ePathWay
THE ROYAL COLLEGE OF PATHOLOGISTS OF AUSTRALASIA

DECEMBER 2017 | PUBLISHED BY RCPA

ISSUE #076

IN THIS ISSUE

INTERESTING FACTS

27%

The decline in the number of estimated deaths between 2015 and 2016 (605) of people living with chronic hepatitis C.

63%

The increase in gonorrhoea notification rates between 2012 and 2016.

107%

The increase in infectious syphilis notification rates

Welcome to the December 2017 edition of ePathWay

The festive season is usually a time of reflection as well as celebration, so we've offered some thought-provoking information in this month's edition. We've also turned the tables on Santa to find out what he's been up to this year.

Our stories cover:

- Why some Hepatitis C cases have decreased for the first time in 10 years.
- The rise in diagnoses of two sexually transmitted infections (STIs).
- Why reference ranges for liver function tests (LFTs) are being reviewed.
- How two pathology advocates saved a historic pathology collection.

Merry Christmas from the ePathWay editorial team. We'll be back in February next year, but until then keep checking our Facebook page and the the latest tweets from our CEO Dr Debra Graves (@DebraJGraves) or the College (@PathologyRCPA).

Hepatitis C advances are gifts that will keep on giving

between 2012 and 2016.

Source: Kirby Institute's Annual Surveillance Report 2017

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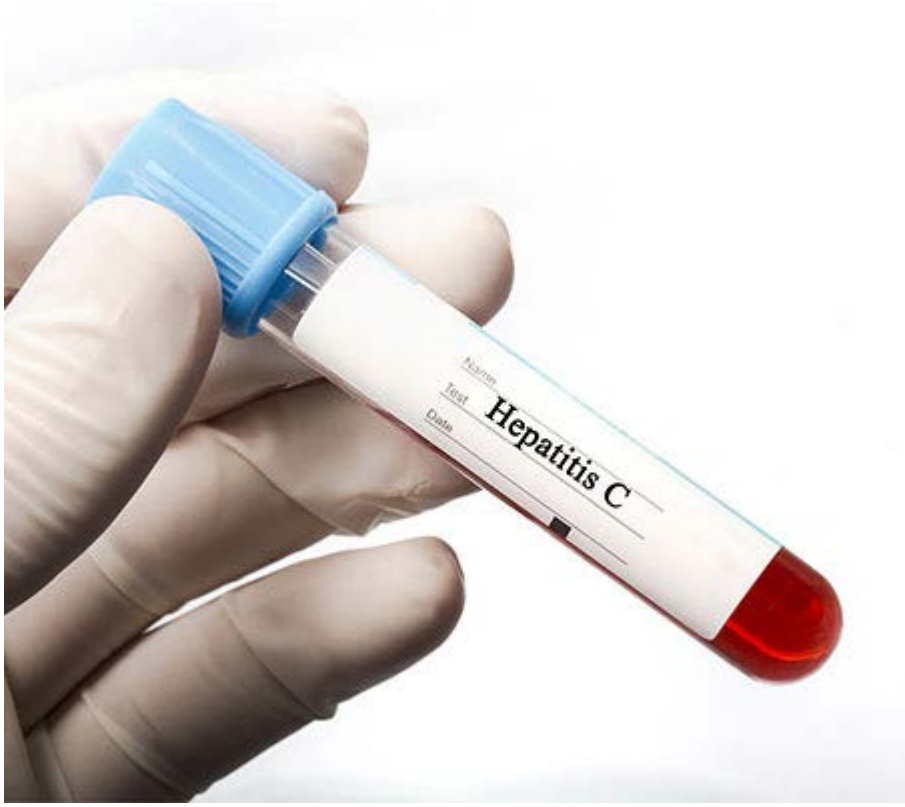

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Rise in STIs means we're sharing more than Christmas cheer

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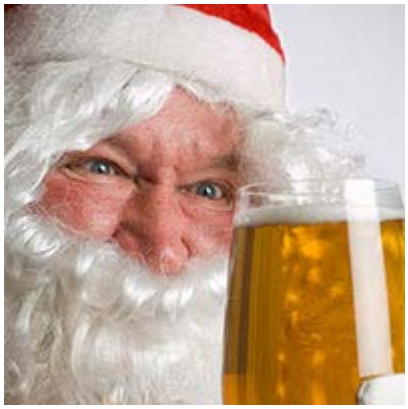
Liver function tests catch Santa at his own game

Healthcare

Forget Santa’s naughty and nice list. Our liver reveals what we’ve really been up to making liver function tests (LFTs) a valuable tool in the medical toolbox. These tests are under continuing review to maintain their relevance as health demographics change.



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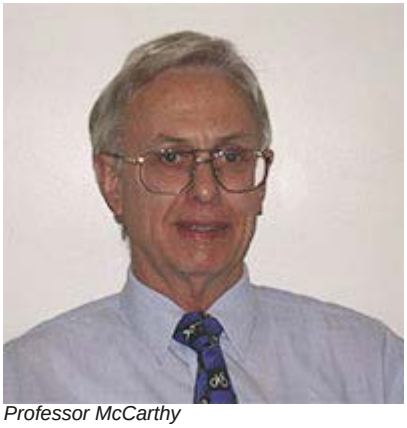
Morbid anatomy collection preserves Australia’s medical past for future generations

The Kanematsu Collection of Morbid Anatomy specimens located at Sydney Hospital represents a significant slice of Australia’s medical history dating from 1890 through to the 1980s. It has had a turbulent past including surviving a building demolition as well as threats to destroy it prompting curator Mrs Elinor Wrobel OAM to threaten a hunger strike. The collection has been spared and is now preserved for future generations.



Professor McCarthy

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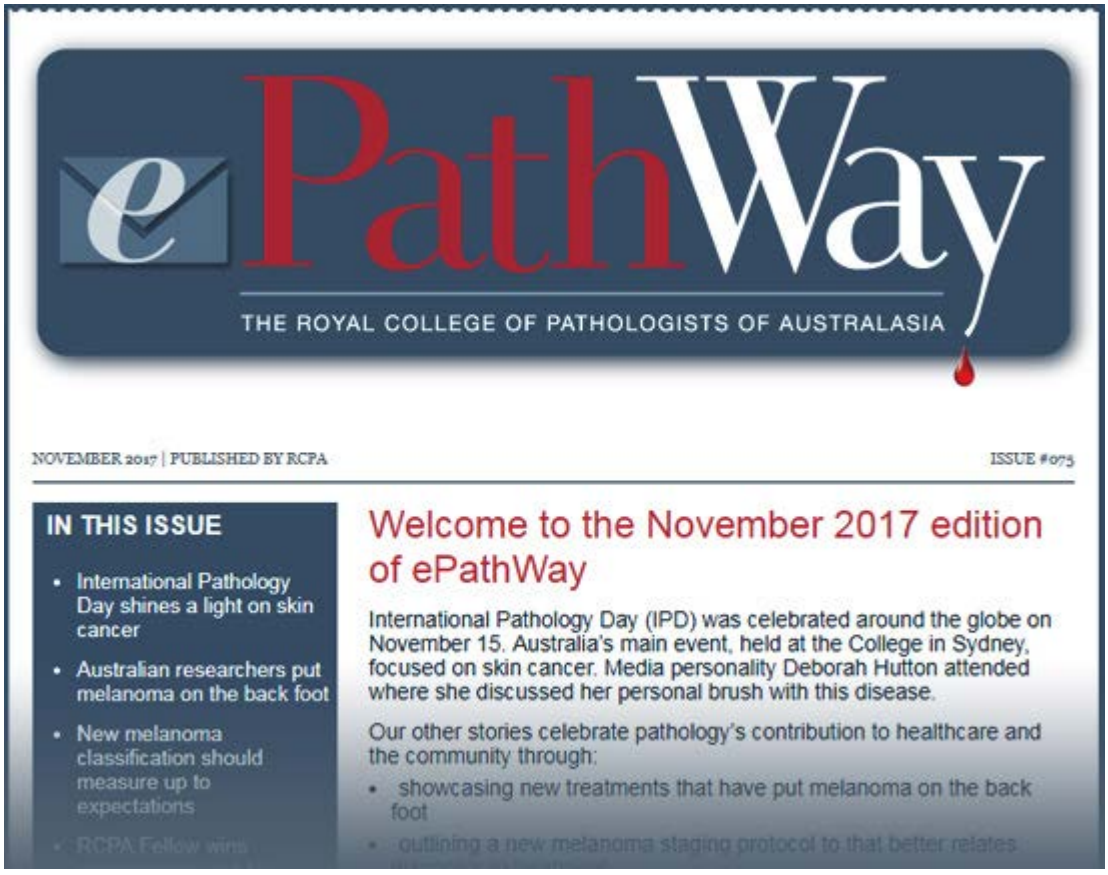

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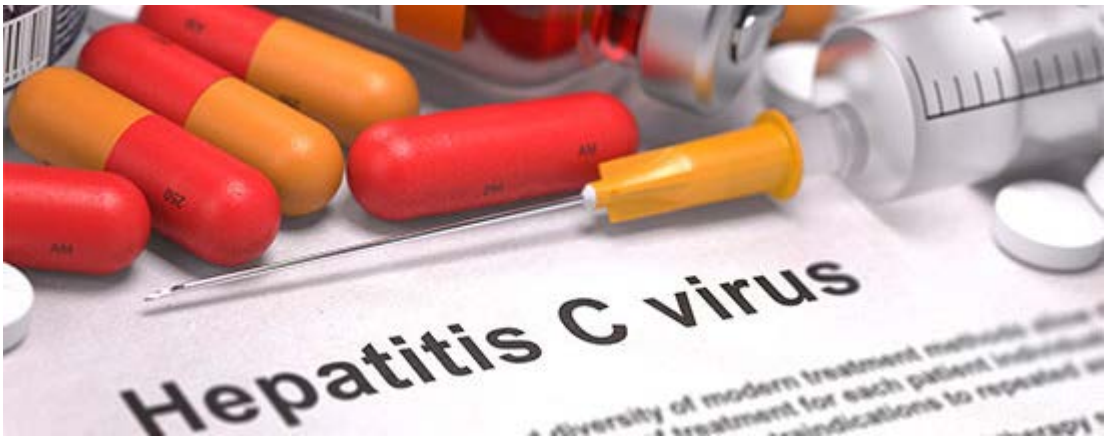
Hepatitis C advances are gifts that will keep on giving



The number of Australians living with hepatitis C virus (HCV) who have advanced liver disease, and the number living with hepatitis C-related cirrhosis, have declined for the first time in 10 years. While the report card for HCV isn't all good news, the benefits of second generation medications are starting to show, and will be gifts that keep on giving well into the future.

Before we look at the future of hepatitis C, let's revisit its past.

"Hepatitis C was initially called non-A, non-B hepatitis. We knew there was something there that wasn't hepatitis A or B, but we couldn't identify what it was. It was finally discovered and named hepatitis C around 1989 thanks to improved molecular techniques," explained Professor Bill Rawlinson, Senior Medical Virologist at SAViD, NSW Health Pathology Randwick & UNSW.

Prof Rawlinson said a snowball effect kicked in once the virus was identified. Hepatitis C was initially associated with infected blood products until a test for the virus was introduced in 1990, with Australia the second country in the world to screen its entire blood supply.

The ability to reliably test for HCV halted transmission of non-A non-B hepatitis from blood. First generation medications were later developed to treat the infection, although Prof Rawlinson said they were of varying efficacy, as low as 50% in some populations. The regimens were difficult to administer and adhere to, and they came with some nasty side effects. Second generation medications, known as Direct Acting Antivirals (DAAs), were the game changers.

“There was a problem and some really clever people persisted until they solved it. The second generation medications for hepatitis C are easier to take than the first generation, have shorter courses, come with far fewer side effects and have better cure rates for a wider range of HCV genotypes.”

The cure rate for HCV for people who receive treatment is very high. About 227,306 people in Australia were living with chronic hepatitis C at the start of 2016. Of these, 14% (32,550) received HCV treatments, of whom 93% (30,434) were cured. Their treatment paths were determined by their HCV genotype or strain, although the effectiveness of DAAs has rendered this determination less critical.

“There is also more advanced technology available to investigate liver damage, bypassing the need for an invasive liver biopsy, as well as better tests for the virus itself,” explained Prof Rawlinson.

“Another flow on effect of being able to diagnose and cure patients with HCV will be an eventual decrease in the number of people who require a liver transplant. This is because liver failure resulting from HCV infection is currently the most frequent reason for liver transplants in many countries including Australia.”

Within one generation the HCV virus was identified, reliable pathology tests were developed to diagnose a HCV infection, the blood supply was safe guarded, treatments were developed that have high cure rates, and fewer liver transplants are on the horizon. All of these point to a brighter future for people living with HCV, and for the community as a whole.

A bit more about hepatitis C

- Hepatitis C is a contagious liver infection caused by the hepatitis C virus (HCV).
- There are six major genotypes (strains) and numerous subtypes labelled a, b, c etc.
- The virus exists in the infected person as a group of closely related species, or quasispecies, which has an influence on how the person’s immune system responds to the infection.
- Transmission is through blood-to-blood contact (parenteral transmission) and from mother to newborn (vertical transmission).
- HCV is now mostly transmitted through the sharing or re-using of injecting equipment such as needles and syringes. Needle syringe exchange programs and needle cleaning programs are attempts to reduce this transmission in some settings.
- Pathology tests to diagnose HCV infection include a blood test to look for antibodies to the virus. If this test is positive, further tests are requested to see if the virus is still present in the blood and to determine the specific genotype of virus. Other tests, such as liver function tests, may be requested to determine whether the virus is damaging the liver.

Prof Rawlinson is also Director of SAViD (Serology & Virology Division), the Director of a NSW State Reference Laboratory for HIV/AIDS, and founding Director of the NSW Organ and Tissue Transplant Donor Screening Laboratory. He was interviewed about hepatitis for the May 2016 edition of ePathWay.

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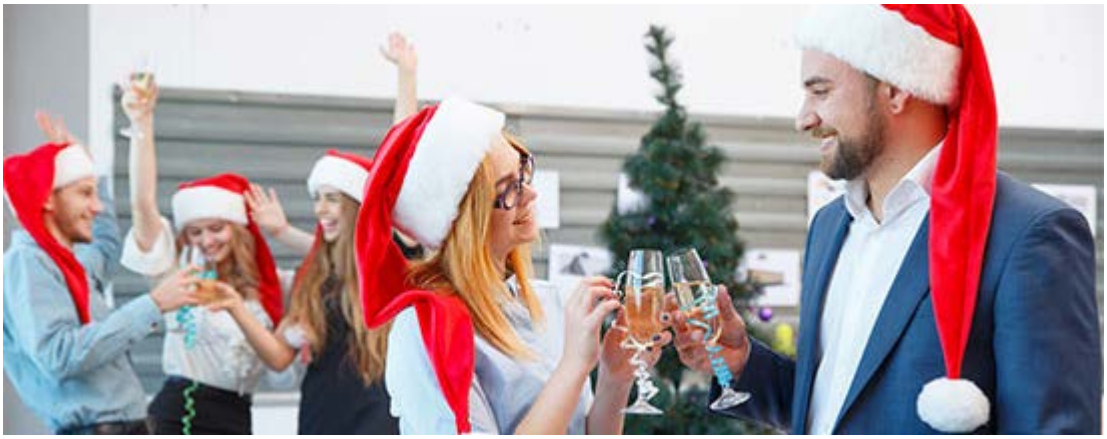
Rise in STIs means we're sharing more than Christmas cheer



It seems we're spreading more than goodwill and cheer around Australia. The Kirby Institute's Annual Surveillance Report 2017 shows gonorrhoea and syphilis diagnoses are increasing, yet these sexually transmitted infections (STIs) are not as benign or as treatable as some people might think.

We may live in an era where medical advances are conquering many diseases, but we are also staring down the barrel of an antibiotic resistant 'superbug' future. Gonorrhoea and syphilis are both bacterial infections treated with antibiotics. It's a small step to join those dots together.

"There has already been a case of multidrug-resistant gonorrhoea in Australia," explained Dr Angie Pinto, Microbiologist and Infectious Diseases Physician at the Royal Prince Alfred Hospital (RPAH) and researcher at the Kirby Institute in Sydney.

"We also have a new generation who don't appear to have the same fear of untreatable diseases. They seem to think if they contract something like an STI then it will be treatable and curable so they may accept the risk of infection. But this is not the case at all. Antibiotic resistance is on the rise and treatment options, for gonorrhoea especially, are becoming more limited."

Dr Raymond Chan, Clinical Microbiologist at the RPAH, agrees. He said safe sex practices were in the spotlight during the terrifying 'AIDS era' of the 1980s. Now that this syndrome is deemed a chronic disease and not a death sentence, the impact of safe sex messages is not as strong.

“It’s still very important for people who engage in risky sexual behaviour to be tested for STIs and to practice safe sex,” he explained.

“The rising incidence of gonorrhoea and syphilis seems to show this isn’t happening as much as it should, although the data may also reflect increased testing and therefore increased numbers of positive test results. It is often difficult to tell what the real situation is.”

The data from the Kirby Institute’s report shows gonorrhoea notifications have increased by 63% over the past five years, with particular rises among young heterosexual people living in major cities. Notifications of infectious syphilis have increased by 107% over the past five years, mostly in young males living in all areas from remote places to major cities.

“Another factor to consider is the rise of social media and dating apps. These may be enabling behaviour or changing it, we’re not sure which. Travel is also a factor because people are often more likely to engage in riskier behaviour in another environment than at home,” explained Dr Pinto.

Conversations about the importance of both testing and prevention in terms of safe sex practices are essential. Whether it makes good Christmas party chatter over the roast turkey and pudding is another matter. But since prevention is better than cure, perhaps a few condoms and some statistics about rising STI rates slipped into appropriate Christmas bons bons could act as conversation starters. In the current climate they would be more useful for our young adults than a party hat, key ring and cheesy joke.

A bit more about gonorrhoea

- Gonorrhoea is a sexually transmissible bacterial infection.
- It has no symptoms in about 80% of women and 50% of men.
- Untreated gonorrhoea can lead to pelvic inflammatory disease in females, and infertility in males and females.
- It is diagnosed via a urine test or genital swab.
- Treatment is with antibiotics.

A bit more about infectious syphilis

- Infectious syphilis is a sexually transmissible bacterial infection of less than two years’ duration.
- Infected pregnant women can pass the infection to their unborn baby.
- Untreated infections may lead to serious complications that can involve the skin, bone, central nervous system and cardiovascular system.
- It is diagnosed via a blood test.
- Treatment is with antibiotics.

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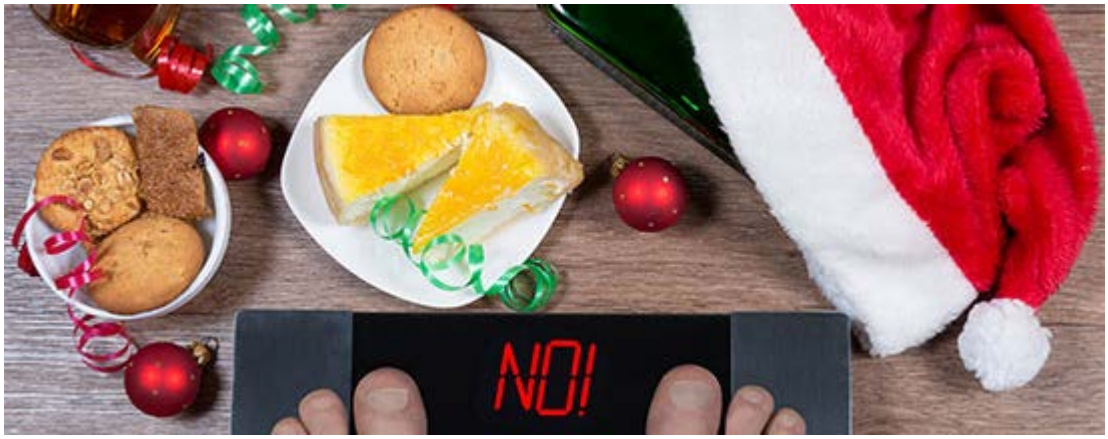
Liver function tests catch Santa at his own game



Forget Santa's naughty and nice list. Our liver reveals what we've really been up to making liver function tests (LFTs) a valuable tool in the medical toolbox. These tests are under continuing review to maintain their relevance as health demographics change.

"The reference ranges for LFTs are being debated and reviewed as our population becomes more obese. The commonest reason for increased alanine aminotransferase (ALT), a test in the LFT panel which reflects liver cell damage, is now fatty liver disease," explained Dr Penny Coates, Clinical Director of Chemical Pathology at SA Pathology.

Reference ranges are set to ensure that just over 95% of a healthy population will fall within the 'normal range'. Our expanding waistlines are redefining what that healthy population looks like.

"Treatment options for liver disease usually depend on laboratory results. If the reference ranges don't reflect medically significant changes in the population then these tests might not flag ill health, or the results might be mostly ignored because they are 'always abnormal'," she explained.

Keeping LFTs relevant is important. To illustrate how informative they can be let's turn the tables on Santa and find out what he's been up to as well. Based on how long he's been carrying excess weight, and on his food and alcohol consumption on Christmas Eve alone (about 1 billion pieces of cake and schooners of beer), his LFT panel would probably light up like the Rockefeller Center Christmas Tree.

"If a person over indulges in alcohol through a single binge they can get acute hepatitis, and this can show up in a LFT as high gamma-glutamyl transferase (GGT) and transaminases. GGT is also increased in seven out of 10 heavy drinkers, and for the

other three increased GGT will probably be due to other causes such as medications or obesity," explained Dr Coates.

If Santa's been taking certain medications, or if his liver isn't recovering from years of extreme binging, or if he has fatty liver disease linked to his weight issue, then these will be picked up by tests in an LFT panel too.

The information collected from these tests form a valuable early warning system. Symptoms of liver disease might not show up until it's quite advanced, yet early changes flagging a potential problem will show up in LFTs. Keeping these tests medically relevant by adjusting their reference ranges is therefore important. And even though we caught him out this year, we're sure the rotund guy in the red suit with questionable dietary and drinking habits, who is also a high-risk candidate for fatty liver disease, would agree.

A bit more about LFTs

- They are a group of tests run together to detect, evaluate and monitor liver inflammation and damage.
- These tests measure enzymes, proteins and substances the liver either produces or excretes, or that are affected by a liver injury, infection or disease.
- Interpreting the pattern of results from the panel of tests helps determines the diagnosis.

A bit more about the liver and fatty liver disease

- The liver's main function is to filter the blood that comes from the digestive tract before passing it on to the rest of the body. It also produces substances that help the blood to clot, helps regulate blood sugar levels, and breaks down alcohol and other drugs, and chemicals.
- Fatty liver disease is a build-up of fat in the liver. Its risk factors include overweight and obesity, type 2 diabetes and excessive alcohol consumption.
- Fatty liver carries a risk for progression to chronic hepatitis and cirrhosis. In some cases it results in liver failure.

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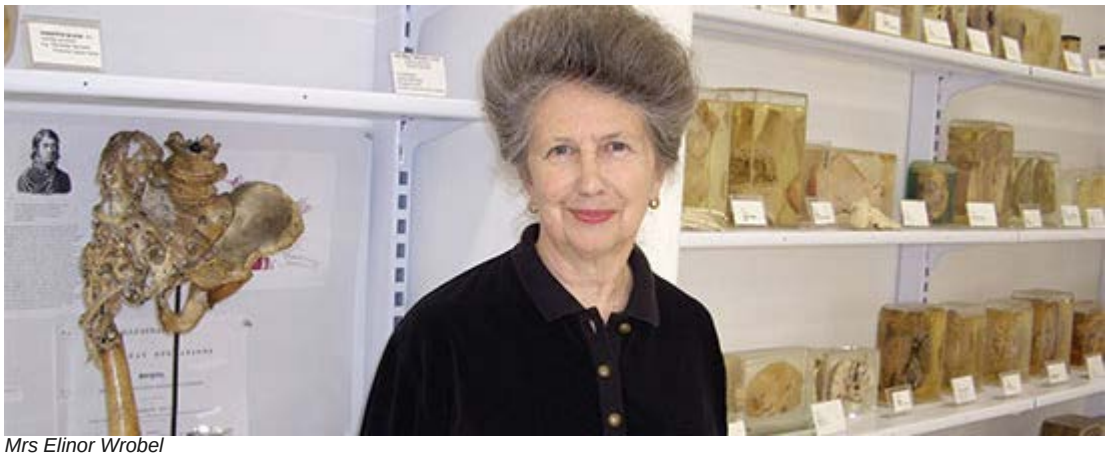
Morbid anatomy collection preserves Australia's medical past for future generations



Mrs Elinor Wrobel

The Kanematsu Collection of Morbid Anatomy specimens located at Sydney Hospital represents a significant slice of Australia's medical history dating from 1890 through to the 1980s. It has had a turbulent past including surviving a building demolition as well as threats to destroy it prompting curator Mrs Elinor Wrobel OAM to threaten a hunger strike. The collection has been spared and is now preserved for future generations.

Mrs Wrobel said the collection contains many treasures including early examples of melanoma, the cancerous hand of a pioneer radiologist, examples of rare fungal diseases, and the lacy skeleton of a farmer's pelvis and femur that were eaten away by *Echinococcus* (hydatid cysts).

"We also have a very valuable collection of lungs including industrial lungs from coal miners, chimney sweeps, stonemasons and wharf labourers who were affected by dust from wheat and grains, and examples of asbestosis, aspirated barium sulphate and tuberculosis."

Mrs Wrobel audited the collection about 18 months ago and found that most museum specimens date from the 1890s to the 1940s.

"I discovered this by matching pathology reports and death certificates to the specimens. Many of these reports were saved by (pathologist) Professor Stan McCarthy who had moved the collection, along with the reports and certificates, to an attic at Royal Prince Alfred Hospital (RPAH) before the Kanematsu Institute of Pathology building where they were kept was demolished in 1985," she explained.

The specimens were subsequently divided between Sydney Hospital, RPAH and University of Notre Dame, Darlinghurst (but only on loan to the two latter institutions). The collection at Sydney Hospital, known as The Dr E Hirst Pathology Museum, opened in 2001 with Mrs Wrobel as the first curator.

“The value of this collection saved by the foresight of Prof McCarthy and others is in preserving the past, as a valuable teaching and research resource, and as a record of inherited diseases in families. The pathology reports that we hold can be accessed by doctors upon request for this purpose.”

Visiting the museum

- The museum is open on Tuesdays between 10am and 3pm, or by appointment for groups.
- The guided tour takes about 1.5 hours.
- Individuals can just turn up, but larger groups should book ahead.
- Cost is $5 per person.
- It is located on the 1st floor of the Nightingale Wing, Sydney Hospital, Macquarie Street, Sydney. Ph: 02 9382 7427.

A brief timeline of the Kanematsu Collection of Morbid Anatomy

1816-1820	Morbid Anatomy Collection began in the Old Pathology Department and Anatomy Room at Sydney Hospital.
1831	Pathology research and accumulation of morbid anatomy specimens (specimens collected before 1890 are not in the current collection).
1878	A pathology museum is planned.
1933	Kanematsu Institute of Pathology is opened at Sydney Hospital and a Morbid Anatomy Museum established in this building.
1985	The building housing the Morbid Anatomy Museum at Sydney Hospital is demolished prompting Professor Stan McCarthy to remove the collection and related material, including pathology and autopsy reports, and store them in whatever spaces he can find at the RPAH.
1999	Premier Bob Carr allocates the 1st Floor of the Nightingale Wing at the Sydney Hospital for a museum.
2001	The current Kanematsu Collection of Morbid Anatomy is opened in its present site with Ms Elinor Wrobel as curator.

A bit more about Mrs Elinor Wrobel

Mrs Wrobel has had many titles including the Matron of Morbidity. Her conversation with Richard Fidler in 2010 is still repeated in ‘Best of Conversations with Richard Fidler’ replays. Mrs Wrobel also helped establish Sydney’s Powerhouse Museum, and is curator and trustee of the John Passmore Museum of Art.

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