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Nadine Berry at our Newcastle genomics laboratory: the first to be NATA accredited to test three key cancer genes

Our genomics revolution

Genomics is one of the most dynamic and fastest growing areas of medicine, and NSW Health Pathology is ramping up to be a recognisable force on the national and international stage.

Dr Cliff Meldrum, our first Director of Genomics, is leading the charge to create a statewide genomics service.

It will bring together the expertise and resources that exist across our networks into one coordinated service, dedicated to providing state-of-the-art diagnostics and care for NSW patients.

"NSW Health Pathology is home to some of the brightest minds in this area," Dr Meldrum explained.

"Our pathologists and scientists are developing faster, more efficient tests for an ever expanding range of genes linked to hereditary conditions like cancer, heart disease and developmental delay."

We have 130 staff working across at least 10 different laboratories. Last year alone our teams processed nearly 90,000 genomic-related tests and the demand is growing every day.

"While the work our genomics experts do is second to none, many of our teams have operated in relative isolation, focusing on their particular specialty area," Dr Meldrum explained.

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HealthNet to include pathology information

NSW Health Pathology and eHealth NSW have joined forces on a project to share pathology results with HealthNet and the national My Health Record system.

This is a key step toward consolidating patient health information, which is often spread across a vast number of different locations and computer systems.

HealthNet provides NSW Health clinicians with secure and immediate access to a patient's recent medical history and a patient's national My Health Record.

Now that HealthNet is being expanded to include pathology results, the system can further enhance its ability to improve quality of care, increase patient safety and improve patient outcomes with:

- immediate 24/7 access to results for clinicians in a single system,
- better support for clinical workflow and improved ability for coordinated care initiatives,
- reduced costs by avoiding unnecessary duplication, and
- greater access and control for patients to manage their own health information.

Our Pathology West and South Eastern Area Laboratory Service teams will be the first to integrate with the new system, followed by Pathology North and Sydney South West Pathology Service.

NSW Health public pathology results will be shared with the national My Health Record, so the patient, their GP and other healthcare providers can access them.



IN FOCUS Scott Pearce NSW Health Pathology Disaster Manager

Scott spent the last two years as the Operations Manager for our Department of Forensic Medicine in Newcastle. In January, he moved across to our corporate office to help develop our emergency and disaster framework.

He has been working with our network staff, Local Health District disaster managers and the NSW Health Emergency Management Unit to ensure we are well prepared in the event of a major incident.

Tell us about your role

It's a new and exciting role that will guide how we prepare for and respond to emergencies and disasters. Most people think that emergency and disaster management is only for major incidents involving mass casualties.

Planning for those types of incidents is a key part of what I do, but we also need to make sure we are prepared for incidents that can affect how we deliver our day-to-day services. That could include anything from a power outage, having one of our IT systems down, right through to making sure we have staff able to deliver our services if there is a pandemic.

What are your key achievements so far?

I've been taking part in exercises with representatives from across NSW Health to determine the role each agency should play in the state's response to disasters and emergencies.

This helped me complete our disaster management plan which will form part of the broader NSW HEALTHPLAN. I am looking forward to visiting more sites and meeting staff.

What was the last thing that made you really laugh?

Dave Hughes' opening for the 2016 Logies. It was great.

How do you spend a typical weekend?

A winter weekend includes four games of soccer with my four children. I coach one of their teams and manage another.

In summer, my weekends are a little bit quieter. We have Nippers on Sunday mornings and the occasional volunteer lifesaving patrol at Nobbys Beach.

In between that I'm running kids around to after-school jobs and other commitments while trying to fit in the domestic jobs, like mowing the lawn.

If you could choose a superpower, what would it be?

Flying. It would be a great feeling of exhilaration and freedom. You would also beat the traffic!

Upskilling our emerging leaders



Tools of the trade: upcoming leaders get a boost in skills and confidence

Our Emerging Leaders program kicked off earlier this year with 30 upcoming leaders taking part in the pilot.

The program gives aspiring leaders from across our organisation the opportunity to further develop and refine their skills.

Director of Workforce and Culture, Martin Sainsbury, said the program supports succession planning and helps nurture the talent and passion of participants.

"It's a great platform to help us develop the leaders of tomorrow," Martin said.

"Participants will develop confidence as a leader and learn how to better engage with their teams, peers and customers," he explained.

The program includes a mix of face-to-face workshops facilitated by internal and external experts. It also provides coaching, networking and individual 360-degree feedback.

So far the group has heard from several internal leaders including our Chief

Executive, Tracey McCosker, who shared her personal leadership insights.

Keynote speaker Dominic Thurbon captivated the group with his philosophy on change management, and international speaker Anders Sorman-Nilsson led an inspiring discussion on innovation.

Steve Lamb from our Sydney South West Pathology Service said the program provides a great opportunity to learn and get a sense of where we are heading as an organisation.

"All of the presenters we've heard have offered unique insights which I am starting to apply in the workplace already," Steve said.

"I really enjoy the collaborative nature of the program, and it's been great having the opportunity for mentoring and support from our senior leaders."

The pilot program will wrap up in October. Planning for round two is currently underway.

Therapeutic drug reporting changes

NSW Health Pathology is changing reporting units and ranges for 46 therapeutic drug tests.

The changes will see reporting units change from Molar Units (e.g. $\mu\text{mol/L}$) to Mass Units (e.g. mg/L or $\mu\text{g/L}$). Ranges and alert thresholds for clinical risk will also change.

The aim is to standardise reporting across our pathology networks and help reduce the risk of clinical misinterpretation and errors.

The changes follow recommendations from our Chemical Pathology Clinical Stream and are based on best-practice advice from the Royal Australasian College of Physicians, the Royal College of Pathologists of Australasia, and the Australian Society of Clinical and Experimental Pharmacologists and Toxicology.

Our pathology networks are working to implement the changes to the 46 therapeutic drugs by end of July.

Our South Eastern Area Laboratory Service has completed the transition.

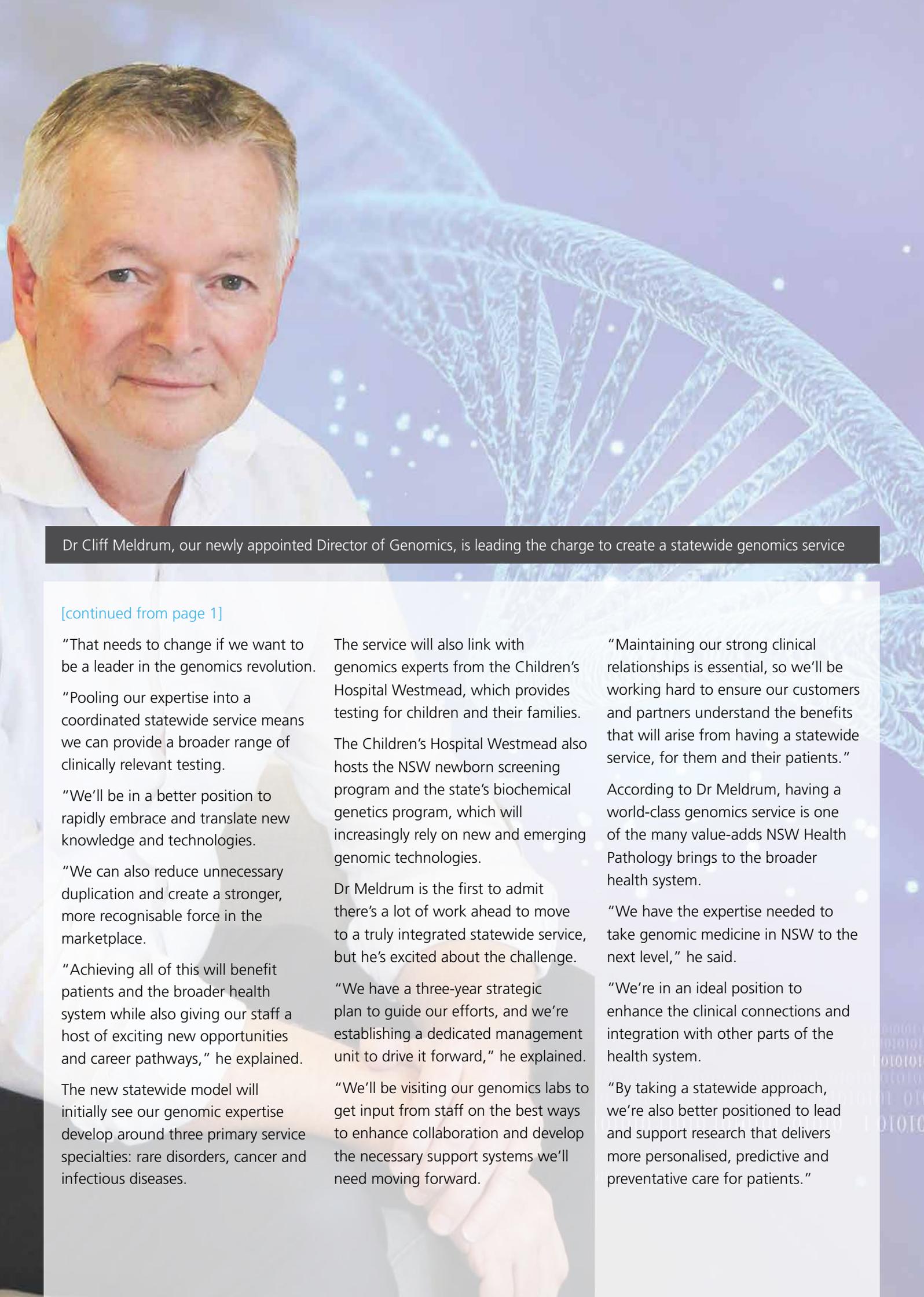
Sydney South West Pathology Service introduced the changes in early May.

Pathology West is taking a phased approach with changes to 36 drugs already introduced and the remaining to be implemented around July.

Pathology North is planning to introduce the changes from early July.

Networks will provide advice to their Local Health District customers in-line with local implementation plans. This includes advice about changes to the electronic medical record system, local patient access lists, etc.

Visit www.pathology.health.nsw.gov.au and search for clinical alerts.



Dr Cliff Meldrum, our newly appointed Director of Genomics, is leading the charge to create a statewide genomics service

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“That needs to change if we want to be a leader in the genomics revolution.

“Pooling our expertise into a coordinated statewide service means we can provide a broader range of clinically relevant testing.

“We’ll be in a better position to rapidly embrace and translate new knowledge and technologies.

“We can also reduce unnecessary duplication and create a stronger, more recognisable force in the marketplace.

“Achieving all of this will benefit patients and the broader health system while also giving our staff a host of exciting new opportunities and career pathways,” he explained.

The new statewide model will initially see our genomic expertise develop around three primary service specialties: rare disorders, cancer and infectious diseases.

The service will also link with genomics experts from the Children’s Hospital Westmead, which provides testing for children and their families.

The Children’s Hospital Westmead also hosts the NSW newborn screening program and the state’s biochemical genetics program, which will increasingly rely on new and emerging genomic technologies.

Dr Meldrum is the first to admit there’s a lot of work ahead to move to a truly integrated statewide service, but he’s excited about the challenge.

“We have a three-year strategic plan to guide our efforts, and we’re establishing a dedicated management unit to drive it forward,” he explained.

“We’ll be visiting our genomics labs to get input from staff on the best ways to enhance collaboration and develop the necessary support systems we’ll need moving forward.

“Maintaining our strong clinical relationships is essential, so we’ll be working hard to ensure our customers and partners understand the benefits that will arise from having a statewide service, for them and their patients.”

According to Dr Meldrum, having a world-class genomics service is one of the many value-adds NSW Health Pathology brings to the broader health system.

“We have the expertise needed to take genomic medicine in NSW to the next level,” he said.

“We’re in an ideal position to enhance the clinical connections and integration with other parts of the health system.

“By taking a statewide approach, we’re also better positioned to lead and support research that delivers more personalised, predictive and preventative care for patients.”

Rare disorders

- Our Randwick lab is NATA accredited to provide whole 'exome' sequencing – a process that sequences (or reads) all of the 20-30,000 genes in a person's genome in a single assay.

So far the exomes of more than 40 families have been analysed, resulting in the diagnosis of 18 children with epilepsy, 19 children with an intellectual disability and four children with immunodeficiency.

Prior to this work the families had no diagnosis for the ailments affecting their children. Now they can seek the treatment and support they need.

- We offer community-based genetic screening for couples who may be at risk of carrying hereditary disorders such as Tay-Sachs disease, Canavan disease, Riley-Day syndrome, Bloom syndrome and Niemann-Pick disease type A.
- We're also working with the Sydney Children's Hospital Network and the Garvan Institute on a research project that helps identify changes in genes by using whole genome sequencing to read the regions in between genes.

Cancer genomics

- Our Newcastle laboratory was the first in Australia to receive NATA accreditation for the use of next generation sequencing technology in routine diagnostic testing for mutations in BRCA1, BRCA2 and PALB2 genes, which are associated with breast and ovarian cancer.

The Newcastle lab is also developing multiple gene panels for colorectal cancer syndromes and other rare inherited cancer syndromes. It's also the statewide referral centre for inherited bowel cancer genetic screening.

- Experts at our Royal Prince Alfred, Newcastle and other labs are creating validated genomic tests to enable customised treatment based on mutations within tumours. This rapidly developing field can match patients to treatments that are more likely to be effective for them and cause fewer side effects. Studying a patient's tumour can also help predict the risk of recurrence and provide information about appropriate treatment strategies.

Infectious diseases

- Our Mycobacterium Reference Laboratory at Westmead is using genotyping to ensure tuberculosis (TB) has few places left to hide.

The lab receives and analyses every TB culture in NSW to help determine the genetic makeup of each individual case and see how many cases are potentially related. Results are logged in a database that informs public health investigations of possible transmission clusters.

- We're also working to better understand how bacteria like staphylococcus aureus (staph) are becoming resistant to antibiotics. Our laboratories can sequence a whole bacterial or viral genome in one to two days. This information could lead to new ways of preventing life-threatening diseases and help inform the development of new and improved vaccines and antibiotics.

Forensics

Scientists at our Forensic & Analytical Science Service analyse crime scene samples (including DNA material) submitted by the NSW Police Force.

DNA samples are cross-checked with existing profiles on the National Criminal Investigation Database in the hopes of making a match to a potential offender. If there isn't a match, the profiling usually hits a dead end.

Genomic technologies like Massively Parallel Sequencing could potentially pinpoint predictive information (such as hair and eye colour, bio-geographical ancestry and other features) and give police new avenues to investigate.

FASS is also exploring how genomics could enhance certain post-mortems requested by the NSW Coroner.

Specific sets of genes or changes in genes can be linked to particular disease processes. With genomic technologies, our forensic pathologists

may one day be able to carry out molecular testing to identify potential risks to surviving relatives.

Where an autopsy doesn't determine cause of death, genomic testing could help identify genetic abnormalities that lead to disorders such as Long QT syndrome (which causes heart problems and can potentially trigger seizures and sudden death).

These advances could provide closure to families and help prevent future unexpected deaths in the same family.

SA case shows why patient privacy matters

Disciplinary action against several South Australian health staff has served as a good reminder of the importance of respecting patient privacy.

If that's not enough, the number of staff disciplined for such incidents will now be published quarterly on the SA Health website, South Australian Health Minister Jack Snelling has announced.

The new approach follows media reports 21 employees were caught 'snooping' at patient records.

Thirteen employees allegedly accessed the records of accused killer Cy Walsh, who is charged with the murder of his father, former Adelaide Crows football coach Phil Walsh.

News reports said the 13 staff received formal warnings and SA Health Chief Executive David Swan warned further action could be taken if the information was passed on to other people.

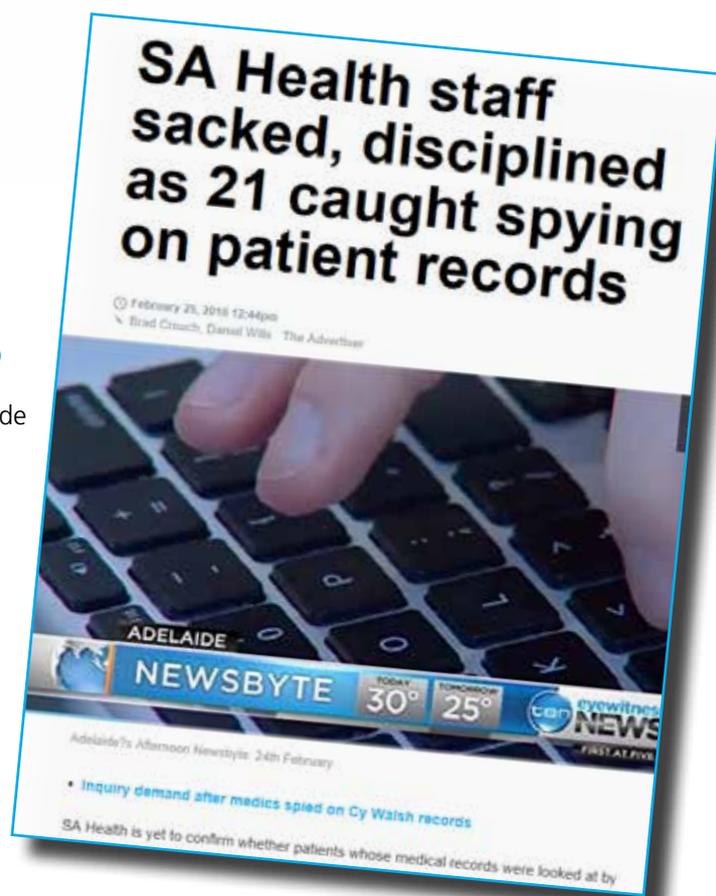
In other South Australian cases, two staff were sacked and a further six disciplined over similar instances of unauthorised access.

Minister Snelling told the state's Parliament that electronic health records are monitored to show when records are accessed inappropriately, and authorities are informed.

Similar audit capability exists across the electronic records systems that are shared and accessed by NSW Health Pathology staff, and regular audits are conducted to ensure the security of personal health information.

NSW privacy laws provide penalties ranging from two years jail and/or \$11,000 fines for the most serious privacy breaches.

Staff who breach patient privacy also risk disciplinary measures that may include formal warnings or termination of employment.



Privacy 101

- Access to confidential and/or personal health information should be on an as needed basis only.
- Access must be appropriate, relevant and directly related to your role.
- Access must be in line with privacy and security policy and requirements.
- Suspected breaches must be reported immediately to a manager or supervisor.
- Breaches occur when personal or health information is lost, misplaced, stolen, or deleted or disposed of by accident or without authority.
- Breaches more commonly involve looking at personal information, such as a patient's medical records, without authority and/or revealing that information to others.
- Any material containing personal health information must be stored securely on NSW Health systems.
- Only authorised mobile devices and other equipment (USB keys, wireless access points, printers etc) can be connected to NSW Health networks and equipment.
- Storing information on personal portable devices is contrary to our privacy obligations as they can be lost or taken and used outside the workplace.
- If portable media must be used, ensure it's on a temporary, as-needs basis and limited to USB keys or other portable media that are the property of NSW Health Pathology or its networks.
- Any confidential information that is temporarily stored on USB or portable hard drives must be secured using encryption and pass or PIN codes.
- If in doubt, consult the NSW Health Privacy Manual for Health Information.

Point of Care hits the road in Ambulance trial

Our highly successful point of care devices are now being trialed in ambulance vehicles. A three-month pilot started in March and tests the devices' ability to provide fast, accurate results while on the road. It's also measuring whether unnecessary patient transfers, admissions and pressure on the ambulance service can be reduced.

Stories from the road

Ambulance officer 1:

We were called to attend a 90-year-old man with shortness of breath. We used the device to carry out a full set of diagnostic testing.

The patient did look quite unwell, and had another ambulance attended they may have been inclined to transport him to the emergency department (ED). We did the blood analysis on the spot and were able to talk about results with the GP and pathologist. The patient was able to stay at home in his own surroundings and not be caught up in a busy ED where he didn't need to be.



Ambulance officer 2:

We attended a 65-year-old man who lives alone, became ill and was found by a home carer during a routine visit.

The patient had delirium and was unsure of his surroundings. However, most of his other vital signs were in normal ranges.

While waiting for a transport car we ran the bloods through the point of care device and it indicated results that were outside of normal ranges.

This pointed us toward renal function failure or disease.

The transport crew told us later that the receiving doctor at Wyong Emergency Department was impressed pathology was done on scene.

After the patient was assessed using blood results from us, a quick diagnosis of advanced renal failure was achieved.

While the device didn't change our treatment or transport options, it helped to have more of an idea about the cause of the delirium when on-scene.

It also provided the hospital with an early diagnosis, and the nursing staff at Wyong indicated that this saved at least three hours in treatment time.



Keeping Iron Man athletes safe

More than 1,400 athletes lined up in drizzling rain for a punishing 3.8km swim, 180km bike ride and 42.2km run at the Port Macquarie Iron Man.

Kempsey laboratory technical officers Chris Romero and Karen Mewett were on hand to test athletes.

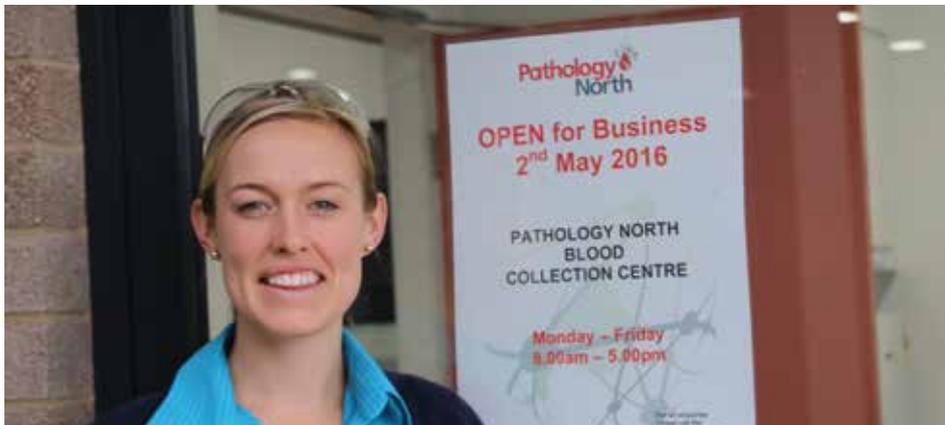
Using point of care testing devices they could check blood oxygen levels, hydration and electrolyte balances. They could even run a troponin test to detect the early stages of a heart attack.

This is the sixth year the team has been at the event and they are proud to be part of the team keeping athletes safe.

"Thankfully we've never had a serious medical emergency but it's reassuring to know that we can pinpoint a serious issue if there is one," said Karen.

"It's life-saving technology but just as importantly, it can also indicate when a patient is not in danger. That rules out an unnecessary trip to the emergency department."

New collection centre opens at Kurri Kurri



Pathology North opened the doors to our newest collection service in early May. The service is conveniently located in the centre of Kurri Kurri in the Lower Hunter Region.

The new service is operating in the local community health centre along with GPs and other health services.

The new collection rooms are in addition to the public inpatient and outpatient pathology services Pathology North provides at nearby Kurri Kurri Hospital.

Pip Gardiner, a collector at the new service, said patients were enjoying the convenience of accessing several health services under the one roof.

“Being located in the community health centre means patients can come

straight from their doctor and get the pathology tests they need, all in the one building,” Pip said.

Pathology North was invited by the group that built the Lang St centre to operate a collection service on-site. It increases public pathology services to the Coalfields community and provides a convenient site for pathology collections in the town.

Pathology North operates 13 community-based collection centres. Some of these are co-located with GP clinics like the new Kurri Kurri service.

To find the public pathology collection service or laboratory nearest you, see the Location Finder on the NSW Health Pathology website (www.pathology.health.nsw.gov.au)

We will still bulk bill

The Commonwealth has proposed changes to bulk billing arrangements for pathology tests.

The original start date for the changes (1 July, 2016) was recently postponed. If the changes go ahead, we will still bulk bill.

For patients attending our public pathology collection services this means:

- No out-of-pocket expenses for tests covered under the Medicare Benefits Schedule.
- We won't seek to recoup costs by introducing co-payments.
- Our collection services will operate as normal.
- We'll continue to accept all pathology requests forms.

Remember, patients can choose their pathology provider but if a doctor specifies a particular pathologist on clinical grounds, a Medicare rebate will only be payable if that pathologist performs the service. Patients should discuss this with their referring doctor.

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We want *Compass* to be interesting, relevant and something you want to read.

Help us make future editions even better by sending in your ideas and feedback.

- Have a personal or team achievement you want to share?
- Working on a collaborative project that will make a positive difference to our public pathology, forensic or analytical science services?
- Know an interesting character to profile in our InFocus section?

Send your suggestions to the *Compass* editor at carina.bates@health.nsw.gov.au

Staff contributions are welcome but may be edited for length and publication style.

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