Most red blood cells (erythrocytes) are disciform in shape, and have only minor variation in size and shape on a peripheral blood film. The following terms explain some abnormalities seen in red blood cells:

- **Anisocytosis**: Increased variability of size of the red blood cells. This is often indicated by an increased red cell distribution width (RDW) on the automated counter. This is a common and non-specific finding and is seen in a variety of conditions including haemolysis, iron deficiency, and megaloblastic anaemia.

- **Poikilocytosis**: Abnormal shape of the red blood cells. This is also a common, but non-specific finding seen in conditions ranging from normal changes at high altitude, myelofibrosis, congenital and acquired dyserythropoietic anaemias, hereditary pyropoikilocytosis and haemoglobin H disease. Spherocytes and elliptocytes are both types of poikilocytes, and can be more specific findings.
**Spherocytes:** Red cells that are spherical or near spherical in shape with no central pallor, rather the usual discoid shape with central pallor. Spherocytes are predominant in hereditary spherocytosis and in immune mediated haemolysis. Spherocytes are also seen in a variety of other conditions including severe burns, other forms of haemolytic anaemias, hyposplenism, and normal neonates.

**Elliptocytes and ovalocytes:** Red blood cells that are elongated. Elliptocytes generally are more elongated than ovalocytes, with a long axis more than twice the short axis; whilst ovalocytes demonstrate a long axis less than twice the short axis. When these cells predominate, hereditary red cell membrane conditions such as hereditary elliptocytosis and Melanesian ovalocytosis should be considered. Other conditions that they are seen include iron deficiency anaemia, thalassemia, megaloblastoid anaemia, myelofibrosis, myelodysplastic syndromes, and occasional red cell enzyme abnormalities.

**Spherocytes**

**Hereditary Elliptocytosis**

**Macrocytes:** Large, usually oval, red blood cells. These cells are commonly seen in megaloblastoid anaemia. Other causes include liver disease, excessive alcohol intake, haematological malignancies, some drug therapy, pregnancy, acquired sideroblastic anaemia, and many other less common conditions.

**Microcytes:** Small red blood cells. Most commonly these are seen in iron deficiency anaemia and haemoglobinopathies such as thalassemia. They can also be seen in other conditions including anaemia of chronic disease and congenital sideroblastic anaemia.

**Target cells (codocytes):** Red blood cells that have an area of increased staining in the middle of the central pallor. These are seen in a variety of conditions including liver disease, haemoglobinopathies and hyposplenic states.

**Multiple target cells**

**Stomatocytes:** Red blood cells with a central, linear slit-like area of central pallor. These can be due to specimen artefact, as well as a large number of clinical conditions including excessive alcohol intake and liver disease. In some cases stomatocytosis is hereditary and seen in otherwise healthy patients.

**Sickle cells:** Thin, dense elongated red blood cells that are often described as boat–shaped. These cells are specific to sickle cell anaemia and other types of sickle cell disease.

**Sickle cells**

**Acanthocytes:** Red blood cells that are spherical and have unequal projections which are not usually uniformly spaced. These cells are seen in a number of conditions including severe liver disease and abetalipoproteinemia.
• **Echinocytes/Burr cells:** Red blood cells that have short regular projections that are usually regularly spaced. They can be a sign of storage artefact (and is often called red cell crenation in this instance), as well as in conditions including liver disease, renal disease and pyruvate kinase deficiency. Spheroechinocytes are commonly seen in post transfusion blood films.

• **Schistocytes/Red cell fragments:** Fragments of red blood cells due to rupture in the peripheral circulation. These can be seen in microangiopathic haemytic anaemias (MAHA) including thrombotic thrombocytopenia purpura (TTP), haemolytic uraemic syndrome (HUS) and disseminated intravascular coagulation (DIC) as well as mechanical causes such as mechanical heart valve haemolysis.

• **Helmet cells (keratocytes):** A red blood cell fragment in the shape of a helmet. These are often present in conjunction with schistocytes in the conditions listed above.

• **Teardrop cells (dacryocytes):** Erythrocytes with a single pointed extension resembling a teardrop or pear. These are most commonly seen in the case of bone marrow fibrosis or dyserythropoiesis, as well as some haemolytic anaemias and megaloblastic anaemia.

• **Irregularly contracted cells:** These are erythrocytes that lack central pallor and are smaller and denser than normal red blood cells. They are different from spherocytes as they are not as regular in size. These cells are found when there is oxidative damage to the cells, or when there are unstable haemoglobins or haemoglobin variants.

• **Bite cells (degmacyte):** A type of irregularly contracted red blood cell, with the appearance of a semicircular deformity of the red cell membrane, formed by oxidative stress on cell caused by conditions G6PD deficiency of drug induced oxidative stress.

• **Blister cells:** Red blood cells containing a peripherally located vacuole. These cells often precede bite cells and are seen in the same conditions.

• **Nucleated red blood cells:** Red blood cells that still are enucleated. These immature red blood cells are not usually present in the peripheral blood beyond the neonatal period. They are associated with hyposplenic states, anaemia with bone marrow compensation, hypoxia, extramedullary haematopoiesis and bone marrow infiltration such as leukaemia.

• **Red cell agglutinates:** Red blood cells that group together to form aggregates. This is seen when red cells are coated with antibodies such as warm autoimmune haemolytic anaemia or cold agglutinin disease.

• **Red cell rouleaux:** Red cells that group together in a linear “stack” of red cells. This is seen when there is an increased proportion of high molecular weight plasma proteins, such as in pregnancy, inflammatory conditions and plasma cell dyscrasias.

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**Continued overleaf**
• **Polychromasia:** Increased numbers of immature red blood cells, demonstrated by the presence of large greyish-blue cells on the blood film. These cells represent an increased proportion of reticulocytes; however, it is important to note that not all reticulocytes are polychromatic.

• **Dimorphic blood film:** The presence of two distinct populations of red blood cells. This can occur in recently transfused patients, or partially correct nutritional anaemias.

Sometimes there are abnormal inclusions within red blood cells. The following terms describe some of these:

• **Basophilic stippling:** Considerable numbers of very small basophilic inclusions, in the form of granules and filaments, throughout the red cell cytoplasm. These inclusions contain RNA. They are seen in a variety of conditions including haemoglobinopathies, megaloblastic anaemia, haemolytic anaemia, dyserythropoietic states, liver disease and heavy metal poisoning including lead poisoning.

• **Howell-Jolly body:** Medium sized, dense, round cytoplasmic red blood cell inclusions which contain DNA. There is usually only one per red blood cell. They are commonly found in hyposplenic states, as well as megaloblastic anaemia and haemolytic anaemia.

• **Pappenheimer body:** Small basophilic inclusions that contain iron at the periphery of the red blood cell. These can be present in hyposplenic states, sideroblastic anaemia and some haemoglobinopathies.

Blood films can also reveal some abnormal platelet findings. These include:

• **Platelet clumping:** Large groups of platelets that are unable to be accurately counted, and often result in erroneously low platelet counts on automated counters. This phenomenon is usually due to sample artefact; however, can be associated with platelet cold agglutinins.

• **Macrotrombocytes:** Abnormally large platelets that are almost the size of red blood cells. Macrotrombocytes that are the size of red blood cells or lymphocytes are often called giant platelets. These are seen when platelet turnover is high, such as in immune mediated thrombocytopenia (ITP). In very rare cases, they can...
represent a congenital platelet disorder such as Bernard-Soulier syndrome, gray platelet syndrome and May-Hegglin anomaly.

Review of the blood film commonly reveals abnormalities in the white blood cells. Some of the more common terms are:

- **Left shift**: The presence of immature granulocyte precursors in the peripheral blood. This is often seen in infection and inflammation; however, can occur in primary or secondary bone marrow pathologies as well.

- **Toxic granulation**: Abnormal granulation of the granulocytes, usually referring to the neutrophils. The granules are abnormally dark and often larger than usual. This is most commonly seen in the instance of infection and inflammation.

- **Döhle bodies**: Small pale-blue or blue-grey cytoplasmic inclusions found in neutrophils. They are found in association with pregnancy, infection, inflammation, burns and in the administration of G-CSF.

- **Vacuolation**: Neutrophil vacuolisation is when small to large vacuoles are present within the neutrophil. It commonly occurs in the instance of infection, G-CSF therapy, and acute alcohol ingestion.

- **Macropolycytes**: Neutrophils which are twice the size of a normal neutrophil. These can be seen in the administration of G-CSF, megaloblastoid anaemia, and congenital disorders such as DiGeorge syndrome.

- **Hypersegmented nucleus**: Neutrophils displaying more than five nuclear lobes. These are commonly seen in megaloblastic anaemia, infection, iron deficiency and myelodysplastic syndromes.

- **Reactive lymphocytes**: Large lymphocytes of varying shape often with irregular nuclear outline and irregular cellular outline. These cells are often seen in the instance of viral infections or other immunological stimuli.

Sometimes findings of the different cell lineages are grouped together and are of particular significance:

- **Leukoerythroblastic blood film**: The presence of nucleated red blood cells as well as left shift in the myeloid cells. This is seen in a variety of conditions including primary or secondary bone marrow disorders, malignancies and myelofibrosis, severe infection and in the case of marked bone marrow response such as severe haemolysis, recovering from severe trauma or stress such as blood loss, and recovery from bone marrow suppression.

Whilst many of these findings are seen in a variety of clinical scenarios, the film findings in conjunction with the clinical context provide a valuable tool which is often overlooked. It is thus important to take note of comments provided from the film review. This list is far from exhaustive, and many other descriptors are possible and used in rarer scenarios.

**FURTHER INFORMATION**

QML Pathology Haematology department

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Images courtesy of Lyndall Dial, Supervising Scientist, Haematology, QML Pathology.

**REFERENCES**

What’s new in Skin Cancer Staging?
Dr Patricia Renaut, QML Pathology

The 8th edition of the American Joint Committee on Cancer (AJCC) Cancer Staging Manual was published at the end of 2016, with the aim of implementation in 2017. However, in conjunction with other organisations in the cancer care community, the decision was made to delay implementation until 1 January 2018 to allow the necessary infrastructure to be put in place for its use.

In the 8th edition, there are significant changes that affect the staging of cutaneous squamous cell carcinoma (SCC) along with some changes to the staging of malignant melanoma. As the changes pertaining to SCC are quite significant, the parameters have already been incorporated into our day-to-day reporting at QML Pathology. For melanoma reporting, in parallel with the practices of the various specialist melanoma units in Queensland, we will continue to use the 7th edition until the end of 2017.

**SQUAMOUS CELL CARCINOMA**

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<tbody>
<tr>
<td>T1</td>
<td>&lt;2cm, &lt;2HRF</td>
<td>&lt;2cm</td>
</tr>
<tr>
<td>T2</td>
<td>≥2cm or any size + ≥2HRF</td>
<td>≥2cm but &lt;4cm</td>
</tr>
<tr>
<td>T3</td>
<td>Invasion of orbit, maxilla, mandible or temporal bones</td>
<td>≥4cm or any size with deep invasion or perineural invasion or minor bone erosion</td>
</tr>
<tr>
<td>T4</td>
<td>Invasion of skeleton (axial or appendicular) or PNI of skull base</td>
<td>T4a Gross cortical bone/marrow invasion or T4b Skull base invasion &amp;/or skull base foramen involvement</td>
</tr>
</tbody>
</table>

HRF = high risk features

In the 8th edition, staging is only required for cutaneous SCC arising in the head and neck. This includes vermillion lip, but excludes the eyelid as tumours arising in the eyelid are staged separately. The same staging system can be used for other cutaneous cancers of the head and neck, with the exception of Merkel cell carcinoma and melanoma, both of which have their own separate staging systems.

Significant changes have been made to tumour (T) staging. T1 and T2 tumours, which are considered to be low risk tumours, are now defined by tumour diameter (T1 <2cm; T2 ≥2cm but <4cm). Tumours ≥4cm or with high risk features are now placed in the T3 category, with T4 being reserved for bone invasive tumours.

The high risk features that upstage a tumour have also changed and include any of the following:
- Thickness >6mm (as measured from the granular layer of the adjacent normal epidermis to the base of the tumour)
- Invasion beyond the subcutaneous fat
- Perineural invasion (PNI)*
- Minor bone erosion

*PNI is only significant if any of the following parameters are met:
- Involvement of nerves lying deeper than in the dermis (any size)
- Involvement of dermal nerves measuring ≥0.1mm in diameter
- Clinical/radiological involvement of named nerves
Histological grade/differentiation is no longer used as a high risk feature to stage tumours, but needs to be recorded in the pathology report. Although tumour subtype is not incorporated in staging it also needs to be recorded, making particular note of sarcomatoid or desmoplastic (infiltrative) subtypes as aggressive subtypes.

There are also changes to nodal (N) staging to take into account the significant impact that extranodal extension has on survival.

What should be included in the pathology report?
- Tumour thickness, differentiation and subtype (if applicable)
- Tissue level of invasion
- PNI – including diameter and location of nerves, as well as margin clearance
- Lymphovascular invasion
- Histological margin clearance – acceptable distance is determined by tumour characteristics and the presence of high risk features
- If PNI is present, a comment should be made on whether this is present in a low or high risk pattern and whether specialist referral is recommended

What information should be provided on the request form?
- Tumour location and clinical size
- High risk features (immunosuppression, scar/burn/radiation, nerve pain etc)

MALIGNANT MELANOMA

AJCC 8th Edition

<table>
<thead>
<tr>
<th>T-stage</th>
<th>Breslow thickness (mm)</th>
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<tbody>
<tr>
<td>T1</td>
<td>≤1.0mm</td>
</tr>
<tr>
<td>T1a</td>
<td>&lt;0.8mm without ulceration</td>
</tr>
<tr>
<td>T1b</td>
<td>&lt;0.8mm with ulceration or 0.8-1.0mm +/- ulceration</td>
</tr>
<tr>
<td>T2</td>
<td>1.1-2.0mm</td>
</tr>
<tr>
<td>T2a</td>
<td>without ulceration with ulceration</td>
</tr>
<tr>
<td>T2b</td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>2.1-4.0mm</td>
</tr>
<tr>
<td>T3a</td>
<td>without ulceration with ulceration</td>
</tr>
<tr>
<td>T3b</td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>&gt;4.0mm</td>
</tr>
<tr>
<td>T4a</td>
<td>without ulceration with ulceration</td>
</tr>
<tr>
<td>T4b</td>
<td></td>
</tr>
</tbody>
</table>

The main changes in T-staging in the 8th edition include:
- Breslow thickness (BT) measurement is now rounded up or down, to one decimal place
- Histological microstaging of T1:
  - A cut-off of BT 0.8mm and the presence of ulceration is used
  - Mitotic count is no longer used, but is still an important parameter to record

Nodal staging has also changed, whereby non-nodal locoregional metastases** are staged according to the number of concurrent nodal deposits present.

**Definition of non-nodal locoregional metastases:
- Microsatellite: Microscopic metastasis found adjacent/deep to the primary melanoma
- Satellite: Grossly visible cutaneous or subcutaneous metastasis within 2cm of the primary melanoma
- In-transit metastasis: Clinically evident metastasis >2cm from the primary melanoma, in the region between the primary tumour and the first echelon of regional lymph nodes

What should be included in the pathology report?
Primary melanoma:
- Subtype
- Breslow thickness and Clark level
- Histological Margins
- Regression

For invasive melanoma, the following also need to be recorded:
- Ulceration
- Mitoses
- Tumour infiltrating lymphocytes
- Lymphovascular invasion/angiotropism
- Neural invasion
- Microsatellites
- The presence of a desmoplastic component

Sentinel lymph nodes:
- Presence of metastasis, location and size including isolated tumour cells
- Number of positive nodes
- Detection technique

Who should be offered sentinel lymph node biopsy (SLNB)?
Patients with tumour Breslow thickness >1mm who have no clinical evidence of metastatic disease should be offered SLNB. SLNB should also be considered in patients with tumour BT <0.8mm, but who have high risk features such as mitoses, ulceration or lymphovascular invasion.

SLNB should be performed at the same time as the definitive wide local excision of the primary melanoma as the success rate of identifying the sentinel node is reduced if the patient has already had a wide excision or flap repair.

FURTHER INFORMATION
Dr Patricia Renaut FRCPA; MBBS; BSc (Hons)
Consultant Histopathologist & Dermatopathologist
P: (07) 3121 4607  E: Patricia.Renaut@qml.com.au
It is important to ensure that the sample collected maximises the potential of the cervical screening test.\(^1\,^2\) As an aid for patient comfort, lubricants are frequently used during the pelvic examination. However, usage of lubricant with Liquid Based Cytology is not recommended, because their use can adversely affect the cervical screening test result in many ways. These can include:

- Residual lubricant could interfere with the endocervical brush and spatula or cervical broom in the acquisition of cervical cells.
- Lubricants may have the potential to cause inhibition in certain molecular based tests.\(^3\)
- Residual lubricant could create a potential immiscible interface in alcohol based liquid Pap solutions leading to potential agglutination and cellular loss.\(^4\)

It is important to obtain a specimen that is not obscured by blood, mucus, inflammatory exudate or lubricant.

Hologic, Inc. makers of the ThinPrep® Pap test, has evaluated a variety of popular lubricants and found that those containing an ingredient known as “carbomers” or “carbopol polymers” may be prone to interfere with cervical screening tests. Carbomers or carbopol polymers are used as thickening agents.

**Recommended:**
- ASTROGLIDE® Natural
- SURGI-gel™
- K-Y® Jelly - medical grade

**NOT recommended:**
- L-gel®
- Aplicare®
- SURGI-gel PLUS™

Lubricant (amorphous purple material) obscuring cellular detail.
SAMPLE COLLECTION OPTIONS FOR LUBRICATING THE SPECULUM:

**Lukewarm Water:** For a patient without physical or physiologic reasons for needing lubricant, lukewarm water may be used to warm and lubricate the speculum. This protocol has the least risk to the quality of the cervical screening sample collected.\(^1,5\)

**Lubricant Gels:** If lubricant must be used due to patient discomfort or other circumstances, lubricant should be used sparingly and applied only to the exterior sides of the speculum blades, avoiding contact with the tip of the speculum.\(^1,2,5,6\) (refer to diagram). When a lubricant is used sparingly and appropriately, it poses little risk to the quality of the cervical screening test sample. **However, when a lubricant is used in excess, it can adversely affect the sample.**

Apply a five cent piece-sized amount of lubricant gel.

Apply only to exterior sides of the speculum, avoiding the tip.

**FURTHER INFORMATION**

QML Pathology Cytology department

P: (07) 3121 4444

**REFERENCES**


ThinPrep is a registered trademark of Hologic, Inc. and/or its subsidiaries in the United States and/or other countries.
2017-2019 TRIENNIUM
Can you all believe we have passed the half way mark of 2017 already? So far this year the education team have been very active in the field of continuing education. We have already seen ALMs, small group learning and Cat 2 events taking place throughout Queensland with record attendances. We would like to thank all doctors and our chosen speakers for giving up their time, expertise and enthusiasm to ensure each and every event has been a success.

THE CYTOLOGY PAP SMEARS AUDIT
Please note - This Audit will close in line with National Cervical Screening Program’s “The Renewal” implementation date scheduled 1st December 2017. This half of the year has seen many General Practitioners and Specialists qualify for the Cat 1 QI points. As a reminder please ensure you tick the clinical boxes on your Cytology Pap audit request forms to ensure these specimens are included towards your totals. The clinical data that you note on the request forms is entered into a completely different computer pathway which enables your statistical and comparison data to be correlated and printed in your report format monthly.

THE SURGICAL SKIN AUDIT
This year has seen a record number of registrations from many practitioners, with hundreds of doctors qualifying for their Cat 1 points so far this year. Our new reference material and information packs have been welcomed by many doctors throughout Queensland. If you happened to miss out on the clinical information inclusive of our MBS Item numbers for skin procedures please contact your MLO or the Education team to receive all literature.
As a reminder The Surgical Skin Audit has specialised request forms, to order please use your stores request forms via your local laboratory. Please use these requests with the reverse of the request form completed to ensure your specimen is included in your count.

THE DYSGLYCAEMIC AND DIABETES MELLITUS AUDIT
Our new audit released for the 2017 Triennium has seen a record number of registrations. Response to our new and updated reference material regarding Diabetes Mellitus has been commented on by many clinicians regarding their clarification of Fructosamine and Albumin Creatinine ratio testing for Diabetic Type 1 & Type 2 patients.

3 monthly reports will show the clinician:

Dysglycaemic states
- Identifies the number of patients with impaired glucose within a 3 month snapshot.
- The table beside will display those patients who have recorded a raised glucose level and have been followed up.
- The non-presenting patients report (sent separately via hard copy) will be those patients that have been identified with raised blood glucose which have not been presented for any follow up testing at a QML Pathology collection centre. * Please note follow up of the individual patient is at Drs Discretion; however, recommendations are for a repeat fasting glucose, HbA1c or GTT.

Diabetes Mellitus
- Monitor patients already diagnosed with diabetes type 1 or 2.
- HbA1c results indicating how well your patients are controlling their Diabetes within the defined timeframe.
- See exact number of recommended tests in line with the annual cycle of care requested for your patients diagnosed with Diabetes (type 1 or 2) within the defined timeframe.

Please note - Patient figures and statistics included in the reporting can only reflect those patients who have been referred and presented for testing at QML Pathology. Gestational Diabetes is excluded from this audit.

EVENTS
In line with the upcoming changes for Cytology, QML Pathology has been providing educational meetings for Cairns, Townsville and our regional areas which have been a massive success with a close off of RSVPs within a week of announcing. We will be travelling to the Sunshine Coast, Brisbane and Gold Coast areas within the next month or two. We have also held exclusive invitation only events which have seen us travel to some beautiful areas on the Sunshine Coast and Gold Coast for ALM workshops. Please keep a look out for any invitations and respond promptly to avoid disappointment.

For further information on all of our upcoming educational activities please visit our website qml.com.au or contact your local Medical Liaison Officer or the Education team directly via email at education@qml.com

Warm regards and hope to see you soon at our events,
The QML Pathology Education team
**Dr K Sivanesan**  
MBBS(Hons) DFFP(UK) MRCOG(UK) FRANZCOG  
Dr Siva is a UK trained general gynaecologist with special interest in urogynaecology (pelvic organ prolapse, urinary incontinence and interstitial cystitis/bladder pain syndrome). Dr Siva is also able to manage wide ranging gynaecological conditions such as abnormal pap smears, menstrual disorders, ovarian cysts, endometriosis, menopause and uterine fibroids. He also offers total laparoscopic hysterectomy as well as urodynamics.  
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E: pswichgy@gmail.com

**Dr John Bingley**  
FRACSC (Vasc), PhD, MMedSci, MBBS  
Dr Bingley is a vascular surgeon working at Wound Innovations, the Mater and Princess Alexandra Hospitals in Brisbane. He has worked in public and private practice, including spending time as a visiting specialist in wound healing centers. Dr Bingley has taught medical students in anatomy and surgery, and is currently a Senior Lecturer for Surgery at University of Queensland alongside his clinical work.  
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W: woundinnovations.com.au

**Dr Richard Baer**  
MBBS(Hons) BPharm MPH&TM FRACP  
Dr Baer is a General and Renal Physician with over 17 years’ experience working throughout Queensland. Consulting at the Wesley, Mater South Brisbane and Mater Brookwater, Dr Baer provides patient-centred care in all general medical conditions and renal conditions including CKD, hypertension, diabetic nephropathy and other nephropathies, transplant, dialysis, supportive care and multisystem diseases. Dr Baer is also available for Telehealth consultations in eligible areas.  
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E: reception@drbaer.com.au  /  W: drbaer.com.au

**Dr Sean Holland**  
BSc, LLB, MBBS (UQ), Fellow ISSVD, FRANZCOG  
Dr Holland is a Consultant Obstetrician and Gynaecologist with his Practice at Pindara Place, Benowa. He operates out of Pindara Private Hospital and Pindara Day Procedure Centre. Dr Holland provides the full array of Obstetric and Gynaecological services, both office-based and operative. Additionally, he has a special interest in vulvovaginal pain syndromes and dermatoses, and is a Fellow of the International Society for the Study of Vulvovaginal Disease.  
P: (07) 5539 2797  /  W: hollandgynaecology.com.au

**Dr. Rebecca Won B Med FRACS**  
Dr Won is a Brisbane City and North West based Plastic Reconstructive & Hand Surgeon with RACS Accredited Post Fellowship Education & Training (PFET) in Hand Surgery, one of only 7 surgeons in Australia with this Qualification. Expertise: Carpel tunnel, dequervain, trigger, ganglion, osteoarthritis, Dupuytrens Contracture (surgery & Xiaflex injection), acute hand Injuries including microsurgery. Skin Lesions: benign and malignant. Scar revision. Blepharoplasty. Aesthetic Breast Surgery  
P: (07) 3839 9791 / F: (07) 3831 0114  
E: reception@doctorwon.com.au

**Dr Katherine Smallcombe**  
MBBS (Hons) BSc FRANZCO  
Ophthalmic surgeon Dr Smallcombe has recently established her own private practice ‘KindSIGHT’, consulting from rooms located in Indooroopilly and Redcliffe. Her interests are in diseases of the aging eye including cataract surgery, age related macular degeneration and glaucoma, and extend to pterygium and diabetic eye disease. Dr Smallcombe was awarded the K.G. Howsam Medal by RANZCO and selected as the inaugural Fellow of The Fred Hollows Foundation. She has completed Fellowship training in pterygium surgery with Professor Lawrence Hirst.  
P: (07) 3063 1600  /  F: (07) 3063 1666  
E: hello@kindsight.com.au  /  W: kindSIGHT.com.au

**Dr Jennie Connell**  
BA MBBS FRANZCOG  
Dr Jennie Connell, has joined the Obstetrics/Gynaecology team at Sunnybank Centre for Women. She offers maternity care through Sunnybank and Greenslopes Private Hospitals. Appointments and office gynaecology (including mirena) are available and welcomed at Sunnybank Centre for Women and Yarrabilba Health Hub. Dr Connell has interests in high-risk pregnancy and pre-conception care. Gynaecology interests include dyspareunia, vulval disorders, continence and menstrual disorders.  
P: (07) 3345 4947  

The Doctors’ Noticeboard is a free service for medical practitioners. If you wish to place a notice, please email no more than 75 words to marketing@qml.com.au
## Infections Diseases Report

### Geographic Distribution - Jun 2017

<table>
<thead>
<tr>
<th>Organism</th>
<th>Regions (as per key below)</th>
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### Regions:

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<td>3 Ipswich</td>
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For further historical clinical data, please contact marketing on info@qml.com.au.