



PathWay

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA



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Issue #067

In This Issue

- New blood test showing promise for forecasting preeclampsia during pregnancy
- AMH blood test could help women manage their biological clock
- The ups and downs of DOACs
- PIANO Study is hitting the right notes by investigating prosthetic joint infections

Welcome to the March 2017 edition of ePathWay

Pathology Update 2017 has come and gone leaving a surge of shared information in its wake. A record attendance meant many sessions were filled to capacity, such was the interest in the event. Attendees travelled from as far away as Israel, Egypt and Myanmar.

It was also tough choosing just four topics to cover in this edition, but we finally narrowed it down to:

- A blood test to forecast the likelihood of preeclampsia.
- A blood test to measure ovarian cell reserves.
- Increased DOAC usage pointing to a need for greater guidance from pathologists.
- A new study showing positive results in the treatment of medical device infections in joints.

Extra information from Pathology Update is on our [Facebook](#) page, and while you're in the social media space check out the latest tweets from our CEO Dr Debra Graves ([@DebraJGraves](#)) or the College ([@PathologyRCPA](#)).

Interesting Facts

1456

The record number of delegates who attended Pathology Update 2017.

151

The number of speakers at Pathology Update 2017.

New blood test showing promise for forecasting preeclampsia during pregnancy

16

The number of countries from which people travelled to attend Pathology Update 2017 (excluding Australia and New Zealand).

Source: RCPA

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A new simple blood test measuring proteins (called angiogenic biomarkers) released from the placenta is proving effective in forecasting a pregnant patient's likelihood of developing preeclampsia. A recent study^[1] also supports the likelihood of these biomarkers for predicting and better managing this syndrome.

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AMH blood test could help women manage their biological clock

A blood test to measure anti-mullerian hormone (AMH) will help women make informed plans around efficient family planning by providing information about their ovarian cell reserves.



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The ups and downs of DOACs

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PIANO Study is hitting the right notes by investigating prosthetic joint infections

Joint replacement surgery is one of the most common major operations in Australia with more than 100,000 performed every year. Unfortunately an estimated 1,000 to 2,000 of these people develop post op infections, prompting a new study to improve the health and wellbeing of patients afflicted by such infections.



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- Behind the scenes at Pathology Update
- RCPA is more than the public face of pathology
- Adenovirus is just a royal pain in the neck for most people
- Innovative diabetes testing program sets the standard

Welcome to the February 2017 edition of ePathWay

It's Pathology Update time. Once again this year hundreds of pathologists will make their way to the International Convention Centre in Sydney on February 24 for three days of continuing professional development. This event is one of the world's foremost international pathology conferences, and we've highlighted a part of the organising process by talking to the Chairs of three Scientific Program Committees (volunteer alert!).

This edition also covers:

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New blood test showing promise for forecasting preeclampsia during pregnancy



A new simple blood test measuring proteins (called angiogenic biomarkers) released from the placenta is proving effective in forecasting a pregnant patient's likelihood of developing preeclampsia. A recent study^[1] also supports the likelihood of these biomarkers for predicting and better managing this syndrome.

Professor Shaun Brennecke and his team at the Royal Women's Hospital in Melbourne have been using the simple blood test to determine the likelihood of preeclampsia in patients. The trial has produced reliable results so far paving the way for better management of the patient and her baby with potentially significant cost savings.

"Roughly estimated, a maternity hospital in Australia could spend thousands of dollars monitoring a patient for preeclampsia. This new blood test is likely to cost less than a hundred dollars while offering better care for the patient and her baby," he explained.

"So far, we have experienced very good results in the ability to predict whether or not there is a risk of preeclampsia in our patients, which has provided us with an improved range of options for the patient and baby," explained Prof Brennecke.

Preeclampsia is a disorder of pregnant women usually involving high blood pressure, oedema (fluid in the soft tissues) and protein in the urine. It is the most common serious medical disorder of human pregnancy and a major cause of maternal and perinatal disease and death worldwide, including in Australia and New Zealand.

It can affect every organ in the mother's body and lead to strokes, heart, liver or kidney failure, as well as impacting the baby with some babies even dying in utero. The precise cause of this disease remains unclear. Once it is established there is currently no effective curative treatment, and the only way to effectively manage it is by delivering the baby to end the pregnancy, even if it means a premature birth for the baby.

“The new blood test helps to streamline the whole diagnostic and management process, offering an improved range of options potentially resulting in a much better outcome for the mother and her baby. Currently, if a patient presents with any signs or symptoms suggesting the development of preeclampsia, she is admitted to hospital for monitoring. However, the new blood test reveals if the chances of developing preeclampsia are low or high.”

Prof Brennecke said if the chances are low the patient does not need to be monitored in a hospital leaving her free to be at home with her family and continue with routine antenatal care visits. Alternatively, if the test shows that her risk is high, it also provides more precise information about when she might need to deliver the baby.

“It therefore allows the clinician to prepare the patient and her baby for delivery. For example, if a premature delivery of the baby is required, then corticosteroid treatment can be given to the mother in time to help mature the baby’s lungs to make breathing easier for the baby after delivery.

“Also, if patients have suffered from preeclampsia in a previous pregnancy, the test offers reassurance that the risk of recurrence is being effectively monitored, which helps to alleviate the mother’s anxiety,” he explained.

“It’s still very early days and we’re still a long way from seeing a nationwide roll-out of the test, however we are optimistic it will occur as I think it shows such a lot of promise. The blood test is currently available only in some research settings, such as the trial we are running. Further studies are still required to definitively determine the cost effectiveness of the test and its impact on maternal and perinatal outcomes in various clinical settings.”

Reference:

[1] Zeisler H, Llurba E, Chantraine F, et al. Predictive value of the sFlt-1:PIGF ratio in women with suspected preeclampsia. *N Engl J Med* 2016; 374: 13–22.

Professor Brennecke spoke at last month’s RCPA Pathology Update Conference in Sydney.

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AMH blood test could help women manage their biological clock



A blood test to measure anti-mullerian hormone (AMH) will help women make informed plans around efficient family planning by providing information about their ovarian cell reserves.

“This test measures AMH, which decreases between the ages of 20 and 45, through to an undetectable level in the pre- and post-menopausal periods,” explained Professor of Reproductive and Periconceptual Medicine at Robinson Research Institute at The University of Adelaide, and Medical Director at Fertility SA, Robert Norman.

“Its primary use is to determine the number of follicles in the ovary, to predict menopause, fertility, and response to IVF stimulation. The level of the hormone is also particularly high in polycystic ovaries and low in women with premature ovarian insufficiency.”

Prof Norman said AMH is used as a test for ovarian reserves in adults as it correlates very closely with the number of primordial follicles (the most immature stage of an ovarian follicle’s development) in the ovary.

“Knowing their ovarian cell reserves enables women to contemplate when they should have children and, for those who want to have children, assess how urgently this needs to become a priority,” he explained.

“Once a patient has the test done, it’s important to get some good advice on what to do next. This may be waiting and assessing again at a later date, or deciding to move ahead with a pregnancy sooner. With increased controversy regarding egg freezing for young women, this test may also offer a suitable alternative.”

Professor Norman spoke at last month’s RCPA Pathology Update Conference in Sydney.

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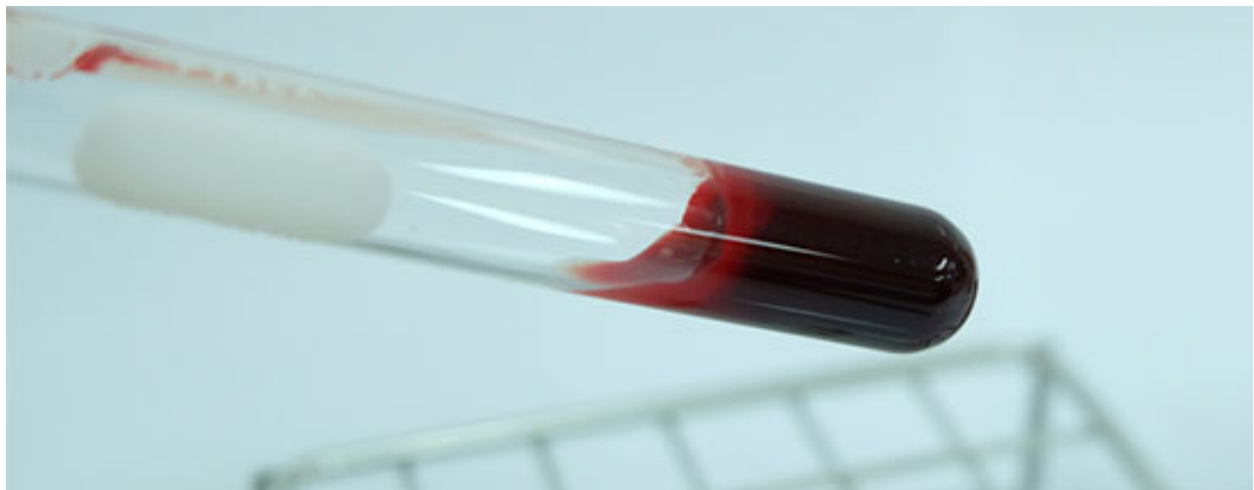
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The ups and downs of DOACs



Prescriptions for direct oral anticoagulants (DOACs) to treat or prevent blood clots inside blood vessels (thrombotic events) have increased dramatically in Australia, often replacing more classical anticoagulant therapies such as Heparin, Warfarin or Vitamin K Antagonists (VKA). These new drugs convey benefits but also carry risks associated with using them.

Dr Emmanuel Favaloro explained that there are widely misunderstood complexities surrounding the use of DOACs, specifically how they affect the body's response to bleeding (haemostasis) and influence the results of many coagulation tests.

DOACs represent a new class of anticoagulants that have proven popular with both patients and clinicians since their introduction. Although they are not suitable for all patients, one of their main advantages is that regular blood samples are not required, making them less intrusive and more convenient than traditional anticoagulant drugs. This could also be one of the reasons for their increasing popularity.

"With clinicians, there may also be a perception that their patients are 'safer' on DOACs than the older anticoagulants; however, there is a range of complexities surrounding their use, and this is where haematologists can have an educational role for their fellow clinicians," explained Dr Favaloro.

"One unfortunate downside to the use of DOACs is a general lack of recognition among clinicians regarding their effects on laboratory tests. Despite the reduced need for blood monitoring, DOACs still affect the results of pathology tests which may be ordered, in particular various haemostasis tests."

Dr Favaloro said that despite the potential for fewer drug interactions with a patient on a DOAC compared to a patient on Warfarin or VKA, patient management can still represent a complex situation for general clinicians to navigate.

"Clinicians may be trying to interpret results of a test, or to make a diagnosis related to a thrombotic or bleeding event. In some situations, the complexity of the test results means the wrong diagnosis may be made. Sometimes clinicians such as emergency trauma physicians may not even know that a patient suddenly under their care is taking DOACs," explained Dr

Favaloro.

He said many patients who take these drugs are also elderly, and forgetting to take their pills, or taking too many, might be difficult to assess.

“As DOACs are now being increasingly prescribed to patients, it is recommended that specialists, including pathologists, haematologists and laboratory scientists, offer supplementary guidance to general clinical colleagues because it is possible for pathology test results related to clotting disorders to be misinterpreted,” Dr Favaloro explained.

“Most DOACs affect routine coagulation tests such as prothrombin time (PT) and/or activated partial thromboplastin time (APTT), with dabigatran affecting the APTT more than the PT, and rivaroxaban affecting the PT more than the APTT. All DOACs affect more complex assays such as factor assays, or those used to diagnose lupus anticoagulant, which is a risk factor for thrombosis. An effort to establish clear communication with the wider medical community who manage patients on DOACs, including all complexities relating to these treatments, would be beneficial.”

Dr Favaloro spoke at last month's RCPA Pathology Update Conference in Sydney.

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PIANO Study is hitting the right notes by investigating prosthetic joint infections



Joint replacement surgery is one of the most common major operations in Australia with more than 100,000 performed every year. Unfortunately an estimated 1,000 to 2,000 of these people develop post op infections, prompting a new study to improve the health and wellbeing of patients afflicted by such infections.

“The PIANO (Prosthetic Joint Infection in Australia and New Zealand Observational) Study is a prospective study being led by Associate Professors Josh Davis (Newcastle) and Laurens Manning (Perth). It is looking at patients with prosthetic joint infections across multiple hospitals in Australia and New Zealand to describe the extent of the problem in our region, and to identify techniques of infection management for device infections which may result in better outcomes for these patients,” explained Associate Professor Craig Aboltins, Infectious Diseases Physician at Northern Health in Melbourne.

He said more than 32 hospitals and over 500 patients have been recruited for the PIANO Study so far.

“We expect the study could ultimately involve one of the largest cohorts of patients with such infections in the world.”

A/Prof Aboltins said the study is beginning to identify: the extent of the problem across Australia; the specific problem patients have; which bacteria are involved; the impact on patients’ lives and how much pain are they experiencing.

“We are also analysing if patients treated in certain ways are more likely to be cured of the infection and have a better joint function with less pain.”

Setting up this network of hospitals with an interest and skills in researching this problem could lead to a future trial network. There are plans in place to begin this through the PIANO FORTE Trial which is looking at different durations of antibiotic treatment for these infections.

“The difference between orthopaedic device infections and other surgical infections lies in the prosthetic material used during surgery. Bacteria that get into the wound can become attached to the surface of the prosthetic material and form a biofilm^[1]. This enables the bacteria to persist and become incurable, rendering the infection incurable except by lengthy, complicated treatment,” explained A/Prof Aboltins.

“An orthopaedic device infection can dramatically impact a patient’s life, requiring therapy for many months or even longer. It can be a lifelong problem. This is in contrast to infections following other procedures that do not involve prosthetic material, where often a short course of antibiotics is sufficient to eradicate the infection.”

He explained that up until a decade ago, infections related to joint replacement surgery were thought to be incurable and required removing the joint replacement, a long course of antibiotics and long periods of time in hospital.

“However, since then there has been a revolution in the management of these infections so that some can be cured by a combination of surgically removing as much infected tissue as possible from around the joint replacement and using antibiotics with specific activity against biofilms.”

[1] A biofilm is any group of microorganisms in which cells stick to each other, and these cells often adhere to a surface.

Associate Professor Aboltins spoke at last month’s RCPA’s Pathology Update Conference in Sydney.

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