

QML PATHOLOGY

newsletter May 2010

>>Liquid-Based Gynaecologic and Non-Gynaecologic Cytology
Dr Bryan Knight, Pathologist in Charge, Cytology

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Liquid-Based Gynaecologic Cytology and Image Analysis at QML Pathology

Liquid-based cytology and image analysis to enhance accuracy of cytology screening is not new to QML Pathology. The first commercially successful and widely implemented liquid-based system was the ThinPrep™ method developed in Massachusetts, USA. Over the last 15 years, it has found very wide acceptance, particularly in the United States. Three years ago, the ThinPrep™ method was introduced at QML Pathology and approximately 20% of Pap smears are currently reported using ThinPrep™ technology. All members of the QML Pathology cytology staff are specially trained and undergo proficiency testing in the use of the liquid-based methodology.

Liquid-based cytology samples offer several important advantages over conventional Pap smears:

- The sample collected from the patients is placed directly into a vial containing a cellular fixative
- The monolayer technique allows multiple, very similar (if not identical) smears to be made from one specimen
- The sample is easier to prepare than the conventional smear
- Labelling and handling of the specimen is less problematic for the staff in the physicians' office, and transport of the specimen is easier and safer for the laboratory courier
- The entire cellular specimen is saved, whereas, using the conventional method, the cells remaining on the sampling device are thrown out
- The cells are better preserved than by the conventional spray fixatives used for conventional smears
- The preparation of the monolayer smear optimises the cellular preparation for

microscopic evaluation, enabling removal of excess mucus, blood or inflammatory pus cells

- The multiple smears can then be used for additional immuno-histochemical staining
- The fixed cell suspension can be used for molecular studies, including HPV DNA typing if necessary
- The monolayer of cells is more amenable to computerised image analysis, enabling precise scientific parameters to be applied in the diagnosis of cellular atypia.

In the future, image analysis may replace the synapses in the human eye-brain pathway. Human interpretation is sometimes subjective, and inevitably, occasional evaluations are subject to a small margin of error.

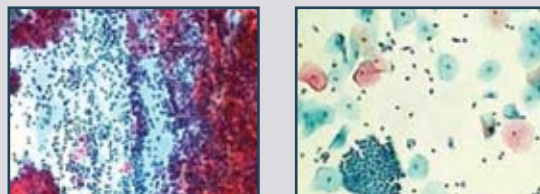


Figure 1: Conventional smear (left) and liquid-based slide (right). The less crowded liquid-based cytology is more easily examined.

At QML Pathology, the ThinPrep™ specimens are generally split samples, with testing also done by the routine Papanicolaou method. The liquid-based monolayer samples are evaluated manually and using the ThinPrep™ image analysis system. Very good correlation between the two methods is achieved in our hands, but the liquid-based sample is sometimes diagnostic when the conventional smear is not. Although ThinPrep™ is a well established methodology and is the market leader in this arena in North America, the method has received stiff competition from a similar but significantly different liquid-based method trading as SurePath™.

>> Liquid-Based Gynaecologic and Non-Gynaecologic Cytology

Dr Bryan Knight, Pathologist in Charge, Cytology

Many leading academic centres in the United Kingdom, Europe and more recently North America have either switched to SurePath™ or favoured this alternative system at the time of implementing liquid-based cytology.



Figure 2: QML Pathology staff member using image analysis equipment

The development of SurePath™ out of Seattle in the US was pioneered by Stanley and Florence Patton, each of whom were doyens in their own right in the field of gynaecologic cytology. The SurePath™ system is currently under evaluation and in an implementation phase for introduction at QML Pathology. Both systems have FDA approval in the United States, but the limitations and conditions placed by the FDA on laboratories using these two systems differ. There are many advantages to SurePath™ technology and its introduction at QML Pathology can only enhance the quality of cytology reporting.

During the early phase of implementation at QML Pathology, use of SurePath™ technology has been used on split samples, enabling a comparison of the outcome with the result obtained using the standard Papanicolaou method. Early validation testing has been restricted to specimens obtained from a few cooperating physicians. As experience with the system is gained, and it is demonstrated that there is an improvement in the quality of our service, it is anticipated that the SurePath™ methodology will roll out to many more women.

Liquid-Based Non-Gynaecologic Cytology at QML Pathology

The ThinPrep™ liquid-based technology is also widely applied to non-gynaecologic cytology specimens in the United States and in Europe. Increasingly, this technology will be rolled out at QML Pathology. The method is particularly useful to prepare high quality smears of cyst aspirates from fine needle aspiration specimens of the breast. No longer is it necessary to spread cyst fluid onto a slide and wait for it to dry out. The liquid-based method allows the aspirating physician to simply place the fluid into the liquid fixative and send it to the laboratory. Far better preparations are achieved because all of the cells are available for evaluation.

Introduction of the SurePath™ system significantly reduce the time for a liquid-based preparation

Similarly, the interpretation of very heavily bloodstained specimens from thyroid FNAs are much improved by using liquid-based cytology. (Cibas, E.S., personal communication, November 14 2009)



Figure 3: Traditional smear (left) and SurePath™ preparation from Fibro-cystic disease (right). The more concentrated cells in this liquid-based cytology make interpretation more straight forward.

>> Liquid-Based Gynaecologic and Non-Gynaecologic Cytology

Dr Bryan Knight, Pathologist in Charge, Cytology

Immuno-Histochemical Profiling in Cytology

The role of immuno-histochemistry (IHC) in the profiling of cells is particularly well accepted in conventional histology. The use of a wide range of antibodies allows identification of many proteins that a cell may express. A simple panel of IHC tests can effectively and definitively identify the protein expression profile of tumour cells, and is widely used in the histologic diagnosis of cancer today.

The application of IHC to cytology requires several refinements and special techniques in the laboratory. One common method of applying IHC to cytology specimens is to prepare a cell block. This entails using a centrifuge to spin down cells from the needle rinse specimen. The cell button so produced is re-suspended in plasma or albumin, which is then clotted to produce a cell block. The cells caught up in the clot are then processed over night for histology as if they were a tissue specimen. If the needle rinse contains sufficient cells, sections of the cell block can be tested using IHC techniques.

Recently, a method of lifting cells off the smears on the glass slides has been introduced at QML Pathology. This enables a very small and limited cytology sample to be tested using IHC. Cells already stained and evaluated for their morphology, can be re-processed and evaluated for the protein-expression profile.

In this innovative application, the cells smeared on the glass slides are entrapped in a special membrane placed on to the surface of the smear. The membrane bearing the cells is lifted from the slide. The cells are then placed on a new slide and can be stained using specially adapted IHC protocols. If there are sufficient cells in a smear, the membrane can be cut into several small pieces and the pieces

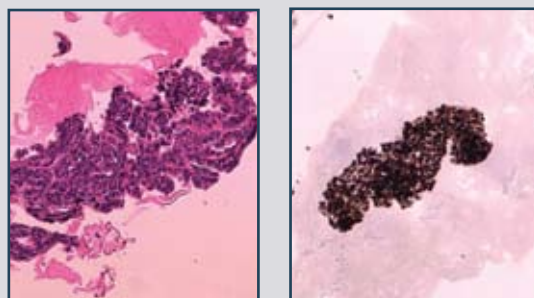


Figure 4: Breast cancer cells stained with Haematoxylin and Eosin (left), and by IHC for ER (positive)

placed on several slides, allowing several different IHC tests to be performed on cells from one smear.

A recently reported case history is illustrative of the value of this technique. A smear made from a lymph node aspirate indicated that the node was involved by metastatic disease. Unfortunately, only one smear contained the malignant cells. The cells were lifted from the smear and four new slides were produced. These were stained using IHC for expression of cytokeratin, oestrogen receptors and two melanoma markers – S-100 protein and HMB 45. The cells were cytokeratin and ER positive and S-100 and HMB-45 negative. This patient was shown to have metastatic breast cancer, which was ER positive.



Dr Bryan Knight

BSc (Anatomy); MB,ChB; MMed
(Anatomical Pathology);
FIAC; ACAP; PhD

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“
SurePath™ Pap test will
the cost to the patient
ased Pap smear.”

>> QML Pathology's New Internationally Renowned Cytology Team

New Head of Cytology Laboratory

The Cytology Department at QML Pathology has undergone several changes in the last few months. Dr Bryan Knight, a Cytopathologist and Anatomical Pathologist working at the British Columbia Cancer Agency in Vancouver, Canada, was recruited as Head of the Cytology Department. Bryan is a Fellow of the International Academy of Cytology with special interests in liquid-based cytology, in the use of immuno-histochemical and molecular techniques, applications of image analysis in cytology and in virtual microscopy. The practice of cytology is rapidly evolving and Bryan believes the use of these emerging technologies heralds a vibrant and healthy future for cytology. He believes it is critical to keep up to date with these new technologies if cytopathology is to remain a significant discipline within laboratory medicine.

New Manager of Cytology Laboratory

We are pleased to announce that Gwenda Lawrence has filled the position of Cytology Laboratory Manager. She is an accomplished Laboratory Scientist, having practised cytology since 1981, mostly in New Zealand but also in the United Kingdom. Gwenda managed a

cytology laboratory for seven years, before moving into quality management. Gwenda has been recruited from Auckland where she has been working as an Accreditation Assessor for International Accreditation New Zealand (IANZ). In her role at IANZ, she took part in the assessment of standards of laboratory practice for the accreditation of laboratories. She has a Postgraduate Diploma in Health Service Management and is currently reading for two Masters degrees - one in Health Service Management and the other in Quality Systems, both at Massey University, New Zealand. We look forward to a future of continued high standards in our Cytology Laboratory.

The Cytology Laboratory Manager position was previously held by Jenny Ross (Halford). For many years Jenny was a lynch pin in the Cytology Laboratory, where she worked tirelessly to maintain very high diagnostic standards. She has recently been appointed Manager of the RCPA Cytopathology QAP Program and now is only able to work part time for QML Pathology. We are very pleased to be able to continue our association with Jenny, and are proud of her achievements and selection for this prestigious new role. It speaks very highly of the standards that she helped to maintain at QML Pathology over the last 23 years.

>> Your Quick Guide to our Cytopathologist Team



Dr Bryan Knight
Head of Cytology
Brisbane



Dr John Adkins
Consultant Histopathologist
Sunshine Coast, Gympie



Dr Tony Dare
Pathologist in Charge
Gold Coast, Northern Rivers



Dr Jenny Grew
Pathologist in Charge
Sunshine Coast, Gympie



Dr Gillian Ritchie
Consultant Histopathologist
Brisbane



Dr Jason Stone
Consultant Histopathologist
Brisbane



Dr Karien Treurnicht
Consultant Histopathologist
Sunshine Coast, Gympie



Dr Sally Williams
Consultant Histopathologist
Gold Coast, Northern Rivers



Dr Jeff Winslow
Consultant Histopathologist
Gold Coast, Northern Rivers

Infectious Diseases Report - Geographic Distribution - March 2010

ORGANISM	Regions (as per key below)															Total			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Mar	Feb	Jab	Dec
Adenovirus (not typed)	1	5	2	1			7		3		3				1	18	15	13	14
Adenovirus (typing pending)		1	1									1	1			4	9	10	8
Barmah Forest virus	3	4		1	1		1			3				2		14	18	23	21
Bordetella pertussis		17	14	3	1		25		12	7	37	14	8	10	7	155	170	215	233
Brucella species											1					1	0	0	0
Campylobacter jejuni																0	0	0	0
Chlamydia pneumoniae																0	0	0	0
Chlamydia trachomatis, not typed	84	128	43	26	6		107	2	49	35	165	56	8	40	19	768	794	682	560
Coxiella burnetii	1								1	1						3	8	4	2
Cryptococcus species			1				5									6	4	6	3
Cytomegalovirus (CMV)		12	2	3			10		9	1	22	8	1	3		71	75	71	61
Entamoeba histolytica							1							1		2	0	0	0
Enterovirus - not typed										1	1	2				4	1	1	2
Epstein-Barr virus (EBV)	6	24	9	4	3		26		14	8	36	7	5	6	5	153	147	148	117
Flavivirus unspecified	3	1		1	1	1					3	2		3	3	18	15	15	19
Hepatitis A virus									1		2				1	4	8	2	3
Hepatitis B virus	4	5	4		1		22		5	1	56	2	3	2	1	106	112	66	67
Hepatitis C virus	17	58	28	5		1	49		30	8	77	24	8	9	9	322	297	267	232
Hepatitis D virus																0	1	0	0
Hepatitis E virus																0	0	1	0
Herpes simplex Type 1	12	43	15	3	2		32		19	7	66	28	4	6	12	249	277	288	239
Herpes simplex Type 2	14	37	9	6	2		28		1	4	43	15	6	11	8	199	180	188	173
Herpes simplex virus - not typed																0	0	0	0
HIV-1	3	6					3		3						1	16	10	10	6
HTLV-1																0	0	0	0
Influenza A virus		6	3			1	6		1	1	4	3	1			26	25	11	12
Influenza B virus			1				1		2						1	5	2	1	0
Legionella pneumophila (all serogroups)																0	1	0	3
Legionella species									1			1				2	4	5	2
Leptospira species			1							1		1	1			4	2	3	0
Measles virus		1														1	0	0	0
Mumps virus												1				1	1	0	2
Mycoplasma pneumoniae		3	1				2		2		4					12	21	15	25
Neisseria gonorrhoeae	5	5	3				5		1	1	9	2		1		32	51	42	55
Parainfluenza virus Type 1		1	2				4		3	1	3	2				16	13	2	6
Parainfluenza virus Type 2		1							1							2	1	5	1
Parainfluenza virus Type 3							1									1		3	18
Parvovirus		1					2		1							4	4	5	7
Pneumocystis carinii									1			1				2	1	0	2
Respiratory Syncytial virus	2	7	6	1			11		6	2	13	13	1	13		75	27	24	22
Rickettsia - Spotted Fever Group	1			1												2	2	1	1
Ross River virus	6	12	9	6			19		16	41	17	13	1	22	23	185	25	16	13
Rubella virus																0	1	0	0
Salmonella paratyphi A																0	0	0	0
Salmonella paratyphi B											1					1	0	0	0
Salmonella typhi											1					1	0	0	0
Shigella dysenteriae																0	0	0	0
Shigella flexneri																0	0	0	0
Streptococcus Group A	8	12	3		3		3		9	9	5	3	3	3	1	62	51	67	54
Toxoplasma gondii																0	0	0	0
Treponema pallidum	27	11	4	3	2		31		9	5	40	5	7	20	2	166	123	114	129
Trichomonas vaginalis	10										2			5		17	19	13	14
Varicella Zoster virus	13	32	10	3	1		41		21	6	40	22	7	4	6	206	161	185	155
Yersinia enterocolitica																0		0	0
TOTAL	220	433	171	67	22	3	437	2	235	143	652	226	65	161	99	2936	2676	2522	2281

REGIONS

1 Cairns
2 Gold Coast/Northern Rivers
3 Ipswich

4 Mackay
5 Mount Isa
6 New England
7 North Brisbane Suburbs

8 Northern Territory
9 Redcliffe
10 Rockhampton
11 South Brisbane Suburbs

12 Sunshine Coast
13 Toowoomba
14 Townsville
15 Wide Bay/Burnett

February 2010 and further historical clinical data can be obtained by contacting your local Medical Liaison Officer

QML Pathology updates May 10

>> Pap Smear Kits

Please be advised that we will be combining our three Pap smear kits into one new combination kit containing a cervex brush, cytobrush, spatula and a slide with case.

Any practitioners requiring a **Rovers® Cervex-Brush® Combi** collection device will need to note this separately when ordering stock on the QML Pathology Supply Requisition Form.



Pap smear kit



Rovers® Cervex-Brush®

Surgical Audit

Please be aware that the end of the RACGP 2007 - 2010 Triennium is approaching. If you would like your Surgical Audit individual ALM finalised, please contact Jo Wilson-Farr, CPD Coordinator, on (07) 3121 4506 or email jo.wilsonfarr@qml.com.au.



No out-of-pocket pathology expenses for hospital inpatients referred to QML Pathology.

All major health fund holders, including Medibank Private and MBF, can now enjoy no out-of-pocket expenses for inpatient pathology tests performed by QML Pathology on Medicare Rebatable tests.



QML Pathology updates May 10

>> Doctor's Noticeboard



Dr Steven Hatcher, Orthopaedic Surgeon, has commenced at the QCOS. Dr Hatcher has special interests in disorders of the foot and ankle, and has recently undertaken a fellowship in advanced training in foot and ankle surgery, including ankle joint replacement, arthroscopic surgery, deformity correction and trauma. He also has a public appointment at the Queen Elizabeth II Hospital.

Address: Level 10, Suite 14, Evan Thomson Building, 24 Chasely St, Auchenflower
Phone: (07) 3721 8600
Fax: (07) 3721 8666

Dr Peter Devadason, Adult and Geriatric Psychiatrist will be consulting at Suite 31, Level 2, Silvertown Place, 101 Wickham Terrace, Spring Hill, from July 2010. He has special interests in mood, psychotic and anxiety disorders. He has undertaken advanced training in old age psychiatry, and is able to assess and manage people with dementia. Dr Devadason continues to work both in public and private practice, including half time work at The Prince Charles Hospital as a Consultant Psychogeriatrician.

Phone: (07) 3831 2233
Fax: (07) 3831 2244

GO Healthgroup

Introducing Associate Professor Samir Henalla, Dr Justin Nasser, Dr Ash Hanafy and Dr Sigit Pramono, who have recently commenced an Obstetrics and Gynaecology private practice.

A/Prof Henalla practiced for 25 years in both the NHS and UK private sector before moving to the Gold Coast Hospital as the Director of Obstetrics and Gynaecology. He is happy to receive referrals for general obstetrics and gynaecology, and has a special interest in pelvic floor dysfunction, as well as incontinence problems.

Dr Nasser is a Senior Staff Specialist at the Gold Coast Hospital and holds Academic titles at Bond and Griffith Universities. He has sub speciality qualifications in obstetric and gynaecological ultrasound, and has special interests in high-risk pregnancies, infertility and management of Pap smear abnormalities.

Prof Ehtesham Abdi, Clinical Lead, Cancer & Aged Care, Griffith University, has recommenced private practice as a Consultant Medical Oncologist, Clinical Haematologist and Palliative Care Physician at John Flynn Hospital. Practice details are:

Address: John Flynn Cancer Centre
Suite 6C, Fred MacKay House
Inland Drive, Tugun
Phone: (07) 5598 0211
Fax: (07) 5598 0227

Prof Abdi will continue to have a public hospital appointment at Tweed Cancer Care Unit.

Gold Coast Sessional Rooms Available

- Centre restricted to medical specialists and allied services
- Heart of medical precinct in Southport
- Close to Allamanda PH, Pacific Private PH and GCH
- Generous undercover parking
- Reception staff available subject to negotiation
- Competitive rates per session of full days

Phone: (07) 5531 0297

Dr Hanafy is currently an Obstetrician Gynaecologist at the Gold Coast Hospital and is the Women's Health Lead and Senior Lecturer at Griffith University Medical School. He welcomes referrals for both general obstetrics and gynaecology, including high-risk pregnancies, abnormal periods and Pap smears.

Dr Pramono is a Fellow of RANZCOG and is currently employed as a Staff Specialist in Obstetrics and Gynaecology at the Gold Coast Hospital. His special interests include minimally invasive surgery, hysteroscopic sterilisation techniques and the management of Pap smear abnormalities.

Address: Suite 9, Level 2, Pindara Place
13 Carrara St, Benowa
Phone: (07) 5597 5344
Fax: (07) 5597 5376

QML Pathology updates May 10

>> Pre-transfusion and Non-transfusion Related Blood Group Immunohaematology Labelling Requirements

The image shows two versions of a QML Pathology request form. The top form is the 'LABORATORY COPY' and the bottom is the 'PATIENT COPY'. Both forms include sections for patient information, test requests, clinical notes, and a declaration section for blood collection. The declaration section includes a checkbox for 'PERSON DRAWING BLOOD' and a signature line.

Request forms and samples must clearly identify the patient with at least two identifiers that match identically. For many years, it has been a requirement for the sample(s) to be signed by the person collecting the sample(s). The request form must now also contain a declaration statement that must be signed by the person collecting the patient's sample. QML Pathology request forms include the following declaration statement:

PERSON DRAWING BLOOD

I certify that the blood specimen(s) accompanying this request was drawn from the patient named above. I established the identity of this patient by direct inquiry and/or by inspection of wrist band and immediately upon the blood being drawn I labelled the specimen(s).

Signature

Transfusion Medicine is an essential part of medical practice and is critical to patient care. The Australian and New Zealand Society of Blood Transfusion (ANZSBT) is the specialist society in laboratory and clinical transfusion practice and has developed guidelines in areas of transfusion practice. NPAAC (National Pathology Accreditation Advisory Council) has therefore produced mandatory requirements in conjunction

with ANZSBT for the accreditation of transfusion laboratories. This document is used to assure the safety, quality and efficacy of transfusion testing, associated transfusion laboratory practice and non-transfusion related blood group immunohaematology testing, e.g., ante-natal screens. Accurate patient identification and sample labelling are crucial to patient safety.



QML Pathology updates May 10

New Collection Centres

Ashgrove

Highpoint Plaza
240 Waterworks Rd
Phone: (07) 3366 6875
Opening Hours:
7.00am – 12.30pm, 1.00pm – 3.00pm (Mon–Fri)

Beauresert

Beauresert Central Shopping Centre
Shop 5, 125 Brisbane St
Phone: (07) 5541 3463
Opening Hours:
7.00am – 4.00pm (Mon–Fri)

Brisbane City

CBD 7 Day Medical Centre
Renown Chambers
Level 1, 245 Albert St
Phone: (07) 3211 1287
Opening Hours:
7.30am – 12.30pm, 1.00pm – 3.30pm (Mon–Fri)

Cairns North

449 Draper St
Phone: (07) 4051 3978
Opening Hours:
7.45am – 12.00pm (Mon–Fri)

Carseldine

Carseldine Central Shopping Centre
Shop ST7, 735 Beams Rd
Phone: (07) 3862 7517
Opening Hours:
7.00am – 12.00pm, 12.30pm – 3.00pm (Mon–Fri)

Edens Landing

Edens Landing Shopping Centre
Shop 6, 125 Castile Cres
Phone: (07) 3299 7417
Opening Hours:
7.30am – 12.30pm (Mon–Fri)

Kewarra Beach

Shop 7
2 Cottlesloe Dve
Phone: (07) 4057 9631
Opening Hours:
7.45am – 12.00pm (Mon–Fri)

Loganlea

Unit 1, 60 Haig St
Phone: (07) 3299 6439
Opening Hours:
8.00am – 1.00pm (Mon–Fri)

Maryborough

Shop 1, 80 Bazaar St
Phone: (07) 4121 5862
Opening Hours:
7.30am – 12.00pm, 12.30pm – 3.00pm (Mon–Fri)
8.00am – 11.00am (Sat)

Mt Ommaney

Mt Ommaney Family Clinic
Mt Ommaney Shopping Centre
Shop 1, 171 Dandenong Rd
Phone: (07) 3715 6091
Opening Hours:
8.30am – 12.30pm, 1.00pm – 3.00pm (Mon–Fri)

Narangba Valley

Shop 1
31-35 Golden Wattle Dve
Phone: (07) 3385 6133
Opening Hours:
8.00am – 12.00pm (Mon–Fri)

North Rockhampton

Shop RS1D, Stockland Shopping Centre
Yaamba Rd
Phone: (07) 4927 5529
Opening Hours:
7.30am – 4.00pm (Mon–Fri)

Surfers Paradise

Shop G8, Piazza on the Boulevard
3221 Surfers Paradise Boulevard
Phone: (07) 5538 5828
Opening Hours:
7.00am – 12.30pm, 1.00pm – 7.00pm (Mon–Fri)
8.30am – 12.30pm, 1.00pm – 3.00pm (Sat)

Wamuran

1100 D'Aguilar Hwy
Phone: (07) 5496 6428
Opening Hours:
8.00am – 12.00pm (Mon–Fri)

Relocated Collection Centres

Sandgate

Shop 1, Ground Floor
Bon Accord Shopping Centre
12 Lagoon St
Phone: (07) 3269 2693
Opening Hours:
7.00am – 3.00pm (Mon–Fri)

Coorparoo

342 Old Cleveland Rd
Phone: (07) 3847 9254
Opening Hours:
7.30am – 12.30pm, 1.00pm – 3.30pm (Mon–Fri)