



PathWay

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA



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Issue #040

In This Issue

- Ebola virus disease death rate not as high as other diseases in West Africa
- Uncommon lymphomas can be skin deep
- Interpreting troponin test results is an increasingly sensitive issue
- Mercury poisoning misinformation can get temperatures rising

Welcome to the September edition of ePathway

The current Ebola virus disease outbreak in Africa has made headlines around the world. We've looked at what this virus is, and how its mortality rate compares to other diseases.

September 15 marked World Lymphoma Day, so we've highlighted a rare form of lymphoma that occurs in the skin.

We've also asked an expert why the test of choice for heart damage is an increasingly sensitive issue, and highlighted why misinformation about mercury poisoning still gets temperatures rising.

Don't forget to check our [Facebook](#) page regularly and keep up-to-date with what's happening in pathology by following our CEO Dr Debra Graves (@DebraJGraves) or the College (@PathologyRCPA) on Twitter.

While you're online, check out the *Know Pathology Know Healthcare* [Facebook](#) page as well.

Interesting Facts

H2H (human-to-human)

The way almost all cases of Ebola virus disease (EVD) are transmitted in the current outbreak in Africa

2 to 21 days

The incubation period from the time of infection to symptoms for EVD

Ebola virus disease death rate not as high as other diseases in West Africa

through a single blood test has made earlier diagnosis easier. Since the troponin test^[1] was introduced in the late 90's several generations of test assays have been able to measure increasingly smaller amounts of troponin proteins, although the increasing test sensitivity seems to be causing confusion.



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Mercury poisoning misinformation can get temperatures rising

Mercury poisoning can be a conundrum. There is no 'normal' range; just safe levels of exposure. Mercury also comes in many forms, and we are exposed to it in many ways. The form of exposure determines the health effects and severity, although misinformation and confusion about mercury poisoning can get temperatures rising.



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- Pathologists add value to cancer diagnosis, prevention, treatment and research
- Why settle for second best with HIV-testing?
- Haemochromatosis highlights a notable design fault in our body
- Mesothelioma is a

Welcome to the August edition of ePathway

Education about and continual awareness of different diseases are important so we've highlighted two this month to coincide with their respective national campaigns. August 11-17 was Haemochromatosis Awareness Week in Australia, and August 22 was Daffodil Day which shines the spotlight on cancer, so we've looked at them both including the role of pathology in diagnosing cancer.

The incidence of human immunodeficiency virus (HIV) is also on the rise in Australia and, along with it, different methods of diagnosis. We've looked at the pros and cons of these methods compared to laboratory

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Ebola virus disease death rate not as high as other diseases in West Africa



The current Ebola virus disease (EVD) outbreak in West Africa has so far infected more than 3000 people, of whom more than 50 percent have died. While the outbreak seems far away, there is a chance an infected person could bring the virus down under. We've talked to Professor Roger Wilson, Chief Pathologist at NSW Health Pathology, to find out more about EVD and Australia's preparations should it find its way here.

Prof Wilson says EVD captures the world's attention because it appears suddenly and dramatically, usually infects a small number of people in a small area with high mortality, and then disappears after being brought under control. While the recent outbreak in West Africa is the worst yet, Prof Wilson says it's still a long way from inflicting the mortality rates of other viruses and diseases.

"Ebola actually has a small impact in terms of human disease compared to other infectious diseases," says Prof Wilson. "For example, the latest figures show there are currently about four deaths per day in West Africa from Ebola, yet in the same region, about 400 people die each day from diarrhoea, roughly 550 die from malaria and more than 650 die from HIV/AIDS."

EVD was first recognised in 1976 when the virus broke out simultaneously in the Sudan and in Yambuku village near the Ebola River in the Democratic Republic of the Congo (formerly Zaire). It was duly named the Ebola virus after this river.

"A lot of work has gone into identifying the natural reservoir of the virus, which is believed to be fruit bats, but there is no absolute verification of this," explains Prof Wilson. "Many outbreaks in the past seem to have started from people handling infected animal carcasses such as chimpanzees which were collected as 'bush meat' from the forest. How these animals become infected is still unknown."

Transmission of EVD from person to person happens through direct contact with blood, faeces or secretions of infected

people. It can also be transmitted through sexual contact for up to seven weeks after recovery from the illness. EVD can also be spread through unprotected handling of corpses and contaminated objects. Diagnosis is confirmed via a blood test.

Prof Wilson says the notion that everyone who has EVD eventually bleeds to death is wrong because more than half the patients don't bleed at all. That impression is partly because EVD has been classed with viral haemorrhagic diseases and was formally known as Ebola haemorrhagic fever.

"Most people with Ebola virus disease die from respiratory failure or end organ failure," he says.

Preparations in light of the recent outbreak in Africa are described on the Commonwealth website^[1] for Australia, and on the Ministry of Health website^[2] for New Zealand.

[1] <http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-ebola.htm>

[2] <http://www.health.govt.nz/our-work/diseases-and-conditions/ebola-update>

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Uncommon lymphomas can be skin deep



September is [lymphoma month](#) when campaigns take place around the world to raise awareness of this common blood cancer^[1]. To support lymphoma month, we've looked at an uncommon type which involves the skin called cutaneous lymphoma.

Dr Stephen Lade, pathologist at Peter MacCallum Cancer Centre in Melbourne, says cutaneous lymphomas are classified according to the lymphocytes involved (B-cell or T-cell). The most common type is cutaneous T-cell lymphoma (CTCL).

"The most famous case of CTCL was British actor Paul Eddington of *The Good Life* and *Yes Minister* fame who died from it in 1995. His condition was actually diagnosed when he was in Australia," he says.

Dr Lade says cutaneous lymphomas are difficult to diagnose in the early stages because the signs and symptoms and skin biopsy findings are very similar to other skin conditions.

"Cutaneous lymphomas present with a rash that is persistent and doesn't respond to treatment or the usual skin rash therapies. Some people can have a chronic cutaneous lymphoma rash for 20 to 30 years," he explains.

"Most lymphomas can be diagnosed from a pathology test, but cutaneous lymphomas are different in this regard. The clinical assessment of the patient is very important because a biopsy often doesn't provide a definitive diagnosis. This means it's very important for the pathologist and patient's clinician to collaborate about the diagnosis based on pathology findings and the patient's symptoms and presentation."

Other pathology tests that assist diagnosis include histology stains for B-cells and T-cells, and molecular testing. Cutaneous lymphomas are mostly treatable but not curable, clinically indolent, and the rash isn't contagious. Treatment options include chemotherapy and radiotherapy. Advanced stages involve the lymph nodes, blood and internal organs.

For more information about cutaneous lymphoma visit the Cutaneous Lymphoma Network [website](#).

[1] Lymphoma is also covered in the [May 2012](#) edition of ePathWay

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Interpreting troponin test results is an increasingly sensitive issue



The earlier and more accurately a heart attack is diagnosed, the better the outcome for the patient. The ability to measure the levels of troponin proteins released from damaged heart muscle through a single blood test has made earlier diagnosis easier. Since the troponin test^[1] was introduced in the late 90's several generations of test assays have been able to measure increasingly smaller amounts of troponin proteins, although the increasing test sensitivity seems to be causing confusion.

Professor Hans Schneider, Director of Pathology and Head of Chemical Pathology at Alfred Health in Melbourne, says the troponin test is an exquisite marker of heart damage, yet most people don't understand where it sits on the ladder of sensitivity.

"When the troponin test was introduced about 15 years ago it doubled the number of acute myocardial infarctions (heart attacks) diagnosed because it could pick up smaller amounts of damage to the heart muscle," he explains.

"Troponin test assays are now so sensitive they can pick up heart muscle damage due to other causes such as heart failure or arrhythmias. We can even detect increased troponin levels in people after they have run a marathon."

Highly sensitive troponin assays should help doctors make treatment decisions earlier, but Prof Schneider says it's important to remember that the test result is also defined by different cut off values for males and females.

"There is also a significant percentage of people now being found with elevated troponin levels who don't have any signs or symptoms of a heart attack," he explains.

Prof Schneider says the newest highly sensitive troponin tests probably don't discover more heart attacks than the current so-called contemporary troponin assays, but they will hopefully allow earlier discharge in patients with normal levels. He says the

confusion arises when doctors are deciding if an elevated troponin level from a highly sensitive test assay is due to a heart attack or other causes.

“The context, patient presentation and clinical information, along with an ECG, should be used for a diagnosis of a heart attack, alongside the troponin level,” he says. “Troponins are definitely the marker of choice for heart damage, especially heart attacks, but the test’s very high sensitivity means it could be elevated for reasons other than a heart attack.”

[1] More information about the troponin test can be found at [Lab Tests Online](#)

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Mercury poisoning misinformation can get temperatures rising



Mercury poisoning can be a conundrum. There is no 'normal' range; just safe levels of exposure. Mercury also comes in many forms, and we are exposed to it in many ways. The form of exposure determines the health effects and severity, although misinformation and confusion about mercury poisoning can get temperatures rising.

Mercury is a naturally occurring element found in air, water and soil. It can be:

- Elemental (metallic) mercury, which is a liquid at room temperature. Examples of where it can be found include some thermometers, amalgam fillings, fluorescent light bulbs, electrical switches, mining and some industrial processes. It is released into the air when coal and other fossil fuels are burned. It is also found in cigarette smoke.
- Inorganic mercury compounds are formed when mercury combines with other elements (other than carbon) to form salts or other compounds. They can occur naturally in the environment, and can be used industrially to make other chemicals.
- Organic mercury compounds are formed when mercury combines with carbon. For example, microscopic organisms that live in water and soil can convert elemental and inorganic mercury into an organic mercury compound called methylmercury, which can accumulate in the food chain.

Dr Penny Coates, Clinical Director of Chemical Pathology at SA Pathology, says consuming methylmercury through eating fish is the commonest type of mercury exposure outside an industrial setting in Australia.

"As fish move further up the food chain the methylmercury becomes more concentrated in their body," she explains. "People who are at a greater risk from methylmercury poisoning include pregnant women and their unborn babies. This is why pregnant women are often advised to avoid eating fish from the high end of the food chain."

Dr Coates says she has also seen patients with high mercury levels in their blood and urine from eating a lot of tinned tuna. Once they stopped eating this product their mercury levels decreased. She says there is also a lot of misinformation about

mercury poisoning, including the link between amalgam fillings and mercury poisoning.

“Amalgam fillings contained mercury which could be released into a person’s system, but we haven’t seen any evidence of toxicity from them. In fact, drilling them out of teeth could be more dangerous because that very action creates an aerosol and the mercury could then be inhaled,” she says.

Dr Coates says mercury is stored in our bone, and everyone has a small amount whether it’s from the air or seawater. This means if chelation therapy^[1] is used to ‘detect’ mercury leaking from amalgam fillings, then the result will always be positive – even in people who don’t have amalgam fillings!

“Chelation therapy is used to treat people with serious or confirmed mercury or other heavy metal poisoning,” Dr Coates explains. “It’s not a valid test to ‘prove’ that a person has mercury in their body from amalgam fillings in the absence of any other risk factors.”

Factors that determine whether mercury is causing any detrimental health effects include the form of mercury a person is exposed to, dose, age (foetuses are the most susceptible), duration and route of exposure (such as inhalation, ingestion or contact with the skin).

Symptoms of mercury poisoning include neurological disturbances, memory problems, skin rash and kidney problems. Diagnosis is through a blood or urine test, although Dr Coates says industrial exposure is usually monitored by a urine test in the first instance, and if that shows a high level of mercury, it is followed by a blood test.

Dr Coates says there is no ‘normal’ reference range for mercury, only a level of concern or safe level of exposure. This makes mercury poisoning an easy target for misinformation and confusion – especially since there are a number of ways to be exposed to mercury – making the clinical interpretation of the test result by a medical expert very important.

[1] Chelation therapy is a medical procedure where chemicals which bind to heavy metals are administered, allowing them to be excreted in urine.

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