



PathWay

THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA



OCTOBER 2014 | Published by RCPA

Issue #041

In This Issue

- Poliovirus takes advantage of gaps in immunisation campaigns
- New guidelines for gestational diabetes mellitus not universally accepted
- Court ruling lets the gen(i)e out of the bag
- Hydatid disease can be contracted from man's best friend

Welcome to the October edition of ePathway

The World Health Organization declared the international spread of wild poliovirus since the start of this year a public health emergency of international concern. We asked the head of Australia's Polio Reference Laboratory about this situation.

The Federal Court of Australia also recently upheld the right of a company to patent a gene linked to breast cancer, so we asked an expert about the issue of patenting genes. New guidelines for gestational diabetes mellitus are also ruffling a few feathers, and we looked at hydatid disease and why it's linked to man's best friend.

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

Interesting Facts

3

The number of countries that remain polio-endemic (Pakistan, Nigeria and Afghanistan), down from more than 125 in 1988.

350,000

The number of cases of polio reported in 1988.

Poliovirus takes advantage of gaps in immunisation campaigns

406

The number of cases of polio reported in 2013.

Source: World Health Organization

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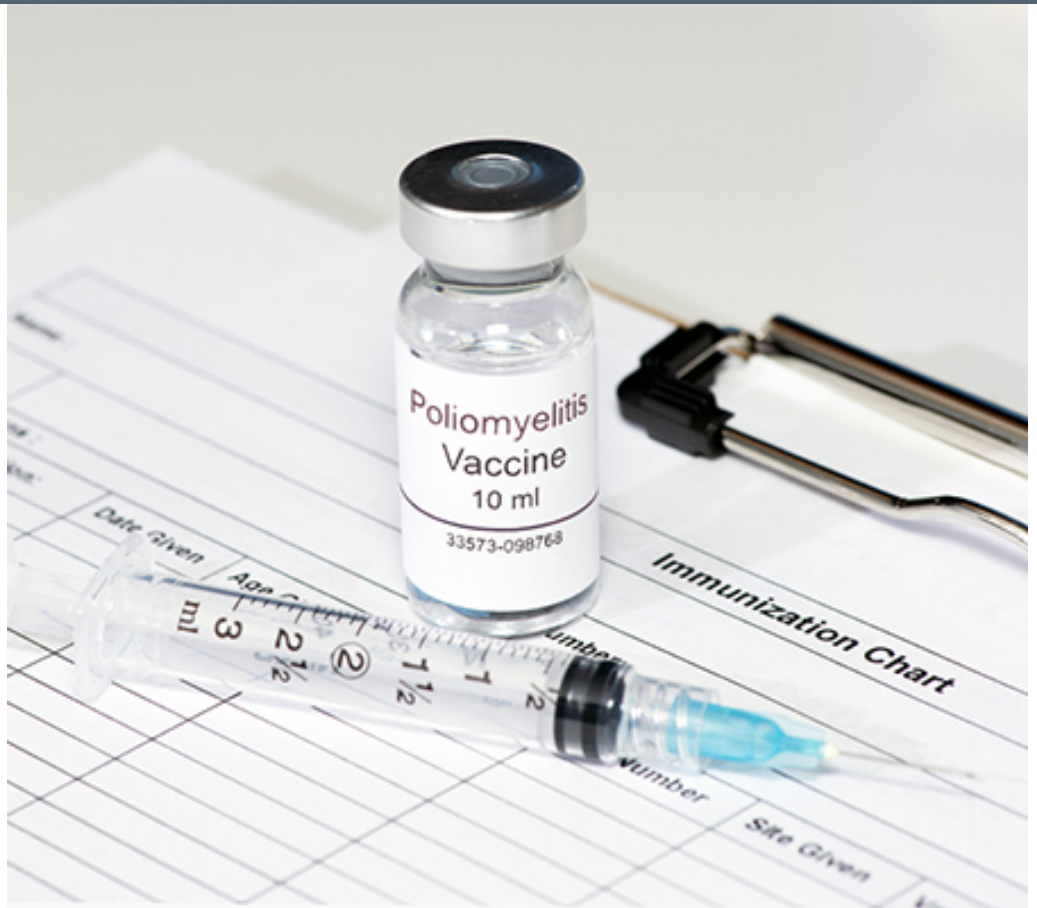
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Gaps in immunisation campaigns for the world's poorest and most marginalised communities have allowed the incidence of poliovirus^[1] infection to rebound. Many of these infections have been traced back to Pakistan as the source by sequencing the virus. The World Health Organization (WHO) is monitoring the situation, and has declared the international spread of wild poliovirus since the start of this year a public health emergency of international concern.

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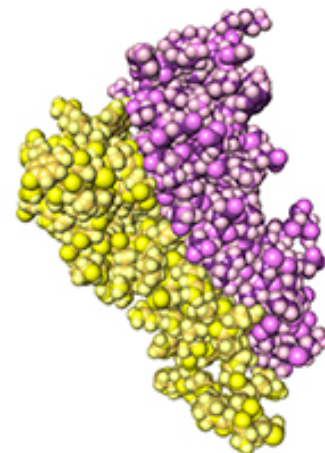
New guidelines for gestational diabetes mellitus not universally accepted

Every woman wants her pregnancy to be uncomplicated but it isn't always so. Between three and eight percent of pregnant women develop gestational diabetes mellitus (GDM). While women are routinely tested for GDM as part of their pregnancy screens, new guidelines could change how they are tested, and who is diagnosed with GDM.



Court ruling lets the gen(i)e out of the bag

The Federal Court of Australia recently upheld the right of a company to patent the BRCA1 gene^[1]. The ruling also confirms the patentability of human genes under Australian law. We asked Professor Graeme Suthers, genetic pathologist and spokesman for the Royal College of Pathologists of Australasia (RCPA), about the issue of patenting genes.



“I believe patenting genes is wrong in principle,” says Prof Suthers. “Gene patents potentially compromise the quality of care given to patients, increase costs and restrict doctors’ abilities to make diagnoses.”

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Hydatid disease can be contracted from man’s best friend

Hydatid disease is the end result of the hydatid tapeworm’s lifecycle. Humans can contract this disease, most commonly from close contact with dogs. Hydatid disease isn’t a big problem in Australia and New Zealand, but more than 1 million people globally are affected by it at any one time.



Dr Tim Blackmore, microbiologist and infectious diseases physician at Capital and Coast District Health Board, Wellington, says the hydatid tapeworm’s lifecycle needs a host for the adult tapeworm. This host is usually a dog (or sometimes a dingo in Australia), which can harbour several thousand adult hydatid tapeworms in its gut at any one time. It then sheds hydatid eggs in its faeces.

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Previous Editions



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ISSUE #040

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- 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

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.

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Poliovirus takes advantage of gaps in immunisation campaigns



Gaps in immunisation campaigns for the world's poorest and most marginalised communities have allowed the incidence of poliovirus^[1] infection to rebound. Many of these infections have been traced back to Pakistan as the source by sequencing the virus. The World Health Organization (WHO) is monitoring the situation, and has declared the international spread of wild poliovirus since the start of this year a public health emergency of international concern.

Adjunct Associate Professor Bruce Thorley, Head of the National Enterovirus Reference Laboratory (which includes the Polio Reference Laboratory) in Melbourne, says incidences of poliovirus infections in Syria and Israel are now tapering off. However, Pakistan is still the greatest reservoir with 166 cases of wild poliovirus type 1 (WPV1) out of 178 reported cases worldwide so far this year.

"There are three serotypes of poliovirus which are wild poliovirus types 1, 2 and 3. Of these, WPV2 is considered to have been eradicated with the last case detected in 1999. While WPV3 has not been detected for nearly two years, it requires three years of clinical and laboratory surveillance before WHO will consider it also eradicated. This leaves WPV1 as the only circulating poliovirus left," says A/Prof Thorley.

"Routine clinical surveillance for cases of polio-like illness or acute flaccid paralysis in children continues worldwide, including Australia, to monitor the situation."

Most polio infections are either asymptomatic or present as a non-specific febrile illness. Acute flaccid paralysis occurs in less than one percent of cases. And while the poliovirus may be a distant memory for most of the world, it is still endemic in Afghanistan, Pakistan and Nigeria.

Routine environmental surveillance is used by Australia and many other countries to test sewerage or other environmental samples for the presence of poliovirus. It can confirm the presence of wild poliovirus infections in the absence of cases of paralysis because the virus is shed in an infected person's faeces.

A/Prof Thorley says every country is at risk while wild poliovirus is still circulating somewhere in the world. This situation also highlights the importance of vigilance through surveillance and preventative action such as immunisation against viruses that only need a small window of opportunity to flourish.

[1] Poliovirus was covered in the [December 2012](#) issue of ePathWay

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New guidelines for gestational diabetes mellitus not universally accepted



Dr Graham Jones

Every woman wants her pregnancy to be uncomplicated but it isn't always so. Between three and eight percent of pregnant women develop gestational diabetes mellitus (GDM). While women are routinely tested for GDM as part of their pregnancy screens, new guidelines could change how they are tested, and who is diagnosed with GDM.

Dr Graham Jones, chemical pathologist at SydPath and spokesman for the Royal College of Pathologists of Australasia (RCPA), says the Australian Diabetes in Pregnancy Society (ADIPS) produced the [new guidelines](#) in 2013. These replaced their previous guidelines on GDM written in 1998.

"The 1998 guidelines were produced with the best available information at that time by an ad hoc committee that met in 1991," explains Dr Jones. "The new guidelines are based on a large multinational trial. The trial data indicates the risks associated with elevated glucose in pregnancy but unfortunately not the effects of any treatments."

Dr Jones says the new guidelines have been endorsed by the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) and are in line with the World Health Organization's (WHO) [position](#) on GDM.

"The issue that has arisen with the new guidelines is conflicting advice from different medical specialties. For example the Royal Australian College of General Practitioners (RACGP) hasn't endorsed them and wishes to continue using the 1998 guidelines while waiting for further evidence of

benefit of the new guidelines.”

This means two sets of criteria for GDM are currently in use in Australia – the old guidelines and the new guidelines. Dr Jones says pathology laboratories are consequently reporting on GDM according to which guideline the referring doctor is following.

“At the end of the day, the treating doctor has the responsibility for their actions and decisions. The medical community must therefore work as a team with open communication about this issue.”

The College is working on a project to develop new test request terminology to clarify which guidelines the requesting doctor would like the results reported against to help reduce confusion about this issue.

“Pathologists need to find out what the requesting doctor’s wishes are in terms of reporting GDM, but at the end of the day we now have a clear set of guidelines for GDM waiting to be used that are in line with the WHO’s position.”

The RCPA has not released a position statement on the new GDM guidelines.

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Professor Graeme Suthers

The Federal Court of Australia recently upheld the right of a company to patent the BRCA1 gene^[1]. The ruling also confirms the patentability of human genes under Australian law. We asked Professor Graeme Suthers, genetic pathologist and spokesman for the Royal College of Pathologists of Australasia (RCPA), about the issue of patenting genes.

“I believe patenting genes is wrong in principle,” says Prof Suthers. “Gene patents potentially compromise the quality of care given to patients, increase costs and restrict doctors’ abilities to make diagnoses.”

Prof Suthers says the testing of patient samples for mutations in genes represents the observation of a natural phenomenon in those patients, and it should not be within the scope of patenting.

“The court followed the letter of the law in terms of its interpretation of the question ‘Is a BRCA1 gene that has been isolated in a test tube for medical testing a natural substance?’ The court ruled it was not, and was therefore patentable.”

Prof Suthers says patents make a positive contribution to innovation in medical laboratories, but it’s essential to distinguish between a discovery and an invention.

“The RCPA views patents on naturally-occurring human genes as wrong. Numerous international medical bodies view them as wrong. The US Supreme Court has ruled against the BRCA1 patents in the USA,” he explains. “Gene patents basically place control and access to a patient’s genetic information into the hands of a third party.”

The way forward, according to Prof Suthers, is to change the rules through legislative changes.

“The bottom line is that this court decision states that current gene patent practices fall within the legal framework for patenting in Australia. We, as a society, need to change the rules so the legal framework aligns with common sense and with what is right for patients and their families.”

[1] A woman's risk of developing breast cancer and/or ovarian cancer is greatly increased if she inherits a harmful mutation in the BRCA1 (or BRCA2) gene.

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Dr Tim Blackmore, microbiologist and infectious diseases physician at Capital and Coast District Health Board, Wellington, says the hydatid tapeworm's lifecycle needs a host for the adult tapeworm. This host is usually a dog (or sometimes a dingo in Australia), which can harbour several thousand adult hydatid tapeworms in its gut at any one time. It then sheds hydatid eggs in its faeces.

The hydatid tapeworm also needs an intermediate host for the cystic stage to complete its lifecycle. This host is usually an animal such as a cow, sheep, pig or wild animal that ingests hydatid eggs from contaminated pasture and grasslands.

Humans can also become intermediate hosts if they ingest hydatid eggs via contact with the faeces of infected dogs, or via patting dogs with hydatid eggs stuck to their coats. The hydatid eggs travel from the gut to the bloodstream and eventually lodge in an organ such as the liver where they form watery cysts full of tapeworm heads. Hydatid cysts can exist in situ for many years without detection.

"Hydatid cysts are often an incidental finding because they don't usually cause any symptoms," explains Dr Blackmore. "Diagnosis is often via a CT or ultrasound scan performed for other reasons. A blood test for antibodies to the cysts is available in reference laboratories."

Anatomical pathologists will also make the diagnosis on histology of cyst walls or cytology of cyst fluid.

“The cysts don’t usually cause a problem unless they rupture. They can then spill into the body, sometimes resulting in daughter cysts. A lot of care is taken during surgery when removing a hydatid cyst in order to minimise the risk of rupture,” says Dr Blackmore.

The risk of hydatid disease to humans is greatest in rural areas where there is a close association between dogs and intermediate hosts. Treatment is based on removing the cysts surgically and anti-helminth (worm) drugs. Prevention involves breaking the tapeworm’s lifecycle by washing hands after handling dogs or their faeces, and ensuring dogs are regularly wormed and not fed raw offal.

Hydatid disease can be fatal without treatment, and heavily infested organs can rupture. Hydatid cysts also remain in the body after the tapeworms in them are dead.

Dr Blackmore says hydatid disease is very rare in New Zealand these days because of better management of the tapeworm’s lifecycle, especially in rural areas. He says it is usually seen in immigrants and refugees, but it is not passed on by person-to-person contact. The rates in Australia are similarly low. But even at our current low rates, it’s not a disease that would be wished upon us by man’s best friend.

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