



ePathWay

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA

DECEMBER 2012 | Published by RCPA

Issue #021

In This Issue

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- The party could be over for revelers who mix drugs and drinking with driving
- Nobel laureate's legacy saves countless lives from cancer
- Polio may be forgotten, but it hasn't gone

Interesting Facts

1 per
14,656

The ratio of pathologists per population in Australia

Welcome to the Holiday edition of ePathWay

The Christmas and New Year season is not only a time for festivities and fun, it's also a time for reflection. For example, what would a world without pathology look like? The new social media campaign launched by the College reflects on this question with humour used to deliver a serious message.

We also reflect on the remarkable achievements of Professor Donnall Thomas who pioneered bone marrow transplantation. Donnall died in October this year, but his remarkable legacy will continue to save countless lives into the future.

We also reflect on the importance of responsible behaviour with random roadside drug and alcohol testing able to detect people disregard the law. And finally, we reflect on why we need to continue being vigilant against polio.

Thank you to all of the pathologists who gave their time so generously to inform the articles published this year, and to the ePathWay editorial team for providing expert editorial direction.

The team at ePathWay wishes all our readers a happy and safe festive season, and we'll see you in February next year.

Humorous campaign underpins the serious message of a world without pathologists

1 in 20,550

The ratio of pathologists per population in New Zealand

70%

The number of diagnoses of all diseases that are made by pathologists

100%

The number of diagnoses of cancer that are made by pathologists

Source: RCPA

Important Message



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Creating a humorous social media campaign^[1] to highlight what a world without pathologists would look like is a brave step for an essentially conservative medical college. But sometimes it takes humour to get a serious message across. This is why political cartoons in newspapers are given prime space on editorial pages. Professor Yee Khong, President of the Royal College of Pathologists of Australasia (RCPA), says that although the videos created as part of the campaign are light-hearted and fun, the underlying message is serious and of major national importance.

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The party could be over for revelers who mix drugs and drinking with driving

The festive season is upon us and that means relaxing with family and friends, enjoying summer barbeques and generally chilling out. It also means being responsible for our behaviour. Random roadside testing for alcohol and drugs is a part of any holiday season, and the party could be over for those who return a positive test.



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Nobel laureate's legacy saves countless lives from cancer

The father of bone marrow transplantation, Edward Donnall (Don) Thomas, passed away on October 20 at the age of 92. His research began in 1955 in New York and has led to around 60,000 people worldwide receiving a stem cell transplant derived from blood or bone marrow every year. Don also won the Nobel Prize in Physiology or Medicine (with Joseph Murray^[1]) in 1990.



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Polio may be forgotten, but it hasn't gone

Did you know there is a World Health Organization (WHO) Polio Reference Laboratory in Australia? According to Adjunct Associate Professor Bruce Thorley, Head of the National Enterovirus Reference Laboratory (which includes the Polio Reference Lab)^[1] in Melbourne, most people are surprised by this discovery. But they shouldn't be. While Australia and New Zealand are officially 'polio free', the highly infectious poliovirus is still circulating in some countries which means we must remain vigilant.



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Humorous campaign underpins the serious message of a world without pathologists



Creating a humorous social media campaign^[1] to highlight what a world without pathologists would look like is a brave step for an essentially conservative medical college. But sometimes it takes humour to get a serious message across. This is why political cartoons in newspapers are given prime space on editorial pages. Professor Yee Khong, President of the Royal College of Pathologists of Australasia (RCPA), says that although the videos created as part of the campaign are light-hearted and fun, the underlying message is serious and of major national importance.

“It’s of great concern to us that a huge proportion of the public still do not know what pathologists do,” he says. “They are behind almost every diagnosis and treatment pathway, but a survey of over 2000 Australians revealed that about three quarters of the respondents believed that pathologists simply assist other doctors in the diagnosis of disease, and are not responsible for making the diagnosis in the first place.”

To illustrate the importance of pathology to the diagnosis and treatment of diseases, the videos released by the college show doctors trying to help patients in a world where pathologists do not exist. Instead of blood tests, swabs or biopsies, the

doctors use a Blowopsy, Tickleoscopy and Emuotopsy to try and find out what's wrong with their patients. As far fetched as it seems, if pathology didn't exist what are the options?

"Results of blood tests, biopsies or Pap smears have real doctors behind them who have trained for 13 years to become qualified pathologists," explains Prof Khong. "Imagine trying to treat a cancer without knowing what type it is, or trying to treat an infection without knowing what organism is causing it^[2]? That's what a world without pathologists would look like."

A new report released in November 2012 by Health Workforce Australia^[3] has forecast a shortage of 216 pathologists in Australia by 2026. That's 20% of the current workforce!

"We've tried to get this message across using serious messages in the past, but they are not working. This is why we're trying humour and social media this time," explains Prof Khong. "It's not about receiving accolades for making almost every diagnosis or for deciding the best treatment pathways for patients. It's about a profession that underpins almost every aspect of medicine being undervalued because we work behind the scenes."

The next time you visit the doctor and they request a blood test or take a biopsy, remember these samples are not being sent to the twilight zone to be tested by machines. They are being sent to state-of-the-art laboratories supervised by real doctors with specialist qualifications whose expertise will inform the next step of the treatment pathway. That's better than using a Blowopsy!

[1] To view the social media campaign go to <http://worldwithoutpathology.rcpa.edu.au/>

[2] An insight into this issue is covered in the article 'What a difference a laboratory makes' published in ePathWay issue #005, June 2011

[3] Health Workforce 2025: <http://www.hwa.gov.au/health-workforce-2025>, 9th November 2012

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The festive season is upon us and that means relaxing with family and friends, enjoying summer barbeques and generally chilling out. It also means being responsible for our behaviour. Random roadside testing for alcohol and drugs is a part of any holiday season, and the party could be over for those who return a positive test.

While we're all familiar with random roadside breath tests for alcohol, random roadside testing for drugs is not on everyone's radar – yet. Professor Olaf Drummer from the Victorian Institute of Forensic Medicine, and Head of the Department of Forensic Medicine at Monash University, says random roadside drug testing was introduced in Australia in 2004 to help decrease road trauma.

“Random roadside testing is about changing behaviour, and while breath testing has made huge inroads to driver behaviour, we needed to add drug testing as well,” he explains. “Illegal and prescribed drugs taken recreationally can lead to road

trauma.”

Alcohol levels are tested via a breath test where a person blows into a tube and a reading indicating their blood alcohol concentration is displayed. Drugs are usually tested by taking a sample of the driver’s saliva using an absorbent collector placed in the mouth or touching the tongue. The test takes about three to five minutes and can detect three classes of drugs: cannabis, ecstasy and methamphetamines.

If the appropriate test is positive for either drugs or alcohol, then a second evidentiary test is conducted. If that test is positive it is sent to that State’s or Territory’s Forensic Pathology Laboratory for confirmatory testing.

“Australia is the world leader in roadside drug testing,” says Prof Drummer. “We are also aware that a number of European Union countries are trialling this approach.”

The proof of the success of roadside drug testing is in the pudding. Prof Drummer says positive drug tests are about twice as common as positive alcohol tests. Spikes in testing around Christmas and New Year are also in line with increased police presence and testing during public holiday periods.

But, there’s still one question to answer. Why is the result of a roadside breath test recorded as a blood alcohol concentration when a blood sample isn’t taken?

Prof Drummer says the machines used to measure the alcohol level in the breath are calibrated to the equivalent amount of alcohol that would be in the blood. This is known as the blood alcohol concentration (BAC), and measures the number of grams of alcohol in 100 millilitres of blood. So, a BAC of 0.05 means there are 0.05 grams (or 50 milligrams) of alcohol in every 100 millilitres of blood.

While most people behave responsibly, it’s good to know there are roadside drug and alcohol checks to catch those that don’t. It’s about keeping everyone safe this festive season so the party can continue into the New Year.

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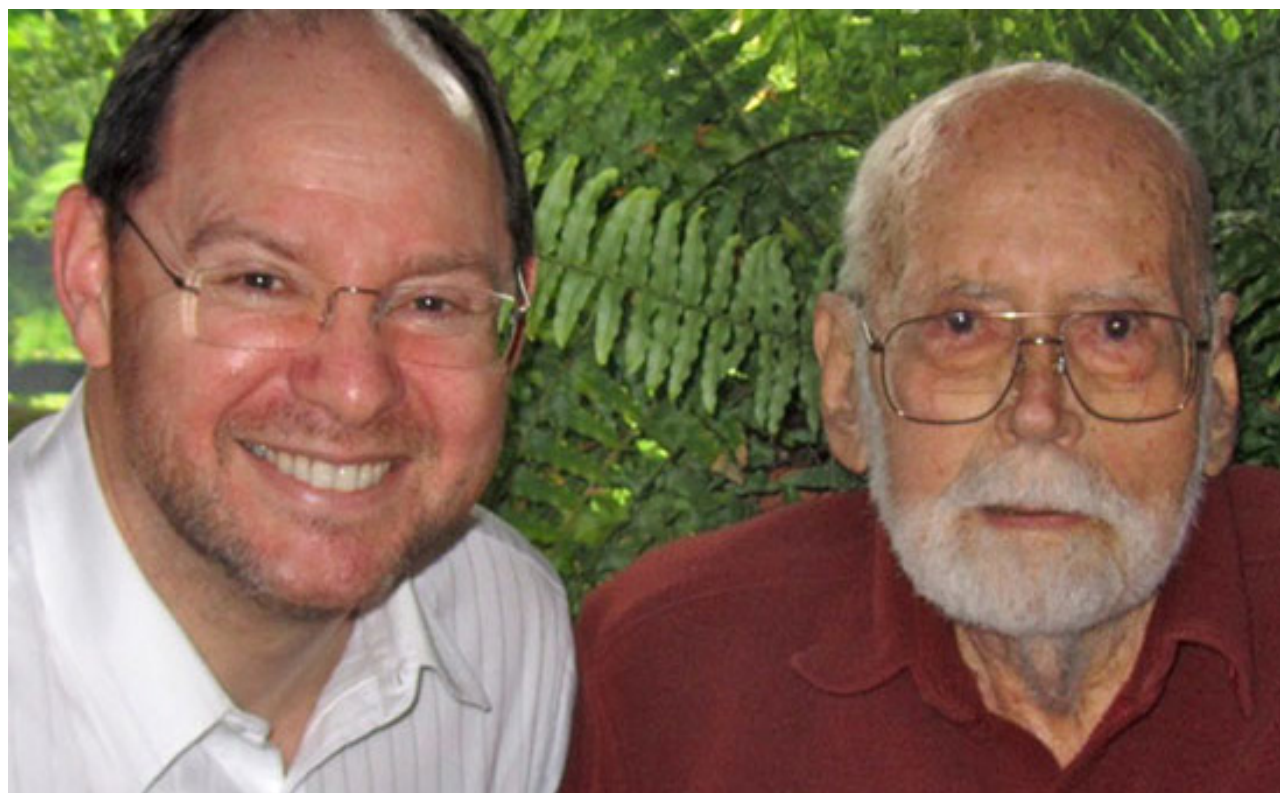
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Nobel laureate's legacy saves countless lives from cancer



Professor John Rasko and Professor E. Donall Thomas

The father of bone marrow transplantation, Edward Donall (Don) Thomas, passed away on October 20 at the age of 92. His research began in 1955 in New York and has led to around 60,000 people worldwide receiving a stem cell transplant derived from blood or bone marrow every year. Don also won the Nobel Prize in Physiology or Medicine (with Joseph Murray^[1]) in 1990.

"Don changed the face of modern medicine," says Professor John Rasko AO, who directs the Department of Cell and Molecular Therapies at Royal Prince Alfred Hospital. "He was an extraordinary humanist, physician and scientist who revolutionised the treatment of blood cancers such as leukaemia, lymphoma and multiple myeloma. Many hundreds of

thousands of people have survived illnesses that would have been otherwise fatal because of his work.”

Don and his colleagues began experimenting with bone marrow transplantation in 1955 using dogs provided by local farmers. He soon applied these techniques to people dying of leukaemia.

“The transplants were initially intended not to cure patients of their disease, but to save them from the cure which was high-dose radiation or chemotherapy,” explains Prof Rasko.

“Radiation and chemotherapy were used to kill the cancer cells in their blood, but since it also killed the healthy blood-producing cells of the bone marrow, patients could not survive the treatment unless they received an infusion of someone else’s marrow. We now know that donor cells can also help destroy cancer cells left behind after radiation or chemotherapy.”

“What was needed was a better understanding of the immune system, the matching of patient and donor tissues (histocompatibility) and the use of immunosuppressive drugs. This became Don’s mission.”

In 1963, Don moved with his family to Seattle where he continued his experiments with dogs. Only when these had yielded good results, and the knowledge of histocompatibility had improved, did he again attempt marrow transplants in patients with leukaemia. What followed was a series of medical breakthroughs.

“Don’s team carried out the first successful transplant between siblings who weren’t identical twins in 1969,” says Prof Rasko. “He then went one vital step further by demonstrating that a marrow transplant could work even when the donor was unrelated to the recipient. It was this achievement that led to the establishment of national bone marrow donor registries in many countries, with almost 10 million donor volunteers in the USA and over 160,000 in Australia.”

Prof Rasko says Don and his colleagues were criticised for decades for subjecting their patients to potentially deadly procedures, but Don told him a few months before his death “... if you do no harm, then you do nothing!”

“Don was a deeply compassionate man, and even in the last few months of his life he recalled with immediacy and detail the names and personalities of patients, including children, he had treated fifty years ago,” says Prof Rasko. “His most important long-term collaborator was Dottie, his wife since 1942, who was trained as a journalist and laboratory technician. They worked side-by-side in various hospitals and laboratories.”

Prof Rasko admits that the kind of research required to develop bone marrow transplantation in the 1950’s might not be possible in today’s risk averse and litigious society.

“Don was always mindful that his achievements depended, above all, on the strength and courage of his patients. The dangers they faced and the suffering they endured enabled him to establish a therapy that has saved many lives and will save many countless more. His life’s work also provides a foundation for broader further applications in the fields of regenerative medicine, gene and stem cell therapy.”

[1] Joseph Murray passed away shortly after Donall in November this year.

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- Early diagnosis equals better prognosis for testicular cancer
- The placenta may hold the key to problems in pregnancies
- Infection to death in two days means the Hendra virus doesn't horse around

Welcome to the November edition of ePathWay

November brings forth two annual events - Movember and Spring Racing Carnivals.

Movember is responsible for sprouting moustaches on thousands of men's faces to raise vital funds and awareness for men's health. Our contribution to this great initiative is a round up of testicular cancer.

While those moustaches are growing, thousands of horses are also being transported around Australia for the Spring Racing

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Did you know there is a World Health Organization (WHO) Polio Reference Laboratory in Australia? According to Adjunct Associate Professor Bruce Thorley, Head of the National Enterovirus Reference Laboratory (which includes the Polio Reference Lab)^[1] in Melbourne, most people are surprised by this discovery. But they shouldn't be. While Australia and New Zealand are officially 'polio free', the highly infectious poliovirus is still circulating in some countries which means we must remain vigilant.

Poliomyelitis (polio) is a disease caused by infection with the poliovirus. It mostly affects children under five years of age, but can strike at any age. The virus spreads by direct person-to-person contact, or through contact with infected faeces or infected mucous or phlegm from the nose or mouth. It enters the body through the mouth and nose.

Once the poliovirus is in the body, it multiplies in the throat and intestinal tract and then spreads through the blood and lymph system. Most people don't develop any symptoms when they are infected, while others may have nonparalytic symptoms such as meningitis. Less than one percent develop paralytic symptoms, usually in the legs, which means the virus has invaded the central nervous system.

“If a person has an active infection we usually detect it through a faeces test,” explains A/Prof Thorley. “Even if there is paralysis involved it can be difficult to detect poliovirus in the cerebrospinal fluid (CSF).”

Vaccination programs around the world have almost eradicated poliomyelitis, with only three countries still polio-endemic: Afghanistan, Nigeria and Pakistan. A/Prof Thorley says the last case of acute polio infection occurred in Australia in 2007 when a young adult travelled to visit family in Pakistan and returned with the virus infection.

The last case of indigenous wild poliovirus in Australia and New Zealand was by the 1970s, but thousands were infected before that time. Many of those who were infected are now feeling the effects decades later in what is known as Post Polio Syndrome (PPS) and the Late Effects of Polio (LEoP).

PPS is characterised by weakness, fatigue and pain, along with other symptoms such as difficulty swallowing or breathing. It is not a re-infection of the poliovirus, but a progression of the neurological damage that occurred when the person had polio all those years ago. The polio patient may have regained mobility due to other nerves and muscles in the affected limb compensating for the damage inflicted by poliovirus, but they may become weakened due to overuse.

“If older people who were diagnosed with polio, or know they had been in close contact with someone who had polio, experience muscle weakness and tiredness then PPS should be considered,” says A/Prof Thorley. “These symptoms can develop decades after being exposed to the poliovirus.”

LEoP is the wear and tear on the body due to the original weakness. For example, although polio affected their right leg, a person might have arthritis in their left leg because of the extra burden it has carried over the years.

“Detecting PPS and LEoP is purely by clinical assessment because there is no pathology test for them,” says A/Prof Thorley. “We have serology tests to detect antibodies, but they don’t distinguish between antibodies produced from exposure to the wild virus or antibodies produced through immunisation.”

The important message is that polio may be gone from our shores, but it should not be forgotten. Since there is still a wild form of the virus circulating in a few countries, and a proportion of those who were once exposed to the virus decades ago are suffering the effects today, you could say we need to be vigilant at both ends of the spectrum.

More information on poliomyelitis, PPS and LEoP can be found at www.polioaustralia.org.au or www.postpolio.org.nz.

[1] These laboratories are a part of the Victorian Infectious Diseases Reference Laboratory (VIDRL) in Melbourne

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