) co-testing and primary screening in the United States (US). It was interesting to hear that cancer screening in the US is not government subsidised and there is no standardisation or guidelines for cervical screening. Hence screening tests are typically dependent on the beliefs of individual insurance companies or clinicians. This made me particularly proud to be a part of the NZ Cervical Screening Programme where all women have access to standardised testing. HrHPV primary screening is currently optional for US women and there is an uptake is less than 5%, likely due to the historical emphasis on co-testing with both cytology and HrHPV testing. William Faquin spoke of HrHPV in a different context, via its role in head and neck Squamous Cell Carcinoma (HNSCC). HPV-positive oropharyngeal SCC (usually type 16) is associated with an improved response to therapy compared with alcohol and tobacco related cases. Again this provides an opportunity to use HrHPV testing to improve patient outcomes by potentially reducing dosage. Oropharyngeal SCC has even surpassed cervical SCC rates. All in all my weekend in Canberra was filled with sunshine, passionate speakers and even a quick visit to the Floriade flower festival. Thanks to the NCPTS for making it happen.

Conference: **Australian Society of Cytology 47th Annual Business and Scientific Meeting**
Dates and Venue: **October 2017, QT Hotel, London Circuit, Canberra**
Report provided by: **Mary Budd, Cytology Scientist, Anatomical Pathology Services, ADHB**

I was fortunate to be a recipient of a scholarship provided by the NCPTS to attend the 2017 Australian Society of Cytology conference in Canberra. Due to the number of attendees from NZ that will also be submitting reports, I have focused on one presentation that I found particularly interesting.
One of the invited guest speakers, Professor Michal Henry who is the current Director of General Cytotechnology at Mayo Clinic in Minnesota, gave a very engaging presentation on "HPV Co-testing and Primary Screening in the United States". I felt this was a very compelling presentation as I feel it comes at a crucial moment in the evolution of cervical cancer screening for many countries including NZ, as we look at moving to Primary HPV Testing.
Currently in the U.S, the majority of women receive LBC and if the patient is over the age of 30 years, they receive HPV co-testing. The Mayo Medical Laboratory where Prof Henry works has offered primary HPV screening since 2015 with only very minimal uptake. A major part of the lack of interest in primary HPV screening is due to the fact that studies have shown co-testing to have a definite increase in sensitivity of the detection of CIN2+ and a negative co-test has a stronger negative predictive value for significant disease over the next 3-5 years.
A growing body of literature supports Pap Cytology WITH HPV testing as superior over cytology alone. Prof Henry feels it gives clinicians a greater opportunity to address pre-cancer risk which gives women greater certainty.
Co-testing identifies women with pre-cancer or risk of pre-cancer that are missed by pap-cytology. Prof Henry felt co-testing had better risk stratification as clinicians could treat women in need of greater care and could reassure the majority of others that are low risk so no extra colposcopies will be required.
We know it is possible for HPV testing to give false negative results for a number of various reasons (eg. due to low viral loads, older age of woman etc). I think this presentation highlights the limitations of HPV testing alone and that maybe co-testing (although it would add an additional cost) may be a more effective method, giving patients better protection and a real possibility for NZ to look at in the future.
I would sincerely like to thank the NCPTS for kindly providing me with the funds to attend this conference. It was a definite learning curve which I am very grateful for.

Conference: **Australian Society of Cytology 47th Annual Business and Scientific Meeting**
Dates and Venue: **October 2017, QT Hotel, London Circuit, Canberra**
Report provided by: **Christl Kirstein, Cytology Scientist, Anatomical Pathology Services, ADHB**

Cytology is at a cross roads, with the HPV primary testing imminent, and sadly this has taken its toll on the sector. The atmosphere was always one of great enthusiasm and anticipation for the new knowledge to be gained, but this was now replaced by insecurity and despondency.
I therefore decided to write my report on the paper presented by Gillian Phillips entitled "Supporting the Workforce".
Gillian was entrusted with this task and the first step was the establishment of a steering group. Three areas of need were identified, providing communication, LBC training and support transition services.
Communication was provided through regular news letters, as well as, formation of a web-site to which everybody had open access. LBC training was already being done in all the labs and four universities were using LBC in their training.

The major part of the resources was directed into the appointment of career management specialists to provide a range of support services through workshops and on-line resources. Consultants were made available. They divided their task into three phases.
Phase one was to provide a needs analysis. This was to be completed in early 2016 and all the labs were to be involved.
Phase two comprised the presentation of workshops aimed at building personal skills to cope with ambiguity and change, leading yourself through change, value and direction, as well as, support for the managers.
Phase three comprised of workshops providing skills in job search, resume building interview skills and planning for retirement. Also two webinar workshops were provided on retirement planning.
These workshops were held in Perth, Adelaide, Hobart, Melbourne, Canberra, Sydney and Brisbane. All workshops had a webinar alternative. A total of 58 workshops were held with 641 participants. Five webinars were delivered.
At this point the project was extended with the government providing extra funding for this to happen. Extended on-line support resources until 2018 were introduced. One extra workshop was to l be delivered in each state in early November. An additional webinar would be provided and participants would be advised in making connections that count, through Networking and Linkedin. Also the development of an ongoing CPD resource for lab medical professionals performing cervical screening tests with the NCSP, which will explain how the testing fits into the broader program, the new guidelines and the clinical implications.
I wish to thank the NCPTS for the scholarship awarded to me, enabling me to attend this conference.

Conference: **Australian Society of Cytology 47th Annual Scientific and Business Meeting**
Dates and Venue**: 13-16 October 2017, QT Hotel, Canberra**
Report provided by: **Akira Akagi, Cytoscientist, ADHB Anatomic Pathology Service, Auckland**

I was fortunate to be awarded a scholarship to attend the ASC 47th Annual Scientific and Business Meeting. The theme that permeated throughout this conference was "Spring into Canberra". I had a chance to visit Floriade which was very beautiful flower festival on Sunday afternoon.

The conference was an intensive 3 days of presentations, more non-gynaecology cytology ratherthan HrHPV testing and gynaecological cytology. This report focuses on one talk relating to non-gynaecology cytology.

I found this presentation by Dr. Kennichi Kakudo (Japanese Speaker) one of the most interesting of the conference, because we test many thyroid specimens in New Zealand.

The following is a summary of **Dr. Kennichi Kakudo's talk "Japanese Approach to the Reporting System of Thyroid FNA Cytology**."

Asian thyroid practices have implemented the American Thyroid Association guidelines. Significant deviations in actual risk of malignancy (ROM) have been reported in Asia. With a review of the literature from Asia, the authors examine the underlining reasons for actual ROMs reported in Asia being so different from western practice based on the author's perspective. Although the most popular diagnostic system for thyroid cytology used in Asian countries is the Bethesda system, the Japan Thyroid Association published clinical guidelines, including a national reporting system for thyroid cytology, to adapt conservative clinical management (active surveillance and strict triage patients for surgery) for low-risk thyroid carcinomas. As less aggressive clinical management is favoured in Asian societies, strict triage of patients with indeterminate thyroid nodules for surgery is usually applied, which ultimately reduces overtreatment of indolent thyroid tumours. As a result, low resection rates and high ROMs for indeterminate nodules were achieved in Asian practices using the same Bethesda system. Recently, borderline thyroid tumours were introduced in the thyroid

tumour classification and significant decreases in ROMs have been reported in the indeterminate categories in western practice. However, ROM of indeterminate nodules remained high in Asian practice even after borderline tumours were deemed benign. These results suggested that the diagnostic threshold of papillary thyroid carcinoma-type nuclear features varied among practices (stricter in Asia than in western practice), and diagnostic surgery was not performed for a significant number of indeterminate nodules with benign clinical features in Asian practice, resulting in low rates of borderline tumours in surgically-treated patients.

I would like to thank The National Cervical Pathology Training Service for the opportunity to attend this conference. However, not many Australian cytoscientists attended this conference. I felt that this was due to the potential loss of cytology jobs due to the impending implementation of primary HrHPV testing. It was sad to see the effect that primary screening with HrHPV will have on many cytology scientists who perform gynaecology cytology only, for the National Cytology Screening Program in Australia. I felt that this is our future for New Zealand's cytology too.

Conference: **Australian Society of Cytology 47th Annual Business and Scientific Meeting**
Dates and Venue**: October 2017, QT Hotel, Canberra.**
Report provided by: **Azusa Akagi, Cytoscientist. ADHB Anatomic Pathology Services,**
I was fortunate to be awarded a National Cervical Pathology Training Service (NCPTS) Scholarship to attend the 47th Annual Scientific and Business Meeting of the Australian Society of Cytology. It was two and half days of intensive educational meetings.
It covered topics of both Gynae and Non-Gynae cytology using morphology and molecular biology for diagnoses. As gynae cytology testing is transitioning to HrHPV testing, this conference had more non-gynae topics.

Canberra is a beautiful city. I enjoyed their "Spring into Canberra" which was the theme.
The cocktail party at "The Deck at Regatta Point" was lovely. We could see Floriade (Flower Festival) and the nibbles were good.
The conference dinner was also very nice, good food and nice mingling.

I found this presentation by **Prof William Faquin** one of the most interesting of the conference.

The following is a summary of Prof William Faquin's talk **"Structured Reporting of Salivary Gland FNA: The Milan System for Reporting Salivary Gland Cytopathology"**

The Milan System for Reporting Salivary Cytopathology (MSRSGC)
The name reflects the first meeting of the core group during the 2015 annual meeting of the European Cytology Congress in Milan, Italy.
The MSRSGC consists of 6 diagnostic categories.
It is an evidence-based system which correlates diagnostic categories with risk of malignancy (ROM) and clinical management.
Given the current lack of a uniform reporting system for salivary gland FNA, the International Academy of Cytology (IAC) has established an international working group (over 40 participants from 15 countries) of cytopathologists, pathologists and head and neck surgeons.
The goal of this group is to establish a tiered classification system that has been designated the Milan System for Reporting Salivary Cytopathology (MSRSGC)

1) Non-Diagnostic
Insufficient quantitative and/or qualitative cellular material to make a cytologic diagnosis.
10% would be a target maximum rate.
2) Non-Neoplastic

Specimens lacking evidence of a neoplastic process: Inflammatory, metaplastic, and reactive.
Reactive lymph nodes (flow cytometry is needed).

3) Atypia of undetermined significance (AUS)
Containing limited atypia; indefinite for a neoplasm.
The majority will be reactive atypia or poorly sampled neoplasms.
Specimens are often compromised (eg, air-drying, blood clot).
Should be used rarely (<10 % of all salivary gland FNAs).

4) Neoplastic:
a) Benign Neoplasm
Reserved for clear-cut benign neoplasms

b) Salivary Gland Neoplasm of Uncertain malignant potential (SUMP)
Reserved for FNA samples which are diagnosis of a neoplasm; however, a diagnosis of a specific entity cannot be made.

5) Suspicious for Malignancy
Aspirates which are highly suggestive of malignancy but not definitive.

6) Malignant
Aspirates which are diagnostic of malignancy.

I would like to thank the NCPTS for kindly providing me with the funds to attend this conference.

Conference: **Australian Society of Cytology 47th Annual Scientific and Business Meeting**
Dates and Venue: **October 2017, QT Hotel, 1 London Circuit, Canberra**
Report provided by*:* **Kervin Govender, Cytoscientist, Anatomical Pathology Services, ADHB**

The reason I chose to elaborate on Professor Faquin's talk is due to the recent increase in the number of fine-needle aspirations (FNAs) and the popularity of on-site evaluation for specimen adequacy. Many laboratories, including ours tend to rely on cytoscientists to attend these procedures and as one of three cytoscientists at my laboratory that regularly attend off-site FNAs (most of which are from the thyroid gland), I certainly enjoyed the following talk by Professor Faquin.

Impact of New Entities on Thyroid Cytology by Professor William C. Faquin
The increase in Thyroid Cancer diagnosis in the last three decades coincided with the importance that Ultrasound guidance plays in the early detection of small lesions.
The advantages of Ultrasound guided FNAs:

- Safe and relatively painless as local anaesthetic provided
- There is no radiation exposure to the patient
- Images are captured in real-time, showing the structure and movement of internal organs
- The procedure is non-invasive and helps clinicians diagnose and treat medical conditions

"Papillary thyroid carcinoma (PTC) is the most common malignant tumour of the thyroid gland, and the follicular variant of PTC (FVPTC) is the most common PTC subtype. The diagnosis of the FVPTC is based upon a follicular growth pattern combined with nuclear features of PTC. Two major subtypes of FVPTC have been described: Infiltrative and encapsulated. In recent years, molecular profiling has indicated that encapsulated FVPTC more closely resemble follicular adenoma/follicular carcinoma while infiltrative FVPTC is similar to classic PTC."
Professor Faquin explained that "A subset of encapsulated FVPTC lacking capsular or vascular invasion has been shown to have a very low rate of recurrence or metastasis, yet it was still being clinically managed similar to conventional forms of PTC leading to overtreatment such as total thyroidectomy and radioactive iodine."

Professor Faquin explained that "To solve the Thyroid Cancer Problem":

- Pathologists need to modify their threshold
- Radiologists should avoid small lesions
- The development of molecular tests

The entire conference was enjoyable and extremely educational and I would like to thank the NCPTS for the opportunity the scholarship funding has provided.

Conference: Australian Society of Cytology 47 Annual Business and Scientific Meeting
Dates and Venue: October2017, QT Hotel, Canberra
Report provided by: Jenny Yin, Cytoscientist. LabPlus, Auckland
The conference was filled with new information and interesting cases. I am very interested in the topic "Impact of New Entities on Thyroid Cytology", presented by Dr William C. Faquin, Harvard Medical School, Boston, MA USA. He fully explored the most significant changes of the Bethesda System reporting thyroid cytology, such as:

1. A newly described entity, called Non-Invasive Follicular Thyroid Neoplasm with Papillary-like Nuclear features (NIFTP)

   The cytological features of NIFTP:
   - Follicular pattern
   - Nuclear:
     - Enlargement
     - Pallor
     - Grooves
     - Overlap
   - Rare:
     - Pseudo-inclusions
   - Absent:
     - Papillae

2. The use of molecular diagnostic techniques in thyroid FNA diagnosis.

   Such as: the molecular features of NIFTP are:
   RAS mutations
   BRAF K601E mutations
   PPAR gamma fusions
   THADA fusions
   BRAF V600E mutations are absent.
   The BRAF V600E mutations negative is most important. If there is a BRAF V600E mutation, NIFTP should be excluded.

HPV screening is another hot topic that I am especially interested in.
In Australia, the Cancer Council of NSW and the Victorian Cytology Service of Australia published its first report on the COMPASS trial. This study has demonstrated that the HPV screening is more accurate and effective at detecting high-grade cervical abnormalities than ThinPrep LBC

On 1st of December 2017, there will be important and significant changes to the National Cervical Screening Program in Australia. The key aspects of these changes include:

1. The replacement of the two yearly Pap test with a five yearly HPV cervical screening test.
2. Changing the screening age range to 25-74 years
3. The liquid based Pap test will become a diagnostic test rather than a screening test.

In the United States, LBC with either reflex HPV or HPV Co-Testing is going very well, but Primary HPV testing is very slowly being used and is certainly less than 5% of all tests offered.

The main reason for lacking interest in primary HPV screening in the U.S. is due to the fact that the HPV Co-testing does show a slight increase in sensitivity for the detection of CIN2+ lesions, but has a slightly higher negative predictive value for high grade lesions over the next 3-5 years.

I would like to thank the NCPTS for the opportunity of scholarship funding to attend the conference.

Reports for 2016 Courses and Conferences

Conference: **Australian Society of Cytology 46th Annual Scientific and Business Meeting.**
Date and Venue: **21st- 24th October 2016. Rydges Hotel Melbourne.**
Report provided by: **Cathy Rowberry, Cytotechnologist, Medlab Central, Palmerston North.**

This year's conference had a lot to do with molecular techniques in Cytopathology.
Fernando C Schmitt (MD, PhD, FIAC) from the Laboratoire National de Sante' Luxembourg, IPATIMUP and Medical Faculty of Porto University in Portugal, gave a brilliant talk on the importance of FNA cytology for recognizing the exact makeup of individual cancer cells and the subsequent identification of specific drugs which can be used for the best outcome for the patient. FNAs are non-invasive and provide superior results in terms of DNA quality when compared with formalin-fixed paraffin-embedded tissue. Collection and preservation of good quality/quantity is a priority so further molecular studies can be done.

Dr Julia Brotherton's (Victorian Cytology Service, Melbourne) talk was an update on HPV immunization. World-wide, 232 million vaccines have been given. Studies have shown high levels of antibodies sustained for 10 years after immunization and a decline of genital warts by 80-90% in the vaccinated population. Also there is evidence of herd immunity across men and women after immunizing women only.

Jennifer Ross from the Royal College of Pathologists of Australasia Quality Assurance Programme (RCPA QAP) NSW reported on the results of the "RCPA QAP" individual Quality Assurance Programme that we have all been doing in New Zealand. The report showed high participant performance with a low rate of major errors. Acceptable/ Target responses were 90+% and major errors less than 1.8%. The ASC is now looking at running a similar external quality control programme because the New Zealand programme has been so successful.

It was also wonderful to see Dr Gabriele Medley (AM) recognized for her dedication to Cytology.
The conference made you realize what a long way we've come and that there's still a lot more development happening. For example there is now a microscope camera adapter for your iPhone (mobile cell phone telemicroscopy).

Thanks to the NCPTS for allowing me to attend a very interesting conference.

Conference: **Australian Society of Cytology 46th Annual Business and Scientific Meeting**
Dates and Venue**: October 2016, Rydges Hotel, Melbourne.**
Report provided by: **Sheryl Worthington, Cytoscientist. ADHB APS Auckland**.

Application of Cytological Samples in the Era of Personalized Medicine.

-Fernando C Schmitt.

-Laboratoire National de Santé, Luxembourg; IPATIMUP and Medical Faculty of Porto University, Portugal.

I found this presentation by Dr Schmitt one of the most interesting of the conference.

He first talked about fresh cytology samples being used for genetic testing. He then went on to talk about also harvesting cells from previously fixed and stained slides to perform genetic testing.

They found that the different fixation methods for cytological material provided well preserved DNA quality as opposed to histologically prepared formalin fixed and paraffin embedded samples.

Next generation sequencing (NGS) can then be used to detect many genetic alterations in the one test. This may then show a mutation that can be targeted with a drug specific for that person.

Dr Schmitt also talked about his group performing NGS on cytological material from metastatic tumours and comparing it with the genetic profile of the primary tumour.

He showed us how metastatic disease may have different gene mutations from the primary tumour. And that they have found it is more important to treat the current (metastatic) tumour than find the primary. Then use Fine Needle Aspiration (FNA) to monitor the tumour and its current gene mutation.

Dr Schmitt's prediction is that the role of cytology in the future will involve the minimally invasive collection of samples using FNA to provide morphological diagnosis of the collected cells together with a molecular assessment to provide information for prognosis and gene targeted therapies.

I wish to thank the NCPTS for the opportunity the scholarship funding has provided me to attend this very informative conference in the wonderful city of Melbourne.

Conference: **Australian Society of Cytology 46th Annual Business and Scientific** MeetingDate and Venue: **October 2016, Rydges, Melbourne**.
Report provided by: **Vicki Goodhand, Cytoscientist, Anatomical Pathology Services, Auckland.**

This year's ASC annual conference theme "Cytology – a new twist" was well reflected in the content of the presentations as well as the feeling of the cytology community as we embark on a journey with many twists and turns.

The cocktail party at the "Old Melbourne Gaol" provided an interesting and entertaining ice breaker to the event, complete with cytologically inspired graffiti in one cell!

Both international speakers proved interesting and inspiring on different levels. Fernando Schmitt from Luxembourg was a joy to listen to, his talk "Application of Cytological Samples in the Era of Personalized Medicine" promoted the role of cytology in next generation sequencing, with cell blocks, smears and liquid based preparations all providing suitable material for NGS. He spoke of the need for cytology to enhance molecular testing, where one mutation on a particular gene may be expressed in a number of diseases, cytology can assist in the diagnosis based on the morphology. His next presentation regarding Intra-Tumour Heterogeneity and its role in effective cancer treatment was fascinating. He spoke of how as tumours metastasize there are modifications at a genetic level - the metastatic tumour expresses different genetic mutations to the primary lesion thus requiring different targeted therapies to be effective. Several factors which may include the original targeted therapy can influence the tumour heterogeneity.
Gladwyn Leiman, originally from South Africa and now of Vermont, America shared with us her extensive knowledge and experience in Publishing in Cytology. Later in the conference she gave us her ideas on 'How to "talk" Cytology', some useful tools for describing and writing a diagnosis based on what you see. In this order - background, cellularity, cell groupings, size, shape, cytoplasm, nucleus, chromatin and finally nucleoli. She finished off with some interesting case studies.

There was not surprisingly a considerable focus on the imminent Australian Renewal, the transition to HPV testing as a primary test and their implementation of a National Cervical Screening Register.

Julia Brotherton of the Victorian Cytology Service spoke about the HPV vaccine and its success in Australia. This appealed to me on a personal level as I contemplate vaccinating my daughter in the future. Even as a scientist it is difficult to ignore all the 'horror stories' in the media – I was particularly interested to learn of the study which demonstrated there was no difference in the incidence of auto-immune disease between vaccinated and unvaccinated people. Her data also detailed how boys benefit from the HPV vaccine via herd immunity and there is no real advantage of vaccinating both males and females.

I really enjoyed my first experience at an Australian Cytology Conference and would like to thank you for awarding me the scholarship money enabling me to attend this year. I have learnt a great deal and will take this with me as I continue to learn.

Conference: **Australian Society of Cytology 46th Annual Scientific and Business Meeting**
Dates and Venue: **October 2016, Melbourne**
Report provided by: **May Du, APS Cytology, ADHB**

The above conference I attended was a very intensive two and a half day conference. It covered topics of both Gynae and Non-Gynae cytology, using morphology as well as molecular biology as diagnostic tools. Cytology diagnoses have been improved by moving from a cellular level to more sensitive and specific molecular levels. The conventional Pap test for cervical screening will be replaced by HPV testing, which drew lots of interest from all conference attendants. The following is a summary of **Ian Hammond's** talk regarding the renewed Australian National Cervical Screening Program.

"The Renewed National Cervical Screening Program and the New Guidelines: An Update"
By Ian Hammond (Chair, Steering Committee for the Renewal Implementation Project, National

Cervical Screening Program, Dept. of Health Australia. Clinical Professor, School of Women's and Infants' Health, University of Western Australia)

The Australian National Cervical Screening Program (NCSP) has offered Pap smears every 2 years for women aged between 18 and 69 years since 1991. Since 1991 the incidence and mortality rates have decreased by 50%. But further decreases in disease rates have not occurred since 2003. Planning for a "renewal" of the NCSP commenced in 2011. The new recommendation is that a primary HPV test with partial genotyping for HPV 16 and 18 and reflex liquid based Cytology (LBC), should replace the current conventional Pap test for cervical screening. Under the renewed NCSP, women aged between 25 to 74 years will undertake an HPV test every 5 years. The new program will commence on 1st of May, 2017.
This new program will result in up to a 30% reduction in incidence and mortality from cervical cancer, and a later age of onset and cessation of screening with fewer lifetime screening tests. A "Steering Committee for the Renewal Implementation Project (SCRIP)" is working closely with members of the Cervical Renewal Taskforce for a successful implementation. Some areas of interest include

- Pathology standards and performance measures for cervical screening
- HPV test platforms
- Pathology Workforce Project, including online training for LBC, educational resources of diagnostic LBC for new cytologists, providing support for current cytologists through transition, keeping updates of the project available.
- A new cervical screening pathway that includes recommendations from the NCSP and guidelines for patient management, after screen detected abnormalities.
- Communication with referring health practitioners.

I am very much appreciated and would like to thank the NCPTS for awarding me a scholarship to attend this conference.

Conference: **Australian Society of Cytology 46th Annual Scientific and Business Meeting**
Date and Venue: **Oct.2016 at Rydges Hotel, Melbourne**
Report by: **Lisa Ding Cytoscientist in APS, Auckland**

I was fortunate to be awarded a National Cervical Pathology Training Service (NCPTS) scholarship to attend the 46th Annual Scientific and Business Meeting of the Australian Society of Cytology. It was three days of intensive educational meetings that were full of informative and interesting presentations.

With the implementation of the new National Cervical Screening Programme (NCSP) confirmed for 1 May 2017 in Australia, it was no surprise that the gynaecology section of the conference was largely focused on human papillomavirus (HPV) testing for primary screening. Some of the main points mentioned were the implications of the HPV screening on the NCSP and the impacts of HPV vaccination. Professor Ian Hammond from the School of Women's and Infants' Health in the University of Western Australia gave a comprehensive presentation on The Renewed National Cervical Screening Program and the New Management Guidelines: An Update. He briefly talked about the history of the NCSP and highlighted some interesting points of the renewed programme. Since the introduction of the NCSP IN 1991, the incidence and mortality rates for cervical cancer have both decreased by approximately 50 percent in Australia. Scientific research has proved that

virtually all cervical cancers arise from persisting HPV infections. Two types, HPV16 and HPV18, are attributed to 70% of all cervical cancer cases. Therefore, the objective of cervical screening is not just to identify the lesions but to identify the persisting infection, the true cancer precursor. With the national HPV vaccination programme, it is predicted that there will be a further reduction in incidence and mortality from cervical cancer. These and other factors such as the potential for greater cost effectiveness, led to the commencement of planning for 'renewal' of the NCSP in 2011. The aim of the renewal is to ensure the continuing success of the program, particularly making sure that all Australian women have access to the cervical screening program.

The renewed programme recommends HPV testing with reflex liquid based cytology (LBC) instead of the current use of conventional cytology (Pap test) for cervical screening. Women aged 25 to 74 years are eligible to undertake a HPV test every 5 years. The renewed programme will have a significant impact upon the many experienced cytologists. In light of this, Mrs. Gillian Phillips the Project officer from NCSP Pathology Workforce presented an interesting talk on the Future for Cytologists.

A large section of the non-gynaecology presentation was on Endobronchial ultrasound guided transbronchial needle aspiration (EBUS-TBNA for short). EBUS-TBNA is a special technique used to take samples of body tissue from inside the chest. It is a procedure with a bronchoscope fitted with an ultrasound probe and uses a 22G needle for sampling. Introduced in 2004, it is mainly used for lymph-node staging, the diagnosis of lung or mediastinal cancer, the diagnosis of unexplained mediastinal and hilar lymphadenopathy as well as other mediastinal lesions. This technique is a minimally invasive procedure that can be used to simultaneously diagnose, stage, and obtain cellular material for ancillary studies. However some potential pitfalls in EBUS-TBNA may pose challenges in some cases, especially at the time of rapid on-site evaluation (ROSE). Dr Alpha Tsui from the Royal Melbourne Hospital gave an impressive talk on Difficult Problems and Pitfalls in EBUS-TBNA Cytology. The common problems include reactive changes verses malignancy, subtyping carcinoma, neuroendocrine tumours and poorly differentiated malignancy. Dr.Tsui talked in detail about each problem and the causes of false positive results and false negative results. The importance of patient clinical history, well preserved samples and immunostaining was also emphasized in order to avoid the pitfalls.

I wish to thank the NCPTS for awarding me the scholarship and providing me the opportunity to attend this informative conference that I thoroughly enjoyed.

Conference: Australian Society of Cytology 46th Annual Scientific and Business Meeting.

Date and Venue: 21st- 24th October 2016. Rydges Hotel Melbourne.

Report provided by: Nirup Kumar Cytoscientist, APS Community Laboratory, Auckland

I was very fortunate to be awarded this scholarship to attend the ASC annual scientific and business meeting in Melbourne, Australia. "A New Twist" was the theme which was highlighted throughout the meeting by most of the speakers where the application of molecular techniques in pathology has changed the practice of cytology.

I would like to start off with the cocktail party which was very interesting. It was held at an ex prison which has a lot of history attached to it. We were escorted by the police officers (in full uniform) to the venue. They were very entertaining and gave us a presentation of some of the previous prisoners and how they were looked after. It was a good and entertaining cocktail party.

The actual meeting was also very educational, which highlighted a lot of challenges and involvements that have recently taken place in the cytology morphology field. It was an intense 3 day meeting involving a lot of different topics, most of which I found interesting and valuable. The

international speakers were not just friendly but superb in their presentations, especially Dr Fernando Schmitt, Dr Liron Pantonowitz and Dr Gladwyn Leiman.
There were numerous valuable educational presentations ranging from:

- EBUS – The scientist's role in EBUS procedure; difficult problems and pitfalls in EBUS; Lung oncology in respect to EBUS.
- New Guidelines of the National Cervical Screening Programme.
- HPV Vaccine and compass trial update.
- Telecytology --- Advances and Challenges.
- And many more.

EBUS (Endobronchial Ultrasound Bronchoscopy) was the topic that caught my attention the most. This is a minimally invasive but highly effective procedure used to diagnose lung cancer, infections and other diseases causing enlarged lymph nodes in the chest.
"SIGH OUT WITH THE PROFESSOR" was also very interesting where 15 unique cases were presented. The outcome of every case generated interesting discussion. Immunohistochemistry was found to be an essential tool for making a correct diagnosis.
Overall all the papers were well presented and topics well covered.
I would like to convey my sincere thanks to the NCPTS for kindly sponsoring me and giving me the opportunity to attend this conference. It was a huge learning curve and I hope to apply these advancements in the ever changing field in cytology in my daily practice.

Reports for 2015 Courses and Conferences

Conference: **Australian Society of Cytology 42nd Annual Business and Scientific Meeting.**
Dates &Venue: **16-19th October 2015. Brisbane Convention Centre, Queensland, Australia.**
Report provided by: **Lorna Whyte. Cytoscientist. Anatomical Pathology Services, Auckland.**

The title of the conference was" Art vs Science" and all International and invited speakers were encouraged to include art of some form into their presentation. Many were very good at setting the theme by providing images of their laboratories and cities for us to visualise. Scientist entered a number of extremely interesting "art works" using petrie dishes, cells from soft tissue and blood cells. Ms Mahoney Archer, a local artist, was invited in particular to present a display of cytological images and miscellaneous objects in art format that were extremely interesting and challenging to the eye at first sight.

I found the presentation from Annabelle Farnsworth from Douglas Hanly Moir Pathology, Sydney, the most interesting and the closest to my understanding of the meaning of Cytology as an art form. She entitled it Art to Science.

As Richard DeMay explains: "The art of Cytology consists in refining our visual diagnostic criteria much as the connoisseur refines his or her taste in fine art, eg. elements of contour, proportion and light. The science of cytopathology consists in building simple, reproducible diagnostic criteria." Annabelle went back in time to the days of George Papanicolaou and the development of the descriptive art-like approach which was universally adopted as a great scientific breakthrough in early diagnosis of cervical cancers. In fact no other test has been as successful as the Pap smear in eradicating cancer.

Scientists and pathologists were educated to take a more scientific approach to reporting of conventional gynaecological cytology and the emerging of population screening and the importance

of quality assurance was developed. The Australian Gynaecological Cytology Society is a direct result of the science behind the screening program.

Annabelle explained cervical cytology can be seen as the victim of its own success. The development of HPV testing and the HPV vaccine are a result of its scientific developments. The increasing use of biomarkers for the detection of abnormal cells in cervical cytology and cervical cancer screening are not "arts" but sciences.

Cervical screening is set to change and it is expected that gynaecological cytology will decrease in volume over the next few years. The scientific knowledge which has been so important in areas of quality control, population screening or interpretation of cellular appearances will still remain crucial to the success of the new program.

Thank you very much to the New Zealand NCPTS for allowing me the opportunity to attend the conference. It was both sad and enlightening to hear of the new developments in Australia involving the introduction of HPV testing and the resulting effects it will have on many laboratories within the wider country who perform gynae cytology only, for the National Cytology Screening program.
Art vs Science or Art to Science, whichever we believe, will always hold a special place in my heart as an integral part of Cytology.

Conference**: Australian Society of Cytology 45th Annual Scientific and Business Meeting. Art vs Science**
Dates and Venue: **16-19 October 2015, Brisbane Convention Centre**
Report provided by: **Krish Pillay, Cytoscientist, APS Community Laboratory- Auckland**

I was fortunate to be awarded a scholarship to attend the ASC 45th Annual Scientific and Business Meeting. The theme that permeated throughout this conference was 'Art versus Science'. By the final day, it was clearly evident that Cytology is indeed a combination of art and science, not Art vs Science! It was an intensive 3 days of presentations and participation, marginally overshadowed by the potential loss of cytology jobs due to the impending implementation of primary HrHPV testing. This report focuses on one particular talk relating to HPV infection and cancer.

Preventing HPV infection and related Cancers.
Professor Ian Frazer, School of Medicine, University of Queensland.
Cancer is not merely lump in the body, it is a disease that migrates, evolves, invades organs, destroys tissues and resists drugs. Subsequent research post 1980 (Harald Zur Hausen), has demonstrated that practically all cervical squamous and adenocarcinomas arise from persisting infection with one of the 14 high risk HPV types, with about 70% attributable to HPV16 and HPV18. 50% of tonsillar epithelial cancers and 30% of anogenital cancers are associated with persisting HPV infection.

David Hume (1711-1776) and Sir William Oster (1849-1919) believed that cancer is a disease of aging and healthy aging provides a good quality of life. What does this depend on and why do we develop cancer? 10% is genetic and the rest is environmental (what we eat, drink and how we behave).So how do we prevent cancer? Stop smoking, control obesity, drink less alcohol and limit sun exposure. Prevent infections from: HPV, HBV, EBV, HepC, HIV, HTLV, Polyoma virus and Helicobacter Pylori. Some of the treatment modalities include amongst others: Surgery, radiotherapy, chemotherapy and immunotherapy (current and topical).
Preventing HPV infections

- High risk HPV infections are transmitted sexually and the high risk subtypes identified are 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68

- Extremely common with more than 50% of young women and men acquiring infection within 3 years of sexual activity
- Most infections resolve without apparent disease over 5 years
- Major problems are the persistent HPV infections, especially 16 and 18, which lead to cancer. These can be detected either through cervical cytology or by testing for HPV DNA, the latter to determine specific subtypes.

HPV vaccines to protect against all HPV types commonly associated with cervical cancer

- ✓ Are based on virus-like particles produced in-vitro by expressing the major viral capsid protein L1 in yeast or insect cells.
- ✓ Vaccines are conventional, adjuvant vaccines which induce HPV type specific immunity.
- ✓ Two currently available vaccines induce immunity to HPV 16 and HPV 18 (squamous carcinoma and adenocarcinoma) and one to HPV 6 and HPV 11 as well (genital warts).
- ✓ Bivalent and quadrivalent vaccines have been extensively deployed in the developed world: school-based programs aimed at 12-15 year olds: 3 doses over 6 months. Research is currently underway to determine if 2 doses will be sufficient to confer immunity.
- ✓ Vaccines and vaccination will not eradicate current HPV infections.
- ✓ In Australia, there has been a substantial reduction in HPV-associated genital warts in men and women under 30 years of age since the introduction of a universal immunisation program for girls aged 12 and over, and a decrease in CIN 2-3 lesions associated with HPV infections.
- ✓ Limited vaccination data is available in NZ.
- ✓ A new 9-valent vaccine is currently being made available and will protect against most HPV types commonly associated with cervical cancer: HPV types 16,18,31,33,45,52,56 and 6,11.

The urgent need in cervical cancer control is for the deployment of the available prophylactic vaccines in the developing world, where most of the 270,000 annual deaths from cervical cancer occur. This plan is being assisted by the differential vaccine pricing, and by support from the Global Alliance for Vaccine Initiative.

I would sincerely like to thank the NCPTS for kindly providing me with the funds to attend this conference. It was a huge learning curve and I hope to contribute to the advancement in the ever changing field of Cytology.

Conference: **Institute of Biomedical Sciences (IBMS) Scientific Congress -**
Dates and Venue: **September 2015, Birmingham International Conference Centre**
Report provided by: **Jan Tew, Section Leader, Histology. LabPlus, ADHB.**

The IBMS congress attracts international speakers and attendees and runs on a bi-annual basis. The IBMS and New Zealand Institute of Medical Laboratory Scientists (NZIMLS) are working together to allow NZ scientists access to the IBMS vocational qualifications, which are the focus of this report.

There were some amazing histology technology advances on display in the trade hall, these in combination with the changes to the National Health Service Cervical Screening Program (NHSCSP) have led many scientists to consider role extension and additional vocational training and qualifications. This meant the focus of the conference, for the Cellular Pathology and Cytology programs, was on training and education.

There are several options for training and education for UK scientists, with role extension into areas more usually held by pathologists. These are being rigorously reviewed by IBMS and the UK Royal

College of Pathologists (RCPath) and are therefore endorsed by both. These roles include Advanced Practitioner Status in Histology Dissection and Cytology Reporting, which are well reported.

There is a new qualification in Histology reporting that has reached its final examination year and was covered during several presentations. The exam results were not available at the time of the conference (exams had been held the previous week) but it is interesting to note that there was a higher uptake of candidates from a cytology background than a histology background. There is close monitoring of this qualification by IBMS, RCPath and the Department of Health.

Each candidate chooses an area of expertise. Currently the options are gastrointestinal or gynaecological histology reporting. It should be noted that this is a 3 year course with exams in years 1 and 3. This is shorter than medical training program of 5 years but focuses on a single speciality. There are stringent selection criteria and complex annual assessments to ensure this qualification is relevant and acceptable to employers. During the first intake in 2012 there were 29 candidates accepted, by the end of the first year 19 sat the Y1 exam, by 2015 only 5 sat the Y3 exam. It will be interesting to see the pass rate and whether these new roles will be accepted in all laboratories.

It will also be interesting to see how these roles might be applied in the New Zealand setting. The UK has struggled to recruit sufficient pathologists for the workload and this has led to a lot of support from pathologists for scientist role extension. In New Zealand, however there is much better recruitment of pathologists and therefore less need to extend scientists to back fill vacant positions. However, with increasing technological advancements in histology, scientists will want to extend into other areas.

The newly recruited International Development Consultant arranged for several international attendees from Europe, Australia, Africa and several Arab States to meet to discuss issues affecting non-UK scientists. It was interesting to note we all face very similar issues around accreditation for laboratories and personal and professional development for scientists.

I intend to cover the content of these talks in more detail at the Histology Special Interest Group in Christchurch (November 2015) if there is further interest.

Many thanks to the NCPTS for the opportunity to attend this valuable conference.

Conference: **Australian Society of Cytology 45th Annual Business and Scientific Meeting**
Date and Venue: **October 2015, Brisbane Convention Centre**
Report provided by: **Amy Wakelin, Cytoscientist, Anatomical Pathology Services, Auckland.**

The theme of this year's Australian Society of Cytology Annual conference was "Art versus Science". Appropriately the cocktail evening and conference dinner were held at Brisbane's Gallery of Modern Art (GOMA). Most of the speakers at the conference alluded to the relationship between art and science in their talks with the inclusion of some rather unlikely but magnificent artworks. The conference had a strong focus on urine cytology, HPV testing and the future of gynaecological cytology in light of Australia's impending move to HPV as their primary screening tool.

The Keynote lecture was from Professor Ian Frazer, School of Medicine, The University of Queensland. He gave a very eloquent talk on "Preventing HPV Infection and Related Cancers". He

delved into the history of the discovery of HPV as a causative agent in cervical cancer, the development of the HPV vaccine and HPV's role in head and neck squamous cell cancers. Finally he talked of his hopes that one day the virus may be all but eradicated from the human population.
A large section of the conference was on urine cytology. Most of the lectures were presented by Dr Rana Hoda, Papanicolaou Cytology Lab, Weill Cornell, New York. She introduced the Paris System (TPS) for reporting urinary cytology and gave a very comprehensive talk on each of its six categories:

- Negative for HGUC
- Atypical Urothelial Cells
- Suspicious for HGUC
- High Grade Urothelial Carcinoma
- Low Grade Urothelial Neoplasia
- Other malignancies – primary/secondary

The morphology of each category was discussed and examples of each category were shown, both straight forward and challenging.

Dr John Yaxley, Wesley Urology Clinic, Brisbane, Queensland, gave a talk on clinical management of urothelial malignancies.

The lectures the following day were mainly centred on HPV testing. Included was a very interesting talk by Dr Michelle Nottage on the clinical importance of HPV testing in head and neck cancer. HPV has only been widely supported as a causative agent in head and neck cancers since 2007. It causes a type of head and neck cancer that is clinically very distinct from its non-HPV related counterpart. This detection of HPV in head and neck cancers is important as there is a marked difference in prognosis for the patient.

The final day's lectures covered Immunocytochemistry, a nice overview of a subject that I previously knew very little about. Finally three cytologists also gave their views on the impact of Renewal (HPV primary testing) on their cytology laboratories. Their talks were very informative and provided an insight into a prospect that will face many cytology laboratories in the future.

I would like to thank The National Cervical Pathology Training Service for the opportunity to attend this wonderful conference.

Conference: **7th National Histotechnology Conference**
Dates and Venue: **5-7 June 2015, Brisbane Convention and Exhibition Centre**
Report provided by: **Amanda Bowden, Histoscientist. Aotea Pathology, Wellington**

This year the National Histotechnology Conference partnered with the Asia Pacific International Academy of Pathology (APIAP) providing two separate conference programs running in parallel. The bringing together of pathologists and scientists was interesting and there was plenty of scope to mingle.

As part of this conference I attended an interactive digital pathology workshop at the Queensland University of Technology run by Dr Eric Glassy, who was very entertaining and knowledgeable. The workshop covered many aspects of digital pathology from slide scanning to image management and the future of digital pathology. We were introduced to QR codes and the many websites and applications available for use and currently used by pathologists.

Other presentations I found of interest were Dr Chan's immunohistochemistry talk and case presentations, where he discussed the importance of some currently used immunohistochemistry tests as still being the gold standard.

The move towards training scientists to perform surgical cut-up is another very current topic which was presented, with courses available in Australia being discussed.

In summary there is a lot more involved in digital pathology than I imagined. The benefits are many but there is extensive quality control required and many considerations to be undertaken prior to implementation ie workflow, interfacing, imaging standards, back-ups and privacy considerations. Currently in Europe and Canada a primary diagnosis is allowed however in other countries digital pathology is not yet FDA approved. Key areas which digital pathology is in current use for are teaching, frozen section reporting, quality assurance, and consultations. In the future it is expected that there will be an improved return on investment. Faster, better, cheaper, more efficient and more integrated!

Although there is a move towards increased use of molecular testing in Histology ie Braf, EGFR, key immunohistochemical tests are still the gold standard.