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# PATHOLOGY FOCUS

## Medical Newsletter

**October 2018 - Newsletter**

Inside this Newsletter:



# Spotlight on STI testing

**Dr Linda Dreyer, Dr Catherine Uzzell & Dr Eddie Chan**

Statistics show the rates of Sexually Transmitted Infections (STIs) throughout Australia are rising, partly due to increased testing, but also due to a true increase in the incidence of these infectious diseases. Research suggests that 75% of women with Chlamydia infection[1], and up to 80% of women with Gonorrhoea infection[2] are asymptomatic. Although these infections may be asymptomatic, they have great potential for long-term harm, being highly associated with pelvic inflammatory disease, infertility and pregnancy complications such as ectopic pregnancy.

In 2014, the Australian Government identified STIs as a high priority, and benchmarks were set to reduce their incidence[3]. A low uptake of testing for chlamydia, especially among high risk groups, was noted and recommendations for increased testing was made. Notification rates of newly diagnosed chlamydia and gonorrhoea nationally have continued to rise[4]. An increase in the notification rate per every 100 000 of population has been observed, but this may reflect improved uptake of testing. This article will focus primarily on chlamydia, gonorrhoea, Mycoplasma genitalium, and trichomoniasis.

## *Chlamydia*


*Chlamydia*

Chlamydial infection is caused by the bacterial pathogen *Chlamydia trachomatis*. It causes a wide range of clinical syndromes including cervicitis, urethritis, pelvic inflammatory disease, pregnancy related complications, epididymitis, prostatitis, proctitis, conjunctivitis, pharyngitis, and lymphogranuloma venereum. Women are often asymptomatic, whereas men are generally symptomatic.

**Treatment**

First line treatment for uncomplicated genital or pharyngeal infection is either a single dose of 1 gram oral azithromycin OR doxycycline 100 mg orally twice a day for 7 days (ETG ABx).

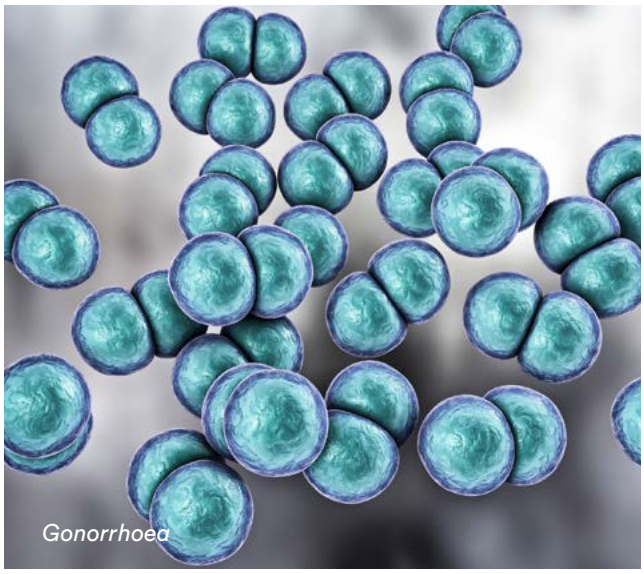
**Testing**

Clinical guidelines recommend chlamydial screening of sexually active young adults (aged 15-29) at least yearly. This is most easily facilitated through the primary care setting.

As per the ASHA Australian STI Management Guidelines[5], other groups to consider testing include:

- Partner change within the last year
- STI diagnosis within the last year
- Have had a sexual partner with an STI
- Signs or symptoms suggestive of chlamydia

## *Gonorrhoea*


*Gonorrhoea*

The bacterium *Neisseria gonorrhoea* causes a disease spectrum very similar to that of chlamydia. In up to 3% of patients, bacteraemic (bloodstream) spread can result in disseminated gonorrhoea with presentations of septic arthritis, polyarthralgias, or dermatitis.

Up to 70% of women with genital gonococcal infection are asymptomatic. The majority of men (approx. 80%) with genital infection will present with symptoms, although symptoms can sometimes be very mild.

Recent Australian data have shown year-on-year increases in case ascertainment; the male to female ratio of 3:1. Highest rates are observed in HIV-positive gay and bisexual men (33.7 per 100 person-years), HIV-negative gay and bisexual men (23.1 per 100 person-years), and female sex workers (5.3 per 100 person-years)[4].

**Treatment**

Current first line antimicrobial management for uncomplicated ano-genital, ano-rectal, or pharyngeal infection is a single dose of 500 mg ceftriaxone delivered intramuscularly (IM) and 1 gram azithromycin administered orally. There is increasing concern with the emergence of multidrug resistant isolates of *N. gonorrhoea*[6]. The Australian Gonococcal Surveillance Programme (AGSP), run by the National Neisseria Network, performs susceptibility testing on clinical isolates. In 2017, 0.04% of isolates demonstrated reduced susceptibility to ceftriaxone, and 9.3% were deemed azithromycin resistant.

Earlier this year, two clinical isolates of extensively drug-resistant (XDR) *N. gonorrhoea* were identified in Australia. In light of limited therapeutic options, appropriate testing and management is critical. Swabs should be collected for culture to enable resistance testing prior to treatment.

**Testing**

The majority of cases are identified from high-risk population groups and as such, no firm recommendations have been made for routine community-based screening. In practice however, most laboratories including Australian Clinical Labs have a NAAT platform that tests chlamydia and gonorrhoea simultaneously. As such, requests for chlamydia testing will also screen for gonococci, and a positive result issued to the requesting clinician. However, due to increasing rates of gonorrhoea, particularly in women, clinicians are encouraged to request both routinely.

## *Mycoplasma genitalium*


*Mycoplasma genitalium*

Around 20% of men presenting with non-gonoccocal urethritis are diagnosed with *M.genitalium*[7]. In women, infection is associated with cervicitis, pelvic inflammatory disease, and possibly adverse pregnancy outcomes[8]. Asymptomatic infection has been described, particularly in women.

**Treatment**

Treatment consists of doxycycline 100 mg BD for 7 days, plus azithromycin 1000 mg oral dose on day 1, followed by 500 mg oral daily doses for a further 3 days. Where macrolide resistance is suspected, guidelines suggest replacing azithromycin with moxifloxacin (400 mg daily for a total of 7 days).

**Testing**

Only patients with symptomatic disease should be tested.

## *Trichomoniasis*


*Trichomoniasis*

*Trichomonas vaginalis* is a protozoan that primarily affects women, although men can rarely present with urethritis. The most common presentation in women is cervicitis or a yellow-green vaginal discharge. Importantly, active trichomoniasis may enhance transmission of HIV. The highest risk group in Australia is Aboriginal & Torres Straits Islander women from regional and remote areas.

**Treatment**

First line therapy is either a single 2g oral dose of metronidazole OR a single 2g dose of tinidazole. A highly sensitive PCR test is available for the diagnosis of this condition.

**Testing**

Testing should be considered in sexually active women presenting with vaginal discharge. Given the infrequent number of cases, routine screening is not recommended.

**Special Consideration: Aboriginal and Torres Strait Islander Women**

While not common in the general community, Aboriginal and Torres Strait Islander women from regional and remote Australia, are at higher risk of Trichomonas infection, with up to 50% of women asymptomatic[9].

Chronic Trichomonas infection is associated with pregnancy complications such as premature rupture of membranes, pre-term delivery and low birth weight, as well as post-partum sepsis[9].

Screening for Trichomonas can also be performed on the liquid based media used for the Cervical Screening Test, and should be considered at the time of cervical screening in this vulnerable group.

Screening for Trichomonas is also fully Medicare rebatable.

***Contact tracing***

Sexual partners of confirmed cases should be contact traced and screened for asymptomatic carriage of infection.

## Summary

Once an STI has been confirmed, appropriate contact tracing, diagnostic investigation, and treatment are essential. Although brief clinical management guidelines have been provided, given the increasing rates of antibiotic resistance in *N.gonorrhoea* and ***M.genitalium*** isolates, we recommend consultation with updated guidelines as required.

## Specimen collection and testing at Australian Clinical Labs

**Men**

- First pass urine sample
- Urethral swab /pharyngeal and rectal swab for NAAT testing
- Urethral swab /pharyngeal and rectal swab for culture (important for resistance testing)

**Women**

- Endocervical, vaginal/ano-rectal swab for NAAT testing and second swab for culture
- First pass urine is less sensitive than vaginal swab and should be collected only if endocervical/ vaginal swab is not possible
- In addition to first pass urine and swabs, testing for Chlamydia and Gonorrhoea can also be performed on the liquid-based media used to collect the Cervical Screening Test

## Screening for STIs - Clinical Recommendations

- Testing for Chlamydia and Gonorrhoea in Australia is performed using molecular PCR techniques, and is fully Medicare rebatable, both symptomatic referrals and for screening.
- In addition to first pass urine and swabs, testing Chlamydia and Gonorrhoea can also be performed on the liquid-based media used to collect the Cervical Screening Test.
- While Clinical Guidelines recommend Chlamydia screening of sexually active young adults (aged 15-29) at least yearly, young adults may not present to their primary healthcare provider this frequently, and STI screening may need to be opportunistic.
- **The first Cervical Screening Test at 25 years of age** is an ideal opportunity to screen for these common STIs, as Chlamydia and Gonorrhoea testing can be performed on the **same ThinPrep vial** used to collect the Cervical Screening sample. No extra specimen collection is required.
- **A repeat STI screen should also be considered in women re-presenting for routine Cervical Screening at 30 years of age.**

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# About the author: Dr Linda Dreyer

**Antimicrobials, infection control and molecular diagnostic assays in contemporary clinical microbiology**


**Infection Control Microbiologist**

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Dr Dreyer came to Melbourne and joined Australian Clinical Labs (formerly Healthscope Pathology) in 2008 as a Senior Registrar and obtained Fellowship of The Royal College of Pathologists of Australasia (FRCPA) in 2010. Dr Dreyer has special interests in the appropriate use of antimicrobials, infection control and molecular diagnostic assays in contemporary clinical microbiology. She was involved in teaching medical students and microbiology registrars and gave lectures to nursing staff, medical students and specialists. She also sat on the Infection Control Committee and the Antimicrobial Stewardship Committee of the Pretoria Academic Hospital.

# About the author: Dr Catherine Uzzell

**Women's Health, Gynaecological Pathology, Dermatopathology**


**Anatomical Pathologist**

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Dr Uzzell has an interest in women's health and gynaecological pathology and cytology. She has over 13 years of experience in reporting cytology, with particular emphasis on gynaecological cytology, and has presented to many general practice and specialist groups regarding changes to the Cervical Screening Program. Dr Uzzell has a special interest in Dermatopathology and is a member of the Australasian Dermatopathology Society.

## Local pathologists near you

### Dr Kelly Papanaoum

*MBBS, FRACP, FRCPA*

**Microbiologist**

Areas of interest: General microbiology, antimicrobial resistance, infection after orthopaedic / general surgery, infections in immunocompromised hosts and ICU, infection control, HIV and viral hepatitis.

Phone: (08) 8205 5666
Location: Wayville

### Dr Travis Brown

*B. COM/B. COMP, B. SCI (MED SCI), MBBS, FRCPA*

**General Pathology**

Areas of interest: Information Technology and Pathology informatics

Phone: (08) 8205 5604
Location: Wayville

# Every step of the way:

## Pregnancy, planning and best practice

Dr Lionel Wu

*Dr Lionel Wu is a General Practitioner with extensive paediatric training. Drawing on his vast experience supporting new parents during pregnancy, he advocates the use of antenatal screening and prenatal testing.*

Very often, pregnancy is a life-changing and emotional journey for parents, especially young couples expecting their first child. So I personally take great satisfaction in helping them navigate through this journey. I see my role as being their first port of call, in a medical sense – someone who is there to guide them every step of the way. As they sit in my office, and the news is confirmed, I congratulate them, I let them enjoy the moment, and then together we begin to plan.

We see quite a lot of young families at Medifirst Family Clinic. In fact, they make up about 80 per cent of our general patient population.

### Managing the pregnancy together

For the first-time mum, I begin with an overview of how we will manage the pregnancy together. This includes a timeframe of when to undertake all the different tests and procedures, including the ultrasound.

It's at this point that I will advise screening for genetic disorders like Down's Syndrome or Turner's Syndrome in the form of NIPT. I always tell parents that tests like these are optional, and not compulsory. Then, we go through the pros and cons. I encourage them to discuss prenatal testing with their partner and whether it is something they would like to proceed with.

I am a big believer in preparedness. For example, for any patient that comes to our clinic, we will check their blood pressure, their cholesterol – so we can identify their heart attack risk. Then, if it is high, we will work together to plan, to prepare, and if possible find a solution.

It's the same with pregnancy. It's always good to know what the possibilities may be, and that is why I recommend NIPT to every single mother – without exception. And, in my experience, nine out of 10 patients agree to it. If cost is an issue, I will suggest the traditional test – which is one third of the price, but it's less accurate, and the patients do not find out the gender.

### NIPT and high-risk results

Generally, most mums will have a low risk result. But what if the test is positive?

That's when I explain to them that this is the very reason we undertake the test – so that they can have professional genetic counselling and guidance through the options. It allows an opportunity to plan our next step, to consider what we are going to do. If they have very strong beliefs, I remind them that this is about putting us in the best position to plan for the future and not necessarily about ending the pregnancy.

That is why I think prenatal testing represents another way of offering assurance to our patients. When medical professionals like us think about the benefits of antenatal screening, we often think of words like “monitoring” and “detection”. But I often use words such as “awareness” and “preparation”.

Every pregnancy, every birth is a miracle. Parents want to be assured that everything will be ok. NIPTs keep them informed. The tests are not just to detect the risk of genetic disorders like Down’s Syndrome or Turner’s Syndrome but to also give parents an awareness – an understanding of what future difficulties and challenges there could be for their new family. This prepares them and makes them emotionally ready for their baby’s birth.

Then the focus can turn to education and planning. It’s important they know there are interventions in place; help is available. The first three months after delivery is such a chaotic time, and it’s easy to become overwhelmed. Tests like Harmony allow issues to be detected early on and, irrespective of one’s beliefs, it’s always good to get that counselling. And I believe that Clinical Labs offers very good, free genetic counselling.

## Ongoing GP involvement

As a GP, I want to be involved in the patient’s journey from start to finish. So, if a test reveals a patient as ‘high-risk’ and they are subsequently referred to genetic counselling, my involvement continues and, in many respects, takes on a far more proactive role.

In the event of a miscarriage, for example, after informing the patients of the results, I let them have time to grieve, and then I invite them back, when they are ready, for more testing – another scan, another blood test – to make sure they are physically and, more importantly, emotionally ready. Then, together, we plan their next pregnancy.

Nobody likes to be the bearer of bad news, but it’s something we all train in as med students – and I would hate to think that this would deter GPs from offering or suggesting these tests to parents. Similarly, GPs shouldn’t perceive these conversations to be solely the obstetrician’s area of concern.

As GPs we are fortunate to have such a central, and trusted, role in a parent’s birth journey. So we shouldn’t regard positive test results as a potential threat to a good doctor-patient relationship. Instead, we should approach the process as a natural step in the patient-doctor journey – and continue to assist in a journey that we are very privileged to have been invited to share.

To find out more information about NIPT and what Clinical Labs can offer please visit our website www.clinicallabs.com.au/nipt

# About the author: Dr Lionel Wu

After completing his Bachelor of Medicine and Bachelor of Surgery with Honours in 2005, Dr Wu has undergone GP training in various hospitals and GP clinics throughout Victoria before acquiring his Fellowship from the Royal Australian College of General Practitioners in 2009. He has undertaken training in Paediatric with Westmead’s Children’s Hospital in Sydney where he was awarded the Graduate Diploma in Child Health in 2007. Dr Wu is also an examiner for the Royal Australian Colleges of General Practitioners.

Medifirst Family Clinic was set up by Dr Wu in 2016 with the hope of helping families who would benefit from having doctors that could speak the patients’ languages. Medifirst Family Clinic has won Australian Clinic of the Year for 2016 from Health Engine. They pride in giving the upmost attention to each patient and raising more awareness to preventative medicine. Dr Wu also conducts regular health assessments, employment medicals, pregnancies, contraceptive advice, mental health consultations and minor surgeries such as implanon insertion and removal and skin cancer surgeries. Apart from English, Dr Wu is fluent in Mandarin and Hokkien.

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# Updates from the lab

## New Australian partnership forms to bring world's first non-invasive melanoma test to market

Australian Clinical Labs and Geneseq Biosciences (Geneseq) have announced they will partner to bring the first non-invasive melanoma test to market under the trade mark Melaseq™.

Melaseq will offer over two million Australians at high-risk of developing melanoma in their lifetime access to a simple blood test to detect melanoma signatures in their blood. Melaseq is also suited to tissue sample testing.

With no specific solid tissue, blood or genetic detection tests available worldwide, doctors will welcome Melaseq for its accuracy and ability to improve clinical decision making and the monitoring of patients at risk of developing melanoma or those with re-emerging melanoma.

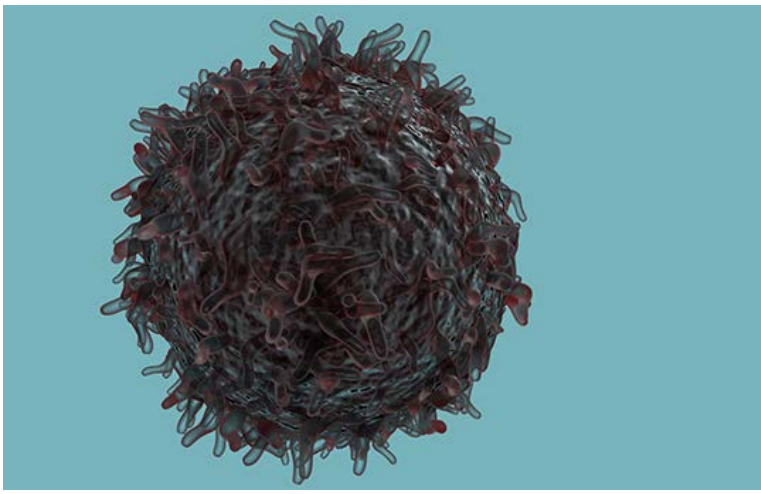
Following the completion of the research, Melaseq will for the first time, offer physicians a diagnostic tool to monitor for early signs of melanoma recurrence, potentially allowing life-saving treatment to start earlier.

The partnership with Clinical Labs achieves an important milestone for Geneseq, a wholly owned Australian company. With the backing of Australia's largest privately-held pathology company, Geneseq can accelerate additional testing and validation work at the scale required to bring Melaseq to the market.

### About the Research

The partnership began after research was published in the peer-reviewed British Journal of Cancer in March 2018. This study revealed how Dr Van Laar and colleagues worked to discover a new signature of melanoma based on circulating microRNAs, found in patient and normal donor blood samples. In independent validation patient series, Melaseq exhibited up to 94% accuracy.

A second clinical validation study has been accepted for publication in the Melanoma Research Journal. Melaseq was developed using the Nanostring digital gene expression platform, a system that is used in over 500 laboratories worldwide. This platform was selected due to its detection accuracy and strong record of in-vitro diagnostic assay development.



### About Melanoma

Two in three Australians will be diagnosed with skin cancer during their lifetime, of which melanoma is the rarest but most deadly form. Worldwide, the incidence of melanoma continues to increase, outpacing the rise of any other malignancy in the Caucasian population over the last 30 years. Despite being curable if diagnosed early, four Australians die each day from this cancer, resulting in more deaths than the road toll.

If not diagnosed early and accurately, melanoma grows and quickly spreads through the lymphatic system and blood stream to other organs such as the lungs, liver, brain or bone. There are currently no specific solid tissue, blood or genetic tests available to help doctors diagnose melanoma or monitor for recurrence.

In 2018 there will be an estimated 14,320 melanoma diagnoses, 1,905 deaths and over 50,00 people living with the disease. Over 2 million Australians have one or more high risk characteristics for developing melanoma in their lifetime.

It is anticipated that Melseq will be available as a tissue sample test in 2020, followed by the blood test in 2021.

For more information please visit
http://www.geneseq.com.au/

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