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WINTER 2022

TECHNOLOGY ISSUE

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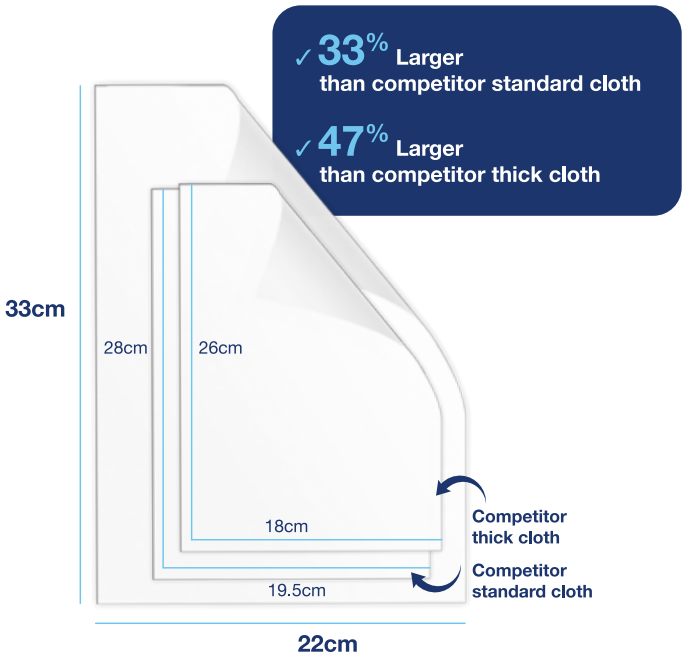

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Welcome to our Winter issue

As you'd have guessed from the cover, technology is one of the key themes in this issue. It's no news that the pandemic led to massive acceleration of digital health adoption across Australia. In fact, a recent consumer survey — said to be one of the largest on virtual health since the beginning of the pandemic — by Deloitte, Curtin University, Consumers Health Forum of Australia and Digital Health CRC, found that around 70% of Australians were willing to use virtual health and over 80% were ready to share their health data in a digitally enabled system.

While we see an explosion of new technologies and innovation in health, the report, Australia's Health Reimagined, emphasises the need to digitise with purpose, serve the needs of individuals and deliver improved outcomes while also managing the risks of digital exclusion and health equity.

Australia's health system is one of the best in the world, but it's not without limitations, such as access to care, inequity and coordination. We all know technology can't solve all these problems, but it can play a significant role in improving and fixing parts of our complex health system.

In this issue's lead article Rebecca Wark, Chief Executive Health Infrastructure, reminds us that while exciting technologies and developments may be shaping hospitals of the future, sometimes it is the simpler innovations that make the largest difference to patient experience. She reflects on opportunities and challenges and explains how technological updates and upgrades, big and small, are improving patient outcomes.

There is also a feature on an award-winning hospital in Saudi Arabia that has digitised every infection prevention and control (IPC) related task across the hospital. From microbiology results to pharmaceutical shopping-list items and HAI case numbers, every bit of data — from contamination rates, MDROs and the number of blood cultures from a central or referral line — was made available with the click of a button. Go to page 24 to read the story.

This issue also features a range of information-packed articles on a variety of topics, including unexplained cardiac arrests, the national clinical trials framework, food safety and the importance training, reinventing aged care and more.

Happy reading!

Mansi Gandhi

Editor, H+H

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WANT TO CONTRIBUTE?

We welcome articles and research reports from health professionals across Australia for review for the quarterly print publication and our daily web page. If you have a story you think would be of interest, please send an email to **hh@wfmedia.com.au**.

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^ AGC versus Low Gas Flow Anaesthesia (2L per minute FGF)

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The Rounds
Updates in health care

Pitfalls of high-risk prescribing

For many aged 65 years and older, good health and longevity is only achievable with the help of prescription drugs. However, researchers have found that some 'high-risk' prescribing practices may be a cause for concern among older adults.

High-risk prescribing practices include polypharmacy (the use of five or more prescription drugs) and the use of drugs with sedative or anticholinergic properties, including antipsychotics, benzodiazepines and antiparkinsonian drugs. Such practices have been previously shown to be associated with physical frailty among older adults, and physical frailty corresponds with a risk of physical disability.

In a new study researchers, led by the University of Tsukuba, Japan, evaluated the relationship between high-risk prescribing practices and an increased risk of disability.

In Japan, people who are aged 65 years and older and have a functional disability are eligible to receive long-term care (LTC) services. To receive these services, an LTC needs certification is granted based on the assessment of an applicant's eligibility and care requirements. Using the certification as a proxy for disability among older adults in Japan, researchers conducted a population-based nested case-control study. They identified and control-matched over 2100 cases who received their first long-term care needs certification within the observation period.

"To conduct our analysis, we used two health insurance datasets to form a comprehensive cohort that included 89% of Japanese adults aged 65 years and older as of October 2018," said lead author Dr Naoaki Kuroda.

"We found that both polypharmacy and the use of drugs with sedative or anticholinergic properties exhibit dose-response relationships with the risk for LTC needs certification," said senior author Professor Nanako Tamiya.

"In other words, these high-risk prescribing practices are associated with an increased risk of disability among older adults."

The findings of this study may encourage the development of public health initiatives regarding high-risk prescribing practices among older adults. Additional research is needed to determine whether a reduction in high-risk prescribing practices corresponds with a reduction in the risk of disability.

Northern Health, The Clinician team up to expand Vic virtual ED

Northern Health has partnered with The Clinician, a digital health company, to develop a patient registration and intake platform as part of the statewide expansion of the Victorian Virtual Emergency Department (VVED).

Through this service, patients can access non-critical emergency care on their own devices, in the comfort of their own homes. The Clinician's digital health platform (ZEDOC) has been configured to provide the VVED with a streamlined digital patient intake solution and clinical tracking dashboard for timely access to virtual emergency care.

The Clinician has been working with Northern Health to replace the VVED's original intake technology with an improved digital front door solution. Launched in April 2022, individuals seeking non-urgent medical care can now register their details and complete a digital health screening assessment on their own devices. Through ZEDOC's tracking dashboard, VVED staff can access intake results immediately for triage and follow up patients via video call.

Taking less than eight weeks from ideation to implementation, The Clinician team worked with Northern Health to include important features such as a registration form available in 22 different languages as well as SMS verification, automated clinical tracking and a streamlined integration with HealthDirect's telehealth service.

The new solution is being used by more than 200 clinical and clerical staff, who can access it onsite or remotely. The VVED has quadrupled its capacity from 50–60 patients per day since the expansion commenced to over 250 patients per day. The Clinician's ZEDOC solution is helping to manage this increase.

The expansion of the VVED across the entire state of Victoria comes off the back of strong results from the program since its initial launch in 2020. That includes: average wait times of 30 minutes to see a triage nurse via telehealth and 80% discharge rate from the virtual ED with 40% directed to other services and 40% discharged outright.

Tamaryn Hankinson, Chief Commercial Officer and Co-Founder of The Clinician, said, "Everyone can relate to the challenges of busy, in-person emergency departments, so our team is proud to be supporting Northern Health's VVED and enabling patients to access high-quality care from home. We see this as a great example of how our platform can be flexibly configured to the unique digital health needs of hospitals and healthcare services and look forward to extending our digital transformation work with Northern Health into other exciting areas."

As part of The Clinician's ongoing collaboration with Northern Health, a patient-reported experience measure (PREM) has recently been added, and integrations with existing health information systems are being planned. Northern Health also plans to leverage The Clinician's solution to support ambulatory and other healthcare professional services across the hospital.

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1 Fleming-Dutra, K., et al. (2016). "Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011." JAMA: The Journal of the American Medical Association 315(17): 1864-1873
2 Tackling drug-resistant infections globally: Final Report and Recommendations – The Review on Antimicrobial Resistance chaired by Jim O'Neill, May 2016

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The Rounds
Updates in health care


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Contact lens could treat glaucoma

International researchers have developed a contact lens that is said to be capable of treating glaucoma by sensing when treatment is required and applying it.

The device is flexible and battery-free, with a compact design, and may be a promising system for the treatment of glaucoma, according to the researchers. While further research is needed, the team says this device could one day be manufactured cost-effectively. Glaucoma, and its associated diseases, can cause irreversible vision loss, with damage often caused by an increase of intraocular pressure due to the abnormal circulation of fluid within the eye.

This pressure can vary with human activities and circadian rhythm, which makes treatment challenging as it requires the long-term and continuous tracking of the eye's condition. Theranostic devices — which combine therapeutics and diagnostics — are capable of monitoring a determined condition and applying an appropriate treatment.

Xi Xie, Cheng Yang and colleagues developed a theranostic contact lens, which uses electrical sensing to measure intraocular pressure and can deliver a drug on demand. The device was tested in porcine and rabbit eyes and was able to detect changes in intraocular pressure. When the measured intraocular pressure reaches a high-risk level, the drug delivery module (powered by wireless power transfer) has the ability to trigger delivery of an anti-glaucoma drug into the anterior chamber of the eye across corneal barriers.

The authors suggest that fabrication of the device is compatible with existing large-scale and cost-effective manufacturing processes. However, they indicate that further research is needed before it can move towards clinical tests.

Tireless dementia advocate awarded OAM


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Val Fell, an active ambassador for the Older Persons Advocacy Network (OPAN), Dementia Australia and the Council on the Ageing (COTA), has been awarded the Order of Australia (OAM) in the Queen's Birthday Honours.

A tireless campaigner for the rights of older people, Fell joined OPAN's National Older Persons Reference Group (NOPRG) in 2020.

"Val has been an exceptionally strong voice for aged care reform and for older people who aren't online," said OPAN CEO Craig Gear.

In January, Fell was appointed to the Aged Care Council of Elders.

In her 'spare time', Fell is studying for a Bachelor of Dementia Care at the University of Tasmania to enable her to provide the latest evidence and research on care to her support group. At 93, she is the oldest person at university in Australia.

"Val's commitment to aging well and refusing to accept what she has jokingly described as her 'use-by date' has been an inspiration to me and countless others," Gear said.

Fell said, "this is extra special for me getting a Queen's Birthday Honour in the year of the Platinum Jubilee. I was there on the embankment to watch her coronation in 1953 so it's a bit full circle."

Fell is currently participating in the CogSCAN project at UNSW, comparing the performance of four prominent cognitive assessment tools. She is also working on a project with NeurRA on hearing and dementia.

Fell formed the inaugural Illawarra Dementia Forum and a local Dementia Carers Support Group — both of which are still in operation — in 2010 when her husband, Ian, moved into residential aged care.

Fell has also been active in supporting the COVID-19 vaccine rollout to older Australians.

For information or support regarding aged care, please call the Older Persons Advocacy Network on 1800 700 600 or visit opan.org.au.


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Common anaesthetic for chronic migraines

Common local anesthetic lidocaine may help 'break the cycle' of pain in patients hospitalised with chronic migraine, reveals a new study.

Lidocaine infusions have been suggested as a possible treatment option for people who have a poor quality of life because of chronic migraine which is refractory to treatment. The aim is to 'break the cycle' of pain, but few studies have looked at the effectiveness of this treatment beyond immediate pain relief, according to the study authors.

The authors analysed the hospital records of 609 patients who were admitted with refractory chronic migraine and treated with infusions of lidocaine to assess the short- and medium-term benefits of this approach.

Patients included in the analysis had experienced at least eight debilitating headache days per month for at least six months and failed to respond to or had contradictions to the seven classes of medicine for migraine. They received lidocaine infusions over several days along with other aggressive drug treatments for migraine, such as ketorolac, magnesium, dihydroergotamine, methylprednisolone and neuroleptics.

Most patients (87.8%) experienced rapid pain relief. At the time of admission, the median rating given by patients was 7.0 and this decreased to 1.0 by the time of hospital discharge.

Patients attending follow-up appointments around one month after discharge also reported that the number of headache days that they experienced had fallen. The 266 patients who attended these appointments, which took place between 25 and 65 days after discharge, said that the number of headache days in the last month had fallen from a mean of 26.8 to 22.5.

Some patients experienced nausea and vomiting during the treatment but all adverse events experienced were mild.

The study has been published in the journal *Regional Anesthesia & Pain Medicine*.

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The Rounds
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Gout drug may help heart failure patients

A common gout medication, colchicine, has significantly improved survival rates for patients hospitalised with worsening heart failure, according to a new study.

Records of more than 1000 patients admitted to University of Virginia Medical Center between March 2011 and February 2020 were reviewed by researchers for worsening heart failure. Patients who received colchicine for a gout flare had a survival rate of 97.9%, compared with a 93.5% survival rate for patients not receiving colchicine, the study found.

While colchicine is a well-established treatment for gout, the UVA research team believes the medication's anti-inflammatory properties may also be key to improving outcomes for heart failure patients.

Researchers think the drug may modulate inflammation in the heart and blood vessels with potential for improving outcomes, especially in the acute phases of heart failure hospitalisations.

While additional larger studies to further explore colchicine as a potential treatment option for heart failure are needed, the UVA researchers were encouraged by their initial findings.

"These results highlight the importance of novel inflammatory mechanisms in heart failure," said Kenneth Bilchick, MD, MS, Professor of Cardiovascular Medicine and a clinical investigator at UVA.

CBD: very high doses don't affect driving, cognitive abilities

New research led by the University of Sydney has found that 1500 mg of cannabidiol (CBD) — the highest daily medicinal dose — has no impact on people's driving or cognitive abilities.

Most countries, including Australia, allow people to drive while on CBD. In NSW, for example, it is legal provided a driver is not 'impaired' due to fatigue and/or lowered blood pressure. The latest study shows, contraindications aside, that even at the highest medicinal dose of 1500 mg, CBD does not cause impairment.

"Though CBD is generally considered 'non-intoxicating', its effects on safety-sensitive tasks are still being established," said lead author Dr Danielle McCartney, from the University's Lambert Initiative for Cannabinoid Therapeutics.

"Our study is the first to confirm that, when consumed on its own, CBD is driver-safe," McCartney claimed.

Unlike THC, a cannabis component that can induce sedation, euphoria (a 'high') and impairment, CBD does not appear to intoxicate people. Instead, it has been reported to have calming and pain relief effects.

Peak concentrations of CBD in a person's blood plasma are usually attained within three to four hours after taking it orally, although individual responses vary.

CBD use is increasing in Western nations, with recent University of Sydney research showing that around 55,000 requests to access medicinal CBD have been approved in Australia since 2016. It is most commonly prescribed for pain, sleep disorders and anxiety.

Dry eye: 77% Australians experience symptoms but many unaware

In Australia, 77% have experienced dry eye symptoms[1], yet many do not have a clear understanding of the signs, symptoms or causes, according to a study by eye care company Alcon.

The consumer study suggests that despite the prevalence of dry eye discomfort, only 11% of people would see an optometrist and 3% would speak to a pharmacist for advice in response to their eyes bothering them.[2]

The research, released in conjunction with the launch of Alcon's Systane preservative-free lubricant eye drops, suggests more consumer education is needed to help people understand their local pharmacy can help Australians recognise the symptoms and causes, and provide advice and management solutions.

The top symptoms for eye-discomfort include 'tired' (62%), 'blurry' (39%) and 'dry' (35%), yet when asked about why they experience discomfort, only 25% stated dry eye as a cause.[2]

Jason Holland, Clinical Optometrist of The Eye Health Centre, who specialises in dry eye management, said, "Lifestyle factors are contributing to eye discomfort with long screen exposure. Pharmacists across Australia do have an opportunity to start conversations about eye health with patients and the treatment options available."

1. Optometry Australia, 2020 Vision Index Report.
2. Data referenced here has been commissioned by PureProfile on behalf of Alcon; Base: Total (n=1000).

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The hospital of the future

Amy Sarcevic

If you close your eyes and picture the hospital of the future, a few images may spring to mind. Robots wandering the hallways and checking patient vitals. Machines dishing out medications, or performing complex surgeries.

While these would not be foolish ideals to aim for, the Chief Executive of Health Infrastructure, Rebecca Wark, believes sometimes it is the simpler innovations that make the largest difference to patient experience.

"There is something to be said for simplicity when planning for future hospitals," Wark said.

"Sweeping innovations that drastically alter clinical practice are important, but so are the more basic technology upgrades that make a big difference to patients and their families feeling comfortable — like better Wi-Fi connections, so that visitors stay by bedsides for longer."

Wark's aspirations for yet-to-be-invented healthcare technologies are of a similar ilk: simple tools that support people through the hospital system, or minimise clinician involvement.

"I would love to get to a point where clinicians can collect data from smart watches, so that you don't have to get an ECG the second you get into hospital. Or have a communications system that sends you a text message when it is your turn to be seen in a fracture clinic, so patients don't have to sit for hours when their child breaks an ankle.

"It may seem counterintuitive to prioritise simplicity in healthcare procurement, but tools like this can often have the most meaningful impact on a patient's mental or physical health."

An ongoing theme

This kind of thinking is necessary as Wark's team plan and deliver NSW Health's $10.8 billion infrastructure pipeline. Alongside simplicity, Wark says thinking small — not big — is sometimes more effective in achieving health outcomes.

"People tend to think bigger is better, but within the hospital environment, the opposite can be true. When you make hospitals more compact and configure spaces to achieve good ergonomics and visibility, then you make it easier for clinicians to monitor patients and resources go further."

Smaller wards may also better suit the future healthcare landscape. With the rise of virtual

"Sweeping innovations that drastically alter clinical practice are important, but so are the more basic technology upgrades that make a big difference to patients and their families feeling comfortable — like better Wi-Fi connections, so that visitors stay by bedsides for longer."

care, Wark anticipates that hospitals will see fewer acute patients over time; despite the rise of chronic disease and an ageing population.

"There is a large move towards at-home and community-based care, and we are working closely with our partners to facilitate this. People don't generally like attending hospitals; and hospital care is not always the most cost-effective way to treat people. So, technologies that altogether remove the need for hospital-based treatment are incredibly valuable."

A big challenge in this shift will be assuring the quality of the digital patient experience. Here, innovation — including advances in wearable devices that monitor people's vital signs at home — will play a key role.

Such technologies, like the Apple or Garmin watch, are already in use throughout the world. However, tools that further liken the at-home patient experience to hospital-grade care will be pivotal, according to Dr Stephanie Allen, Head of Healthcare at Big Four Consultancy Deloitte.

"A big challenge in our push towards more widespread virtual care will be about assuring the quality of the at-home patient experience. We need to service people in the home at a level that is equal to, if not better than, in hospital — and technology will play a key role in this," she said.

"In an ideal scenario, we would have all the health data we need collected from individuals at home via sensors and devices and instantly uploaded to some kind of operational command centre. Here nurses and doctors could see it in real time and triage and administer treatment accordingly."

Wellness push

Many of the technologies that enable virtual care could also help with a nationwide push towards 'mental and physical wellbeing' — a paradigm set to supplement the more traditional approach of tackling 'illness' and 'injury' within health care.

"Wearable technologies that measure your heart rate, oxygen levels, mood, physical movement and calorific intake, for example, will not only help nurses keep an eye on patients' conditions from afar but also help individuals make informed decisions and proactive healthy choices about their own lifestyle," Allen said.

Technologies that help prevent hospital readmission are also valuable. For example, Royal Prince Alfred's virtual hospital in Sydney recently launched a tool for vascular lower leg ulcers to promote healing, prompting patients to wear and change compression stockings, or follow up with their GP.

Dr Allen said that while the engineering behind many of these technologies may be complex, they offer simple solutions to existing healthcare challenges.

"With the advancements in cloud engineering, interoperability of systems and data, and the promise of 5G, we have many of the ingredients we need to achieve the national healthcare outcomes. We now need to pull the threads together in a simple, intuitive and user-friendly way."

Deflecting the data breach

Brendan Read, Partner, KordaMentha

Cyber breaches in Australia's healthcare industry are rising fast compared to other sectors. Yet, this increasingly vulnerable sector stands apart given the dangers such attacks can pose to human life.

Cybercriminals are attracted by healthcare's large attack surface, one filled with sharing vast amounts of sensitive, time-critical information over largely aging systems that aren't cohesive . But despite this worrying rise in attacks and the ramifications, healthcare sector managers continue to resist new government measures requiring mandatory risk management programs and reporting.

Cost, of course, is the primary argument agencies are using against the new regulations. Yet this argument needs to be reframed through the lens of much larger financial losses suffered because of a cyber attack. For the truth is, costs of mitigation strategies are relatively minor when compared to the multimillion-dollar financial outlays generally involved with detecting, dealing with and then rectifying a cyber breach in its entirety.

Spiralling costs

There is no denying cyber attacks in healthcare are on the rise. During the 2020 calendar year, the Australian Cyber Security Centre (ACSC) received 166 health sector-related cybersecurity incident reports — almost twice the 90 reported incidents received the previous calendar year.[1] This marked rise prompted the ACSC to embark on an awareness-raising campaign for healthcare industry executives and cybersecurity professionals around what they could do to protect their organisations, no matter how large or small, from cyberthreats.

Australia's healthcare system is basically going in the same direction as the United States', where cyber breaches last year cost the industry an average US$9.23 million — the highest total average cost of a cyber attack of any industry for the 11th year in a row.[2] Almost 45 million health records were exposed or stolen in the process.[3]

Not surprisingly, the US is also acting to prevent the spread of serious cyber incidents. As of March, a new US Government Act has required healthcare and public health entities to report any significant cyber incident to the Cybersecurity and Infrastructure Agency (CISA) within 72 hours, and any ransom demands within 24 hours.[4]

"Some healthcare providers need to face the fact that their systems may be so archaic they are impossible to upgrade."

Those of us in the cybersecurity community are only too aware of the true extent of the costs and damage taking place via these spiralling incidents. It is important to know from a financial risk perspective what the overall costs could be (preventative and possible breach scenario) and how to strategically reduce these costs.

Discovering a compromised system is just the tip of the iceberg, and only lengthy and costly investigations can reveal how severely an IT environment has been compromised. For this reason, Australia's healthcare managers and IT professionals cannot continue to throw up their hands and refuse to comply with regulations now being imposed on critical infrastructure as a whole.

Some healthcare providers also need to face the fact that their systems may be so archaic they are impossible to upgrade. This, of course, makes them especially vulnerable to a breach, and latest research shows that this puts them among cybercriminals' primary targets.[5] Others must recognise that letting their own systems reach such a state is to be avoided at all costs.

Small steps

Instead of recoiling from new mandatory cybersecurity requirements, healthcare providers need to first realise their arguments around such processes being cost prohibitive are flawed and that embracing even the simplest of cyber-risk management principles is entirely possible. For example, having an incident response plan at the ready is a key step forward in the right direction: this is a straightforward list of initial measures an organisation needs to take immediately following the discovery of a data breach. Educating staff of the common attack vectors, such as malware, viruses, email attachments, web pages, pop-ups, instant messages and text messages, and how to discern unusual activity is imperative.

Healthcare providers should also be availing themselves of official guidelines around containing and managing a breach, such as those provided by the Office of the Australian Information Commissioner (OAIC).[6] Joining the ACSC Partnership Program[7] is another beneficial move for any healthcare provider. This will ensure executives and cybersecurity professionals have awareness of key cybersecurity threats currently occurring in the healthcare sector.

The seriousness of damage caused by any cyber attack cannot be ignored. At the very least, healthcare providers need to take time identifying weaknesses in their technology systems and then do the work to mitigate those risks as quickly as possible.

1. Australian Cyber Security Centre, 2020 Health Sector Snapshot (10 February 2021) <https://www.cyber.gov.au/acsc/view-all-content/reports-and-statistics/2020-health-sector-snapshot>
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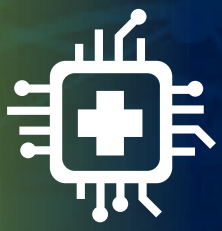
Four steps to robust clinical cybersecurity



Samuel Hill, Medigate

Australia's healthcare system has been plagued by cyber attacks in the last few years.

In April 2021, a cyber attack on Uniting Care Queensland left four hospitals and several aged-care homes without any access to patient records. Just one month prior, a cyber attack on Eastern Health forced four hospitals in Melbourne to take their IT systems offline and postpone elective surgeries.

Hospitals in particular are attractive targets for attackers due to the critical nature of their operations and the opportunity to cause massive disruption. A major contributing factor to the success of these attacks is poor cyber hygiene.

The lack of a strong security culture and need for increased security training in Australia's healthcare system is well-documented. For example, in 2019 Victoria's Auditor-General sought to prove a point by successfully hacking and accessing sensitive patient data in some of the state's biggest hospitals using basic hacking tools. The audit revealed that several hospitals made basic cybersecurity errors, such as using default account names and passwords set by manufacturers that can be easily located online.

Just as hospitals maintain robust physical hygiene practices like frequent handwashing to prevent the spread of disease, cybersecurity should be treated no differently. To prevent cyber attacks, healthcare providers must pay careful attention to their cyber hygiene or find themselves facing unexpected, costly and potentially life-threatening consequences.

Clinical cyber hygiene

Clinical cyber hygiene refers to an organisation's ability to discover, assess and manage cybersecurity risks on an ongoing basis. Essentially, it details the methods and mechanisms organisations use to maintain the privacy and integrity of their clinical networks and prevent the spread of cyber attacks.

It also shows how well an organisation recognises recognises and manages cybersecurity risks. Having a robust approach to cyber hygiene not only improves the efficiency of clinical operations, it also ultimately improves patient safety and privacy. It ensures that the personal information of patients is protected from compromise and maintains an organisation's ability to deliver critical care in the event of an attack. With the healthcare sector reporting the highest number of ransomware attacks in Australia by a significant margin, it's time for all healthcare organisations to improve their approach to clinical cyber hygiene.

Here are four best practices we've seen healthcare providers leverage to their advantage.

1. Profile all devices on the clinical network

Do you maintain current, detailed information about every single device on your network? If not, how can you protect them? Healthcare organisations need to be able to identify 100% of the devices hosted on their networks, and beyond that they must have a digital fingerprint of each one including the manufacturer, model, OS, hardware, app versions, location, network status, security posture and utilisation patterns. As new devices are introduced to the network, it is essential to maintain a detailed and accurate database of all connected assets. This will drastically improve the efficiency of both security audits and patching should any vulnerabilities be discovered.

2. Give each device a multi-factor risk score

Risk scoring is a continually evolving process that helps organisations identify their most vulnerable assets or devices on the network. Risk scores shouldn't just be calculated based on the risk of compromise, they must also factor in potential impacts on patient safety and clinical operations. For example, if two devices have roughly the same risk of being compromised, but one of these could result in the exfiltration of sensitive patient data, that would be assigned a far higher risk score. Organisations with robust cyber hygiene continuously re-evaluate risk scores and adjust them as necessary.

3. Take a methodical and cross-functional approach to risk management

It is essential to have a clear methodology in your risk management program, as just one weak link can undo all your hard work. For example, a risk management program that covers all internal healthcare facilities and devices, but doesn't factor in clinical partners, leaves a significant gap. Furthermore, having a clear methodology is imperative for performance tracking — it's impossible to measure improvements or identify problems if there is no established benchmark. Given the highly mobile nature of medical devices, and the continuing fragmentation of care delivery, risk management must encompass all operations.

4. Use device monitoring insights to inform procurement

Ongoing device monitoring (location, use, etc) enables healthcare providers to identify vulnerabilities in different devices and establish patterns. Those responsible for procuring medical devices can draw upon this information during the decision-making process to ensure they purchase the most appropriate and secure devices, which will reduce the overall risk of compromise.

As the saying goes, you get nothing for nothing. While it takes time and dedication to improve cyber hygiene, the effort is very much worth it. As the healthcare sector continues to be a prime target for threat actors, the actions (or inaction) of healthcare providers will have greater implications for patient safety than ever before.

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Selecting an Air Purifier for use in Healthcare

Air filtration has become a key line of defence in providing airborne control of COVID-19 in healthcare facilities.

A large number of hospitals in most Australian states have invested in air purifiers as a way to reduce the airborne spread of the virus.

The science is clear when it comes to purifying the air. A German study at Goethe University in Frankfurt found that in a room with all the doors and windows closed, air purifiers reduced the number of aerosol particles present by 90% in less than 30 minutes.

Speaking with Nicholas Kraus, the Managing Director of InovaAir Australia, an Australian air purifier manufacturer on the Central Coast of NSW, we asked what's important when selecting an air purifier in healthcare facilities?

What type of air purifiers should be used?

When selecting an air purifier in commercial environments including patient and staff areas, it's important to get a system that includes an H13 medical-grade HEPA filter.

This is where the filter is made from paper with airtight seals. HEPA paper is used in medical applications because it guarantees the same high efficiency for the life of the filter which is typically up to 3 years.

Synthetic filters commonly found in the majority of home air purifiers only last around 6 months before the efficiency of the filter starts to reduce. These types of air purifiers are better suited to dust & allergen removal rather than filtering viruses.

Where should an air purifier be operated?

We find hospitals are using InovaAir systems in patient rooms where there are COVID positive patients, suspected positive patients, ER's and staff areas.

They are designed to operate 24/7 and portability is key to allow for ease of filter changes in negative pressure rooms or quarantined areas.

Are air purifiers suited to daily surface disinfection?

Important consideration should be given to the construction materials of an air purifier. Not only should the air purifier be compatible with ethanol based alcohol disinfectants, the exterior casing should avoid crevices around the air intakes and discharge vents which could harbour viruses and bacteria.

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How to digitise your IPC strategy

Insights from a global IPC award winner

Amy Sarcevic

For many healthcare professionals, face masks, shields and soap have been the hallmark images of infection prevention and control (IPC) throughout the COVID-19 pandemic. But for an award-winning hospital in Saudi Arabia, digits, dashboards and data cards have become a more fitting emblem.

Khaled Alnafee and colleagues at the King Faisal Specialist Hospital and Research Centre recently installed a program that digitises every IPC-related task across the hospital. From microbiology results to pharmaceutical shopping-list items and HAI case numbers, every bit of data a practitioner might need to execute an IPC strategy is visible on a single portal, at the click of a button.

If the national criteria for benchmarking HAIs changes, an algorithm will automatically update it. If an IPC report is required for a board meeting, the program will automatically generate it. And if a physician is undertaking surveillance, the program will create a spreadsheet showing contamination rates, MDROs and the number of blood cultures from a central or referral line.

Filling the gaps

While auditing the new software for efficacy, Alnafee — who has since won a global award for his efforts — was surprised to find a string of errors, omissions and misinformation. Not in his digital program, but in the paper-based system that preceded it.

"We continued using the paper-based system for a full year alongside our software, in a bid to detect and rectify any issues with the new program. This involved continuously cross-checking the output with the handwritten notes staff were producing," Alnafee said.

"In doing this, we found that some of the notes compiled by practitioners were incomplete or unclear, meaning we couldn't establish a full dataset for a particular patient or ward.

"The digital program has helped fill in these gaps and give us a much clearer picture of where we are at in terms of our IPC efforts."

Raising standards

As a result of the digitisation, almost all key performance indicators (KPI) in relation to IPC are tracking well above benchmark. These KPIs are displayed in colour-coded format on the program dashboard.

"The dashboard gives us a visual snapshot of everything — when the last hygiene audit was done, the total number of surgical site infections, etc. For example, a rate of 1.6 is the benchmark for a specific surgery procedure and we are almost double what is required by this standard," Alnafee highlighted.

"If we were under the benchmark, the number would be colour coded in red. This allows us to see quickly where our IPC weak spots are for each ward or unit."

Patient priorities are easy to spot too, with the program providing a visual snapshot of all IPC-related metrics.

"The software automatically links a patient's lab results, as soon as they become available. It allows the IPC practitioner to tell at a glance whether the patient has any serologies or requires an endotracheal tube, and to see the history of their white blood cell count, for example. Everything you can think of from A to Z is documented and accounted for on this system."

Pandemic buffers

As well as avoiding any ambiguity in patient care cycles, the system prescribes clear information on whether staff pose an IPC risk. Via an inbuilt survey, the system categorises each staff member as high or low risk of being COVID positive, and gives clear instructions relative to current government guidelines.

"If a colleague has tested positive to COVID, I can jump on the system and answer a few questions. The system will then let me know whether I need to be excluded from work for three days or continue and monitor for signs and symptoms," Alnafee said.

Meanwhile, the program will capture the precise whereabouts and quantities of PPE supplies, notifying users when supplies are dwindling.

Change management is essential

Despite the efficacy of the system, Alnafee admits there was a fair amount of resistance from staff during its rollout.

"People had grown comfortable using the handwritten notes and some were not overly happy about having to learn a new way of working. For this reason, training, regular communication and leadership has been so crucial to the success of this new system."

To this effect, Alnafee and colleagues executed a series of campaigns highlighting the value of the new software features.

"We asked to be invited to each committee and take 15 minutes to present the dashboard. We made a video and uploaded it to the hospital portal so staff can access it at any time. We also make ongoing use of the newsletter to remind people and showcase specific features of the software.

"Ultimately, this tool will help them do their jobs better, avoid errors that result in harm or litigation, and make a more meaningful contribution to patient care.

"In short, software like this is well worth weathering any teething problems," he concluded.

Where does real interoperability start?

Catherine Koetz, Industry Manager — Healthcare, GS1 Australia

What is 'interoperability' and why is it important?

Interoperability is about data and information having a consistent meaning enabling it to move and be used meaningfully between people, organisations and systems. Digitisation of healthcare that focuses on the patient and enables ready access to the relevant care information for those who have a legitimate need means that data and information must be interoperable — for the patient, this is a critical element.

How do data standards play a role in this vision of interoperability?

It is easy to focus on the infrastructure pieces, the large systems and solutions, or even the small edge technology that does amazing things or 'goes ping' because you can see and touch them. But underpinning their workings sits data. Whilst brilliant minds across technology have often developed data formats, schemas and proprietary solutions to problems and have implemented them within technology platforms. Whilst these home-grown solutions might work perfectly well in isolation, once data needs to be shared across technology platforms, between organisations, into centralised records or even across borders the necessity to be able to interpret it in a commonly defined way throughout the process means that these innovative ideas often fail to scale. Enter then data standards.

The data standards we need are already available

Not only are the data standards already available for many of the foundations, but in many cases, the implementations have already begun — at least elsewhere around the world. The issue is not whether the standards exist, it is ensuring that we are implementing them within Australian healthcare and the solutions we are deploying as we 'digitalise' our healthcare ecosystem. It is sometimes hard to understand why the progress has not been faster. To be fair it is not always the fault of the solutions, the issue is often that we are not clear on what standards should or in some cases must be implemented for the various areas within the health system, and with an absence of clarity we stick to the status quo and wait. While we wait, the digitising using non-scalable proprietary solutions continues, meaning that we will need to likely find funding across the various organisations to make changes to systems and processes — adding costs that Australian healthcare can ill afford and needing resources that are often in limited supply.

What does the standards landscape look like for healthcare?

There are a large set of standards that apply within healthcare and thankfully many have been developed in parallel to ensure that they are interoperable or complement each other. Here are just some that are being implemented across healthcare.

- Healthcare Identifiers used to manage the identity of individuals and healthcare providers within My Health Record and related systems are all based on the ISO7811-3 and ISO7812 and defined for Australia specifically within AS 4846.
- Several ISO standards provide guidance in areas related to Health Informatics. One such standard is ISO18530, which provides guidance related to the standards to enable the identification and data capture of subjects of care and providers within healthcare providers and care delivery. This standard enables the transition from internal MRN/URN to a unique and unambiguous identity for patients and has already been implemented in some health organisations in Australia.
- Snomed CT is a comprehensive global clinical terminology standard that enables clinical content to be easily represented within clinical systems enabling automated processing of clinical data. It provides the basis for Australian Medicines Terminology (AMT).
- Fast Healthcare Interoperability Resources (FHIR) is an HL7 standard that originated in Australia, describing data formats and elements and an application programming interface for exchanging electronic health records across a variety of clinical workflows.
- With increased focus on the 'traceability' of products and a greater understanding of the need for digitisation to enable critical supply chain improvements, the utilisation of GS1 global data standards has also increased in line with the vision for the healthcare supply chain that was defined under the National eHealth Transition Authority (NeHTA), the predecessor to the Australian Digital Health Agency (ADHA). Use of GTIN for products, GLN for places & parties and SSCC for shipments along with standardised Electronic Data Interchange (EDI) to digitise 'procure to pay' are expanding within Australian healthcare organisations, especially where new regulations are driving the need for change, or it aligns to broader infrastructure initiatives such as the National Freight and Supply Chain Strategy.

What comes next?

A patient-centric healthcare system supported by data and information cannot be achieved without interoperability, and for this, universal open standards need to be in place. With updated interoperability frameworks and standards frameworks being delivered by the ADHA, this will go some way to creating the much-needed clarity concerning what standards should be being implemented to support local needs. This clarity will enable scaled engagement, with the solution provider community supporting Australian healthcare to drive necessary development and inclusion within solutions used in the sector. By removing the need for specific projects to implement standards, the added cost, drain on resources and delay in the many projects around the country should be possible — in short, the benefits to the Australian health system will be significant.

Learn more about standards in healthcare: https://bit.ly/3xYb1ZP

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The growing RSV disease burden

Respiratory syncytial virus (RSV) was responsible for more than 100,000 deaths in children under five across the globe in 2019, according to a study by Australian and international researchers.

The researchers examined RSV disease burden in narrow age brackets, reporting that there were over 45,000 deaths in infants under six months old in 2019, with one in five of the total global cases of RSV occurring in this age group.

"RSV is the predominant cause of acute lower respiratory infection in young children and our updated estimates reveal that children six months and younger are particularly vulnerable, especially with cases surging as COVID-19 restrictions are easing around the world and the majority of the young children born in the last two years have never been exposed to RSV (and therefore have no immunity against this virus). With numerous RSV vaccine candidates in the pipeline, our estimates by narrower age ranges help to identify groups that should be prioritised, including pregnant people, so that children in the youngest age groups can be protected, similarly to current strategies which offer vaccines for whooping cough, typhoid and tetanus to pregnant people," said Harish Nair, University of Edinburgh, UK, co-author of the paper published in *The Lancet*.

Across the globe in 2019, there were 33 million RSV-associated acute lower respiratory infection episodes in children under five years old, leading to 3.6 million hospital admissions, 26,300 in-hospital deaths and 101,400 RSV-attributable deaths overall (including community deaths), according to the study authors. This accounts for one in 50 or 2% of annual deaths from any cause in this age range.

For children under six months old, there were 6.6 million RSV-associated acute lower respiratory infection episodes globally in 2019. There were 1.4 million hospital admissions, 13,300 hospital deaths and 45,700 overall deaths attributable to RSV in this age range, accounting for one in 50, or 2.1% of annual deaths from any cause.

Based on estimates of in-hospital versus overall RSV mortality rates, globally only 26%, or approximately one in four RSV-associated deaths, occur in a hospital. This is particularly apparent in low- and middle-income countries, where the in-hospital case-to-fatality ratio for children under five is 1.4%, compared to 0.1% in high-income countries. Overall, 97% of RSV deaths in children under five occurred in low- and middle-income countries.

"Our study estimates that three-quarters of RSVs deaths are happening outside of a hospital setting. This gap is even greater in LMICs, especially in children under six months old, where more than 80% of deaths are occurring in the community. This reflects the fact that access and availability to hospital care are still limited in these regions. Early identification of cases in the community and referral for hospital admission of sick children (particularly those with low oxygen saturation in peripheral blood), and universal effective and affordable immunisation programmes will be vital going forward," said Xin Wang, co-author of the study, Nanjing Medical University, China and University of Edinburgh, UK.

The authors acknowledged some limitations with this study. Variations in factors such as study setting, exact case definition for acute lower respiratory infection (ALRI), healthcare access and seeking behaviour, and eligibility for RSV testing could affect estimates of mortality figures produced in the modelling.

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Clinical trials: the big shift is here

Nick Northcott*

For too long now, clinical trials in Australia have taken place to significantly varied standards, but now that's set to change.

With different hospitals and trial facilities working to methodologies and standards that are far from uniform — and therefore producing results that are difficult to compare, analyse and implement — the medical system has had to deal with a multitude of challenges Most importantly, the way the system has functioned has ultimately led to poorer patient outcomes.

But a cultural shift is coming. The Australian Commission on Safety and Quality in Health Care launched the National Clinical Trials Governance Framework at the ARCS (Association of Research and Clinical Scientists) conference in Sydney.

This is an important step towards fixing the system and moving towards better patient outcomes as it imposes a minimum standard on clinical trials across all sites that undertake clinical trials in Australia.

Once adopted, the framework aims to increase quality and speed of clinical trials at sites, meaning they will likely be more attractive to big pharma and CROs driving inbound investment into Australia.

A higher standard and improved patient outcomes

The success of this change is not a given though, at least not in the short term. Australia has never previously had a national governance framework to guide clinical trials, so sites may have to make significant changes.

The most pressing incentive for trial sites like hospitals to meet these new standards is that they could lose their accreditation, but they should also want to make these changes too.

As mentioned, a uniform framework for clinical trials will not only result in the whole country singing from the same hymn sheet and attracting more investment, but a higher standard of clinical trials will also result in improved patient outcomes for each facility.

So how did we get here? To start with, each individual research site ascribes importance to clinical trials differently, and each has its own priorities. No singular trial location will function exactly the same, with exactly the same needs.

Access to clinical trials has traditionally been significantly more about who you know or who your doctor knows, as well as where you are located. These governance changes tap into a movement, particularly in regional Australia, towards teletrials and more decentralised trials.

Not having people in regional areas be able to take part in trials means you exclude significant parts of the population, often and particularly First Nations Australians.

The new framework takes an important step towards democratising access to health care and reversing the idea that power, money and access are the most important factors in whether people can access new therapies via trials.

While this new governance framework is clearly spelt out, it will come down to individual chief medical officers, executive directors of medical services and their research directors to ensure it is put in place as best practice.

In the past we've seen clear regulatory frameworks proposed at an organisation level, and while senior executives have generally had a solid understanding of the proposed framework, in most cases decisions about when and how to implement new guidance gets pushed to a junior person who is not empowered and doesn't want to take risks. In addition, a lot of hospital and clinic CEOs don't have research as a KPI, so it leads to a culture where governance officers are likely to delay or slow things down to take the most risk-averse approach.

Embedding trials into the healthcare system

We must ensure that the new framework is adopted and isn't slowed down through internal bureaucracy. We must continue to highlight the fact that research and clinical trials improve patient outcomes. In the end, a clinical trial is a structured way of testing a new intervention or therapy.

Without it, facilities are delivering only a standard of care and treatments don't improve. It's about embedding clinical trials into the healthcare system.

It's not about having clinical trials in one part of the organisation and facility, and doctors treating patients in standard clinical care somewhere else. The best outcomes for everyone happen when clinical trials are

"It's all about changing behaviour and putting in place systems that make life easier for clinicians, researchers and administrators that are followed and actually work in the long term."

embedded into the system and are treated as one and the same.

Ultimately, you'd struggle to find anyone who disagrees that the National Clinical Trials Governance Framework is an important step in the right direction. It represents recognition that the Australian Commission on Safety and Quality in Health Care has a bigger role to play in effectively regulating clinical trials.

This has come about due to pressure on several fronts, including significantly increased media coverage about the problems with how clinical trials have been run in Australia — and recognition that the current governance processes have been blocking research from actually happening at sites. More visibility around this has seen the Commission act, forcing its hand to step in and get more closely involved with clinical trial governance.

The implementation of this framework will require significant cultural change. There is complexity around understanding the new framework, but the biggest challenge is around adoption. It must be approached in a way that isn't purely theoretical and having this new framework on a piece of paper.

It's all about changing behaviour and putting in place systems that make life easier for clinicians, researchers and administrators that are followed and actually work in the long term.

*Nick Northcott is the founder and Managing Partner of specialist health and medical research consulting firm Chrysalis, which has grown rapidly across Australia since 2016.

Chrysalis provides consulting services including strategy and growth advisory, IP commercialisation and a specialist clinical offering to the clinical research and governance markets.

Nick has extensive experience advising boards, CEOs and executives to manage complex innovation and change projects, on high-risk matters (eg, investigations, disputes and governance issues) and to complete value-adding deals, including having raised over $100 million in venture, philanthropic, grant and corporate funding.

Professor Qing Li and Ben Ferguson. Image courtesy of The University of Sydney

Surgical tool
for digital rehearsals

Jawbone reconstruction — or orthognathic surgery — is a complicated medical procedure that involves replacing damaged or diseased bone tissue with an implant, typically a titanium plate or prosthesis.

The surgery involves treating a person's jaw for significant trauma, such as from a car crash or gunshot wound, or diseases like oral cancer, with recovery as long as 12 weeks. Complications like implant failure and infections are common, potentially requiring repeat procedures which can place significant burden on a patient.

In recent years, biomedical engineers have developed a new generation of medical implants designed to not only substitute bone, but to help regenerate tissue back to its original state using 3D-printed tissue scaffold-fixation systems.

These devices enhance the innate healing potential of human tissue, using a scaffold as a temporary support structure for the surrounding cells to attach to and grow. Eventually, the scaffold is expected to dissolve into the bloodstream, leaving new tissue in its place.

A digital twin

Ben Ferguson, a PhD student at the University of Sydney's School of Aerospace, Mechanical and Mechatronic Engineering, is developing a surgical planning tool to assist surgeons in planning complex jawbone reconstruction procedures using these new-generation devices.

Using advanced computational technology and decision-making algorithms, the tool works by generating a 'digital twin' of the patient using CT scan data. It then rapidly simulates different designs of the implant before 3D printing the final, optimal design, allowing surgeons to perform a digital 'rehearsal' prior to theatre.

"Nowadays, it would be unthinkable to construct a building without running an engineering simulation on it beforehand. This is the industry standard in civil engineering — the same expectation should be applied to surgery on a human being," said Ferguson, who is due to submit his PhD in September.

"The jaw is a complex area — required to talk, eat, chew and perform tasks that require both finesse and strength. Because of its complexity, we want to give orthognathic surgeons the best tools so they are set up for success — hopefully reducing repeat surgeries and improving patient outcomes," he said.

"A bone implant design may work in one patient, but it may fail in another. If it was you, you would probably want a team of surgeons and biomedical engineers to run a simulation and assessment of the medical device in your body before it is actually implanted."

Optimising device design

The surgical planning tool combines computer-aided design (CAD) tools with high-fidelity computer-aided engineering models and optimisation algorithms that can accurately simulate the medical device while under physiological load.

Ferguson's supervisor, Professor Qing Li, said, "In addition to pre-surgical planning, this simulation data can also assist the surgeon in optimising the medical device's design, helping them resolve issues that inevitably arise when designing a device that must meet multiple design and medical objectives."

"It is a careful balancing act," said Ferguson. "For example, an implant may need to mechanically stimulate the surrounding tissue to enhance healing, but mechanical stimulation may then increase the risk of implant failure. Our algorithms and data-driven approach help surgeons develop an optimal design without having to rely solely on intuition."

Turning tech into clinical reality

The researchers have recently partnered with Professor Jonathan Clark, Chair of Head and Neck Cancer Reconstructive Surgery at Chris O'Brien Lifehouse, to help translate the new technology into a clinical reality.

Clark said, "Australia has been a leader in jaw reconstruction since Dr Ian Taylor's 1974 breakthrough mandibular reconstruction. Since then, jaw reconstruction has evolved substantially: digital tools have been incorporated into pre-surgery planning, allowing surgeons to create more precise devices with better aesthetic and functional outcomes for patients.

"What's really exciting about this tool and data is that they provide the opportunity to evolve the technology beyond form, to also include biomechanical modelling, which can help predict the bone tissue's response to physiological loads. This kind of analysis — termed CT-based finite element modelling — will be of great importance as we move away from using patient's own bone for reconstruction and start to incorporate customised scaffolds in the future."

People making tough times tolerable

The global pandemic proved that strong people could make the impossible happen according to Dianne Joannidis, Manager — Aged Care & OxyCare at BOC in Australia.

Q: What was the biggest pandemic issue for aged care providers?

It was crucial for aged care and healthcare providers to have a constant supply of medical gases, respiratory products, and services so residents with health conditions were supported.

BOC managed the supply of these vital products, allowing our Aged Care Partners to focus on the other issues the pandemic presented.

Q: How did your team deliver during the massive spikes?

I'm proud of the work our team did with customers to ensure a balanced and fair delivery program of medical devices. This avoided the need for panic buying.

BOC upscaled production so additional cylinders were available to cover surges and increased medical device stock.

Thankfully Australia limited the virus early and this helped us build capacity to deliver enough medical product for our needs and beyond. This allowed us to supply countries in Asia and the South Pacific in their time of need. BOC was proud to collaborate with humanitarian agencies and sent much needed medical gas and equipment to various parts of our region to help ease the crisis. India, Papua New Guinea, Fiji, Tonga, and the Solomon Islands all received assistance.

Q: How do you think BOC differs from other suppliers?

BOC is able to manufacture multiple times the medical oxygen consumed nationally on a typical day.

We also have the capacity to store months' worth of oxygen across the nation, making us the 'go-to' company for oxygen supply to hospitals and aged care facilities.

Our operations team and relationship managers closely monitored stock to ensure reliable supply and communicated personally. Our team also engaged with our manufacturing partners globally to ensure order volumes could increase and be delivered.

Q: How did you ensure smooth deliveries of critical medical gas and equipment during the pandemic?

We significantly invested in our rental fleet of medical equipment renewing and extending our range of rental oxygen concentrators, regulators, flowmeters and cylinder handling equipment. BOC ensured stock was in multiple locations across Australia and complemented our extensive transport fleet to deliver where and when needed.

Medical devices were often airfreighted into the country instead of by traditional sea freight. This ensured products were available for customers as soon as possible, even though costs couldn't be fully recouped.

Q: Was cleaning and hygiene a bigger safety issue?

Safety is always top priority for BOC and we developed special disinfection protocols for rental medical equipment and cylinders to ensure the safety of our customers and staff.

Q: How do you future-proof the supply of medical gases and equipment for unexpected situations?

We are constantly collaborating with aged care and healthcare providers to understand their ongoing needs. That's the big learning — planning is key and it works.

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Virtual biopsy
could transform heart transplant care

Approximately 3500 people worldwide receive heart transplants each year. Most patients experience some form of organ rejection, and while survival rates are high, a small percentage will die in the first year after surgery.

Most clinicians around the world currently test for rejection by performing a biopsy, which helps determine the level and suitability of immunosuppressive treatments needed to treat and prevent further rejection. This invasive procedure involves a tube being placed in the jugular vein to allow surgeons to insert a biopsy tool into the heart to remove multiple samples of heart tissue, said Victor Chang Cardiac Research Institute in a statement.

"As well as being uncomfortable, it can also lead to rare but serious complications if the heart is perforated, or a valve is damaged. Patients usually undergo a biopsy around 12 times in the first year after transplantation."

Now, a new virtual biopsy that takes less time, is non-invasive, more cost-effective, uses no radiation or contrast agents, can detect any signs of the heart being rejected. Scientists at the Victor Chang Cardiac Research Institute and St Vincent's Hospital, Sydney, are hoping it will be adopted by clinicians the world over.

Andrew Jabbour, Associate Professor, Victor Chang Cardiac Research Institute and Consultant Cardiologist at St Vincent's Hospital Sydney, said, "It's essential that we can monitor these patients closely and with a high degree of accuracy; the new biopsy can do just that without the need for a highly invasive procedure."

The new MRI technique is said to have been proven to be accurate in detecting rejection and works by analysing heart oedema levels which the team demonstrated are closely associated with inflammation of the heart.

Biopsy vs MRI

Forty heart transplant patients from St Vincent's Hospital Sydney were randomised into receiving either a traditional biopsy or the new MRI technique.

Secondary findings of the study revealed that despite similarities in immunosuppression requirements, kidney function and mortality rates, there was a reduction in hospitalisation and infection rates for those who underwent the MRI procedure vs a biopsy. Also, just 6% of patients having the new MRI technique needed a biopsy for clarification reasons. These secondary findings are earmarked to be reconfirmed in planned larger multi-centre studies.

Fellow author and cardiologist Dr Chris Anthony, who helped conduct the study, said: "The technique is now frequently used at St Vincent's Hospital in Sydney, and I anticipate that more clinics across the world will adopt this novel technology."

Next steps

The team at the Institute and St Vincent's is now planning a larger multi-centre trial to broaden the applicability of the findings and incorporate paediatric transplant recipients.

They are also developing new genetic testing to be used alongside the MRI, which it is hoped will detect signs of rejection through identifying genetic signals of donor-specific inflammation in the bloodstream. The new technique will also be adapted to detect heart inflammation in the wider population, not just transplant recipients.

The S-Monovette® is the revolution in blood collection.

The S-Monovette is an innovative enclosed blood collection system that allows the user to draw blood from the patient using the syringe or vacuum method, uniting the advantages of both techniques in a single product.

When used as a syringe, the phlebotomist has full control over the speed at which the blood is drawn into the tube. This is particularly useful for patients with fragile veins, such as the very young or elderly, where the use of the aspiration technique prevents even the most fragile veins from collapsing. When the tube has been filled, the plunger is simply snapped off to leave a primary sample tube which can be centrifuged and is compatible with all major analysers.

The S-Monovette can also be used as an evacuated tube by drawing the plunger fully down and snapping it off immediately prior to blood collection. This creates a fresh vacuum and ensures a precise filling volume, ensuring a correct dilution ratio.

The reduced vacuum pressure in the S-Monovette drastically reduces the rate of haemolysis and vein collapse, meaning increased sample quality and reduced costs associated with repeat collections. Furthermore, unlike pre-evacuated tubes, the S-Monovette does not have to hold a vacuum for many months after manufacture, which allows the membrane stopper to be thinner and more easily penetrated by the needle sheath. This minimises the movement of the needle in the vein when attaching the tube, ensuring optimum patient comfort.

The S-Monovette needle is ready to use so that there is no need for assembly to a holder. The needle is of a compact, low profile design, which reduces the chance of haematoma by allowing for a reduced angle of puncture and eliminates the possibility of needle stick injury caused by assembly of the needle and holder. The compact design also results in approximately one sixth of the sharps volume caused by using a pre-evacuated system, giving significant cost savings.

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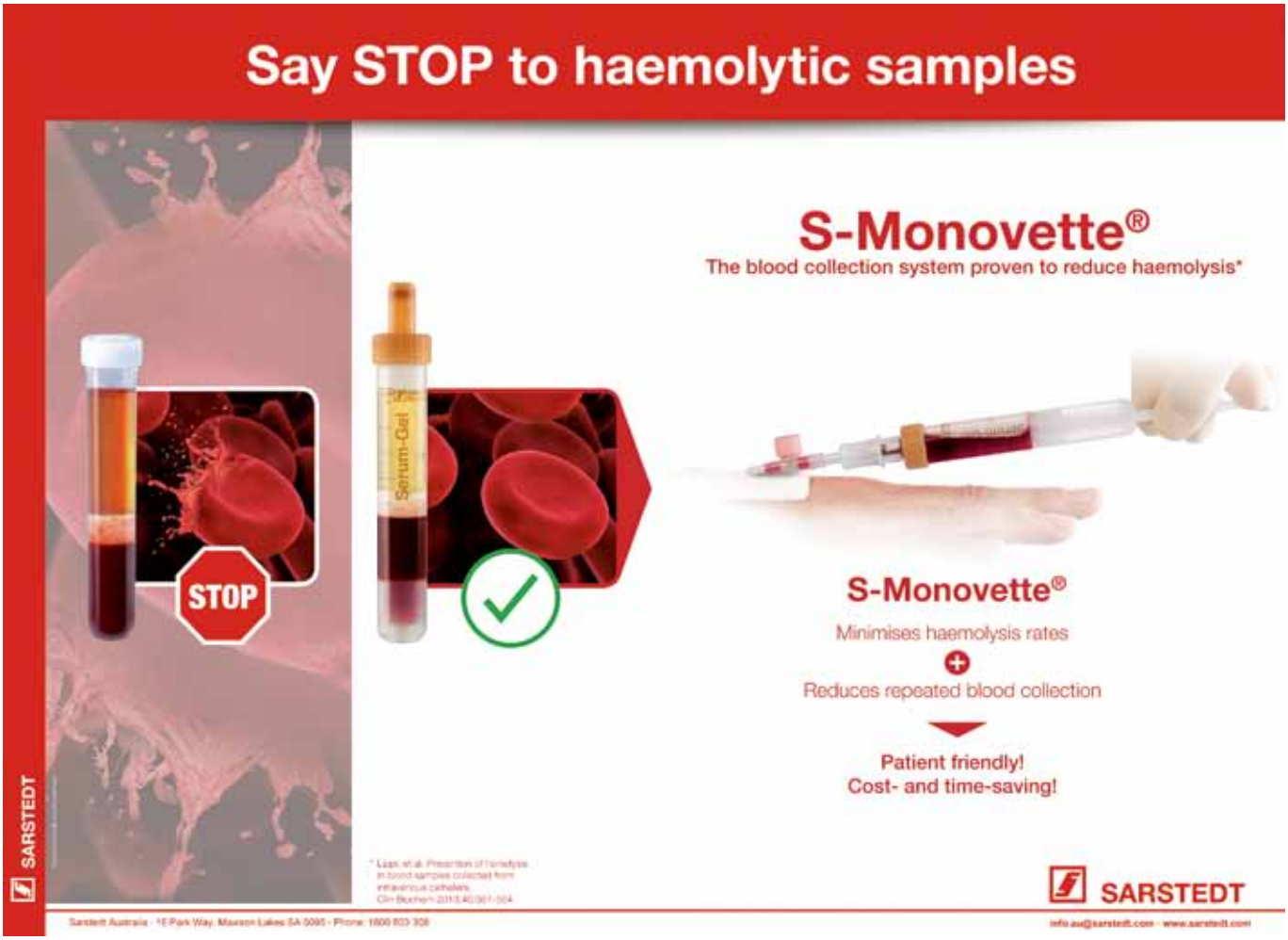

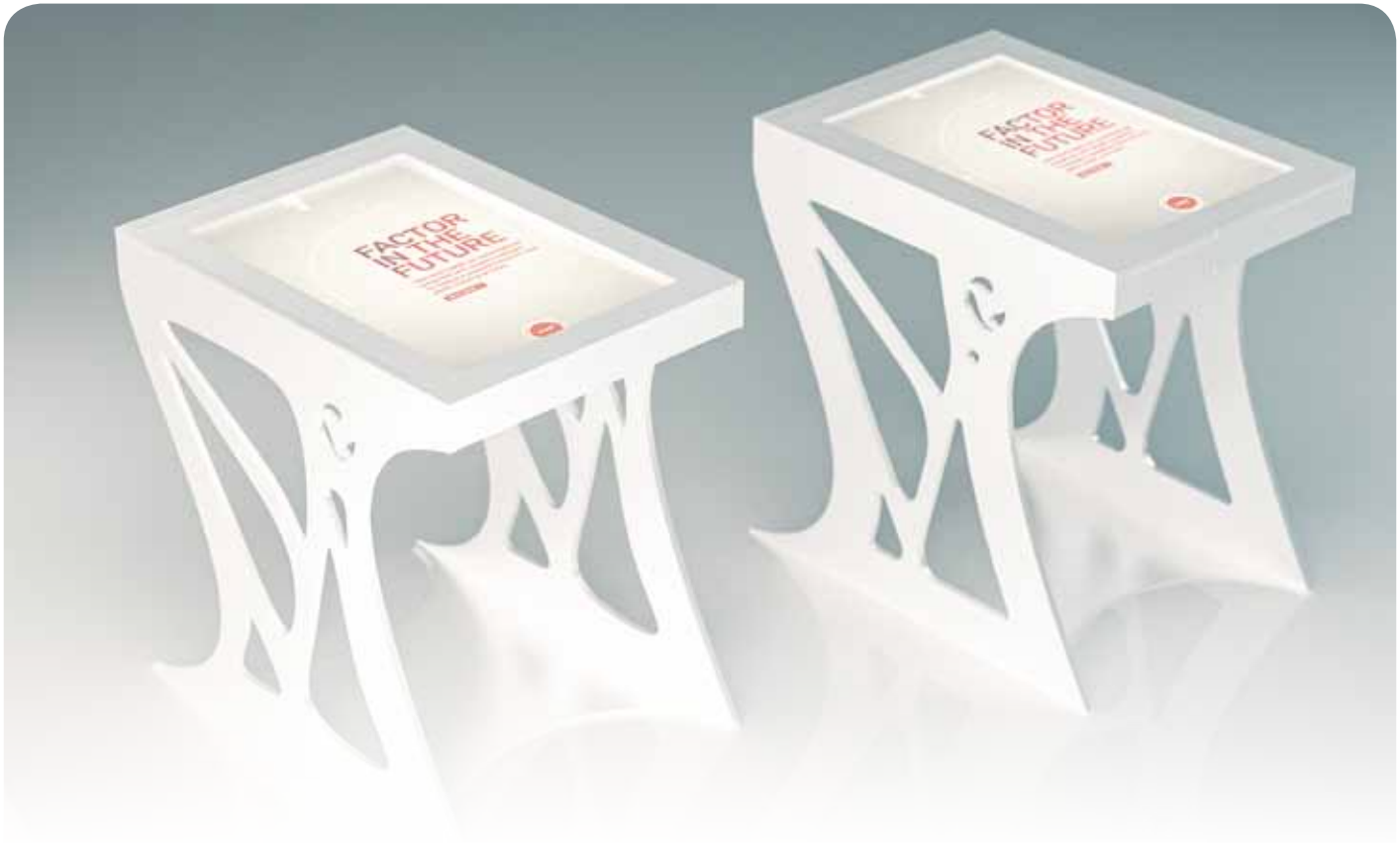

AR to support haemophilia patients

An Australian-designed, augmented reality (AR) technology unveiled at The Children's Hospital at Westmead (CHW) will give young people living with haemophilia a glimpse into the future and help them stay on track with treatment.

Haemophilia, an incurable, inherited rare blood disorder, is estimated to impact more than 3000 Australians.[1] It is diagnosed when there is not enough clotting factor VIII(8) or IX(9) in the blood to help control bleeding in the body.[1] This bleeding most commonly occurs in the joints of the knees, elbows and ankles,[2] and can lead to joint disease if not treated adequately. As haemophilia is also an inherited condition diagnosed at birth, joint disease caused by haemophilia can begin to develop as early as the age of 20.[2,3]

The AR Joint Scanner, which will be used by clinical staff at the Kids' Factor Zone at Westmead Children's Hospital's Paediatric Haematology Unit, will help educate young patients and their families on the possible future impact of joint disease and the importance of maintaining a regular treatment program to help prevent bleeding episodes.

The scanner uses a 'leap motion' 3D camera attached to a computer to scan and map a person's hand when placed under the device. A specially designed software then overlays imagery onto the user's hand to replicate normal aging and the impact of joint disease.

While the scanner uses only the user's hand as its reference point, it cleverly allows the user to expand the replicated view on the screen beyond the hand to see what is happening elsewhere in the body, focusing on specific joints known to be impacted by haemophilia including the shoulder, knee or ankle.

"Technological advances like augmented reality, seen in this Joint Scanner, allow healthcare professionals to bring important health education to life that directly engages their patients. We know improved health education can help patients make informed decisions about managing their health conditions," said Murray White, Joint Scanner developer from Crash Bang Wallop.

Tim Demos, a 28-year-old Melbourne-based ambulance worker who lives with haemophilia A, said the Scanner provides an insightful and startling lens into what life can look like if he doesn't continue to pay attention to his haemophilia management.

"I've always felt I had a pretty good handle on managing my haemophilia, but even so, it's easy to disregard the impact of my condition in the next 10 years. This Scanner has helped to strengthen my understanding that what I do now will determine how I live with my haemophilia for the rest of my life", Tim said.

Sanofi has developed the Augmented Reality Joint Scanner, which is provided on loan to hospitals across Australia, including Westmead Children's Hospital, as an educational resource for patients and their families.

1. Haemophilia FAQs. Haemophilia Foundation Australia. Available at https://www.haemophilia.org.au/about-bleeding-disorders/faqs. Accessed 16 March 2022
2. Knobe et al. Haemophilia and joint disease: pathophysiology, evaluation and management. Journal of Comorbidity 2011; 1:51-59
3. Melchiorre, D et al. Pathophysiology of hemophilic arthropathy. J Clin Med. 2017 Jul; 6(7): 63. Published online 2017 Jun 25. DOI: 10.3390/jcm6070063

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Oral drug for PPD shows promise

A drug delivery platform developed by Monash University researchers in partnership with PureTech Health plc has reached a significant milestone, showing for the first time in humans that a drug that currently must be injected due to breakdown in the liver after oral administration, may be administered as a simple oral capsule.

The data were generated with 'LYT-300', an oral form of allopregnanolone. Allopregnanolone is currently the only FDA-approved medication on the market specifically for the treatment of postpartum depression (PPD), however it must be administered as a 60-hour intravenous infusion, a method that has inherent limitations, said Monash University in a statement.

Current research, Monash stated, suggests that PPD affects up to one in five new mums, yet readily accessible medications to specifically treat PPD are limited, and an unmet clinical need remains.

"The ongoing Phase 1 clinical study of LYT-300 showed that when orally administered via the new drug delivery technology 'Glyph', systemic blood levels were approximately ninefold greater than that of orally administered allopregnanolone, based on previously published data. This has the potential to dramatically increase practicality and usability.

"In the PureTech study, fasted healthy adults were given LYT-300 containing the equivalent of 53 mg of allopregnanolone, achieving plasma exposure levels with an AUCinf of 352 ng*hr/mL. This compares to a previously published study in fasted healthy adults where 30 mg of allopregnanolone was orally dosed, resulting in an AUCinf of 21 ng*hr/mL.

"This is the first clinical validation of the Glyph technology in humans. The platform, developed by Professor Chris Porter and his team at the Monash Institute of Pharmaceutical Sciences, piggybacks onto lipid absorption pathways, targeting drug absorption to the lymphatic system and away from the liver. This provides patients an opportunity to switch from invasive intravenous administration to a simple oral capsule.

"The Glyph technology is licensed to commercial partner PureTech Health plc, a clinical-stage biotherapeutics company dedicated to discovering, developing and commercialising highly differentiated medicines for devastating diseases."

Porter said that this is a key milestone for Glyph. "These data show that allopregnanolone can be successfully administered orally, which is very encouraging not only for women with PPD, but also for those with other neurological and neuropsychiatric conditions, including other forms of depression, anxiety and sleep disorders, who could benefit from an oral form of allopregnanolone.

"Because Glyph re-routes drug transport via the lymphatic system, it has the potential to enhance the bioavailability of orally administered drugs like allopregnanolone. In addition, since it selectively traffics therapeutics into the lymphatic system, it has the potential to target therapies to the immune system. We are hopeful that LYT-300 will be the first of many applications for Glyph."

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Chief Medical Officer of PureTech Julie Krop, MD said: "Natural allopregnanolone has demonstrated efficacy for the treatment of PPD and other neuropsychological conditions, but up to now has required IV delivery due to high first pass liver metabolism. LYT-300 is designed to unlock the validated pharmacology of natural allopregnanolone with a potential oral treatment option for PPD and a range of other neurological and neuropsychological conditions."

The multi-part Phase 1 program of LYT-300 has three primary objectives — to demonstrate oral bioavailability, evaluate safety and tolerability across a range of doses, and to identify a dose to take forward. With the achievement of the first objective, additional dose exploration and the effect of food on oral absorption of the prodrug are progressing, and assessments of safety, tolerability, pharmacokinetics (PK) and pharmacodynamics (PD) will be measured. Dose escalation continues as no dose-limiting toxicities have been observed to date. The full results of the Phase 1 study will be shared in a future scientific forum.

In addition to Porter, the team at Monash that developed the Glyph technology was led by Associate Professor Natalie Trevaskis and Dr Sifei Han, and included Dr Luojuan Hu, Dr Dan Zheng, Dr Nathania Leong, Dr Garima Sharma and Dr Mitchell McInerney.

Managing insomnia with an app

An app designed to treat insomnia without the use of medication, available in Australia via a Flinders University clinical trial, has received an official recommendation from the UK's National Institute for Health and Care Excellence (NICE).

The NICE guidelines provide national guidance and advice to improve health and social care in England. The recent NICE report states the app, Sleepio, is a safe and effective treatment for people suffering from insomnia and could reduce the number of prescriptions for medications such as zolpidem and zopiclone, which can become addictive.

Following the news, Dr Alexander Sweetman from Flinders University's Adelaide Institute for Sleep Health is calling on Australian GPs and people with insomnia to get in touch to learn how the app can be accessed in Australia.

"At present, Sleepio is only available in Australia through a clinical trial, so it's important doctors are aware it's an option and patients can be referred to the program and assisted," Sweetman said.

"Our previous research has shown that cognitive behavioural therapy for insomnia (or 'CBTi') is the most effective treatment for insomnia and Sleepio is a self-administered version of that."

Cognitive behavioural therapy works by targeting the underlying psychological, physiological and behavioural causes of insomnia, in contrast to medications, which simply treat the symptoms.

Through the trial, Sweetman is aiming to develop the pathway within the doctors' central software program to help GPs identify and refer patients to the specialised digital cognitive behavioural therapy program for insomnia.

"Currently the most common treatment for insomnia in Australia is sedative-hypnotic medications, or sleeping pills, which are potentially addictive and not effective over the long-term," Sweetman said.

"Instead, we have a treatment with cognitive behavioural therapy, proven effective in multiple clinical trials worldwide — we just need to provide GPs with more information, accessible guidelines and tools, as well as referral and treatment options to help them to help their patients manage insomnia."

Insomnia is a common and debilitating disorder that can impact a person's physical and mental health and wellbeing. Symptoms include taking a long time to fall asleep or frequently waking up throughout the night and not feeling rested the following day.

45 GPs are currently participating in the Australian Sleepio trial and have referred 200 patients to Sleepio. The trial will continue offering the app to GPs and patients throughout 2022.

"So far, patients have reported improved insomnia symptoms and around a 40% reduction in sleeping pill use," Sweetman said.

GPs and patients interested in the trial should contact Dr Alexander Sweetman on alexander.sweetman@flinders.edu.au.

Mackay Base Hospital gives clinicians more time to care with clinical artificial intelligence

Mackay Hospital and Health Service serves around 180,000 people in a range of regional, community, and rural settings in Queensland. One of these settings — Mackay Base Hospital — is the referral hospital for the region, seeing around 271,000 outpatient visits and caring for more than 81,200 people in its Emergency Department each year.

Mackay Base Hospital is one of the most digitally advanced hospitals in Queensland. It recently introduced Nuance's cloud-based clinical speech recognition solution, Dragon Medical One, integrated with its Cerner ieMR, to provide powerful new documentation capabilities.

Using Dragon Medical One, Nuance PowerMic, and Nuance PowerMic Mobile, clinicians in the Emergency Department can document their decision-making using only their voice and automatically create accurate, detailed clinical notes in the Cerner ieMR. And as Dr Pieter Nel, Chief Digital Director Medical Services at Mackay, told us, the hospital and its clinicians have already seen some remarkable results.

"It gave us quite considerable time back, and we talk about at least two minutes per patient being given back to every clinician, which is a 30% reduction of time spent on documentation," said Dr Nel.

"We have the time to look at the wellbeing of our staff, to connect to the nursing team much easier and understand their challenges," said Dr Nel. "We have time to check up on the wellbeing of RMOs and support them in the challenges of a busy emergency department."

Analytics also showed that documentation created in Dragon Medical One was more accurate and detailed. Now, creating complete documentation in real time allows Mackay's Emergency Department clinicians to improve patient flow and safety.

"For clinicians to do documentation in real time is very important. When you do it in real time, you remember the finer detail, and you've done it in a structured way — that improves the quality of the notes," said Dr Nel.

"What we also found is that our notes are much more comprehensive, longer, more detailed, but we still gained those two minutes. We could immediately see the advantage of voice-to-text: typing at 30 words per minute with a lot of mistakes versus 170 words a minute."

"It's definitely improved our discharge summaries," said Dr Nel. "By the time a patient gets to his car, or the taxi or ambulance is taking him home, the discharge summary handover note has been completed, and an admin person has emailed it through to the GP."

Now that clinicians can use Dragon Medical One to create documentation three to four times faster than typing, they feel more in control — and they're able to switch off at the end of their shift.

The early results from Dragon Medical One are very promising for Mackay and its patients. As anybody who's worked in an Emergency Department will tell you, when clinicians have more time to spend with their patients — and with their families — the outcomes are better for everyone.

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Efficiently manage the certificates of insurance and Ahpra registrations for your staff, with meXus's apps

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Ideal for single hospital locations and networks with multiple sites, meXus allows your organisation to maintain control and consistency, with centralised visibility and reduced risk.

Keeping track of certificates of insurance and Ahpra registrations for healthcare practitioners can be time-consuming, inefficient and error prone.

These gaps or failures in hospital systems and processes can increase medico-legal risk, with out-of-date information leaving your organisation liable for poor patient outcomes, complaints or legal actions.

There is a simpler, more efficient way.

meXus simplifies the most resource- and time-intensive credentialing tasks — the annual task of collecting each practitioner's certificates of insurance (CoI) and Ahpra confirmation of registration details — to help you:

Save time and money: See greater efficiency and significantly reduced staff time spent on chasing up practitioners for their insurance and checking their AHPRA registrations remain current. meXus enhances your administrative processes by retaining this important credentialing information in one central, fully auditable and secure portal.

Reduce risk: Interactive dashboards pull real-time doctor credentials directly from the source, so your healthcare organisation can collect, verify and track up-to-date CoI and Ahpra registration information for your staff to ensure regulatory compliance and reduce risk.

Certificate of Insurance (CoI)

The CoI app automates the collection of insurance documents and simplifies compliance — saving time.

An easy-to-use dashboard shows which certificates need renewing. These can be filtered by site, practitioner type and expiry date, providing an efficient way to ensure practitioners' insurance certificates are current, thereby reducing risk for healthcare organisations.

Ahpra Alerts

Lapses in Ahpra registration can expose healthcare organisations to medico-legal risks.

Efficiently and securely manage the status of your Ahpra-registered health practitioners.

The Ahpra Alerts app synchronises with the Ahpra database, ensuring organisations stay up to date with each practitioner's registration status, including notifications of any changes to conditions or undertakings on their registration.

Today, our technology and services are used by more than 1,000 organisations to support more than 15,000 staff.

What meXus customers say:

"... onboarding process has been great ... our credentialing officers are very happy, the onerous task of having to chase CoI's has been lessened and hopefully, together, we can get more of our practitioners to provide their consent ... we are very happy with the process." — St Vincent's Health Australia

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The bridge between

The Perth Children's Hospital Foundation Kids' Bridge — a three-metre-wide, 217-metre-long pedestrian bridge over Winthrop Avenue in Nedlands, connecting the Perth Children's Hospital and Queen Elizabeth II Medical Centre to Kings Park — has been commended at the 2022 Dulux Colour Awards.

Designed by Fratelle and BEAM, the colourful facility provides families with the opportunity to escape the rigours of their hospital journey by providing safe access to nearby Kings Park.

"This striking, serpentine-like bridge connecting Perth Children's Hospital to Kings Park is a dazzling urban intervention, which undoubtedly fulfils its ambition to uplift young patients undergoing treatment and rehabilitation," the judges commented.

"Thoughtfully created to provide colour therapy and its mental health benefits, as much as a physical connection to the hospital's neighbouring parkland, Koolangka Bridge embraces Aboriginal culture as an integral part of its vibrant scheme. The underside mural, painted by Indigenous artist Kamsani Bin Salleh in Dulux Weathershield colours, offers an unexpected visual delight to those passing below, adding yet another dimension to this multifaceted and impactful project," the judges said.

"The deck surfaces are banked up on either side in direct response to the forces acting on the structure, providing a playful sloped footway for children to explore. The fluid geometry and vibrant colours of the deck create a distinctive aesthetic that is particularly apparent from the hospital. Within Kings Park the approaches are arranged to minimise disruption to protected habitats, meandering through sensitive vegetation and utilising low-impact construction methods," BEAM said.

The 2022 Dulux Colour Awards recognised exceptional projects that demonstrated the most ambitious and innovative use of colour in the built environment. The winning projects were selected from 103 finalists from Australia and New Zealand, competing across six categories for awards and commendations.

Dulux Colour and Communications Manager Andrea Lucena-Orr said, "Not only did we witness some remarkably creative, original projects, but this year we also saw colour strategies that challenged stereotypes, with ambitious programs and unparalleled impact, across a range of building typologies.

"The judging panel agreed that, irrespective of scale, scope or program, in residential, urban or educational contexts, a number of exceptional projects transcended their stereotypes through the highly considered specification of colour."

The Australian Grand Prix winner and recipient of the Commercial Interior — Public and Hospitality Award, Studio Bright for the Monash Robotics Lab, epitomises this. "Eschewing the clinical, sterile palette typically associated with science facilities, this lab is warm and inviting thanks to a play of earthy tones, colour pops and calming greens," said the judges.

"Thoughtfully created to provide colour therapy and its mental health benefits, as much as a physical connection to the hospital's neighbouring parkland, Koolangka Bridge embraces Aboriginal culture as an integral part of its vibrant scheme."

Image credit: Asset Reports

Want to run your healthcare facility more efficiently? Here's how you can do it.

We all want to improve our health delivery systems to increase the wellbeing of patients in our hospitals. One of the most effective ways of doing this is by using real-time data and information to assist with decision making on clinical efficiencies, patient movement and building operations.

Schneider Electric's Solution Architect for Buildings Business, Daniel Garcia Gil, says embracing an integrated digital future will allow healthcare facilities to better navigate and adopt new trends.

"From patient-centric care to challenges around workforce and skills shortages, we know that to produce the best possible outcomes, data from a number of different sources needs to be normalised, analysed and actioned in a holistic manner. We want to bridge the data gap across the entire value chain from facilities and care delivery to administration, in order to improve delivery of healthcare services. The best way to do this is for healthcare facilities to utilise an operational digital twin."

How will digital twin technology assist healthcare?

A digital twin is a virtual replica of systems, processes and infrastructure across an entire enterprise. It includes the relationships between these parts and has the potential to be the heart of a real-time health system. Data from all inputs are brought together to provide an all-encompassing system which, through the use of machine learning and artificial intelligence, can enable optimal solutions and reduce risk. In a healthcare setting, the digital twin can optimise operational strategies, bed capacity, staff scheduling and care models. The digital twin can be configured to test the influences of changes on system performance without risks, as well as for modelling of new scenarios.

Using the global pandemic as an example, Mr Garcia says that if a new virus were to spread around the world, then a digital twin could be employed at healthcare facilities to analyse the flexibility of the infrastructure and offer recommended actions.

"If a new threat were to occur, a digital twin platform, which collects and processes healthcare facility, IT and operational data, could be used to alleviate pressures relating to the stretching of capacities and saturation of emergency departments and ICUs," Mr Garcia says. "Analysing the collected data, an operational digital twin could then run

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predictions on what impact decisions such as the cancellation of elective surgery, or different public health prevention measures, might have on clinical services and operations."

Likewise, any information collected and analysed by the digital twin previously could be used to predict clinical and facility metrics and provide insights. This could be information such as:

- if and when elective surgery needs to be cancelled,
- recommendations for repurposing hospital areas as isolation rooms (or wards) or for ICU purposes,
- frequency of monitoring and replacement of infrastructure needs, such as filters or respirators.

"As we can see, a real-time health system not only provides 'as it happens' information but also offers background data collection and correlation to provide future insights," Mr Garcia says.

On a more local level, an operational digital twin can provide evidence into how patient care can be carried out most effectively.

"If an inpatient has been booked for a procedure that's scheduled to last for up to 4 hours, plus post-operative observations, the digital twin is able to model the patient and all the ancillaries that are involved," Mr Garcia says. "In this instance, notifications can be sent to all relevant parties, such as the clinical team undertaking the operation, transportation of the patient (including alternative paths if there's maintenance going on or a lift out of order), location and status of equipment needed for the operation, and any dispensing of post-operative pharmaceutical medication. The facility management team can also be notified that the room is vacant at that time and that any maintenance or cleaning can occur. Systems in the room can also be put on stand-by to save energy. As you can see, the entire system can be mapped out as one activity."

Supporting infrastructure

In order for this digital streamlining and efficiency to take place, healthcare facilities must have the ability to model all systems within their enterprise. All of this data, from clinical systems, sensors, medical devices through to administration, facility and IT systems, needs to be brought into the one operational digital twin.

"The good news is, this data collection is already happening at most healthcare facilities," Mr Garcia says. "The bad news is that often it is being collected in separate, siloed databases which don't, or can't, talk to each other. Schneider Electric expert teams can audit your facilities and identify potential areas of friction for data integration as well as design roadmaps to transition to a more integrated digital platform."

Connecting and modelling newer connectable assets can be a simple task, but it is a bit more cumbersome for older assets where the process will require finding documentation, maintenance sheets and datasheets in order to create an accurate model. For this later case, an accuracy assumption for the prediction will have to be made.

Once you have digital twin infrastructure operating, Mr Garcia says that success is determined by reliable and sustainable infrastructure.

"Critical plants, backup power systems, electrical infrastructure, pneumatic tube systems and automated pharmacy systems must all be running optimally to ensure premium healthcare is maintained," Mr Garcia says. "Because we now have full visibility of our facility infrastructure thanks to the digital twin, we can see how flexible it is to quickly adapt to new models of care and clinical needs. We can implement a predictive and proactive asset maintenance strategy and avoid infrastructure checks based on a non-prioritised list of reactive tasks. We can ensure that if a pandemic or emergency mode is triggered, visibility of key facility items is prioritised so that healthcare workers can continue to do their jobs for better patient outcomes."

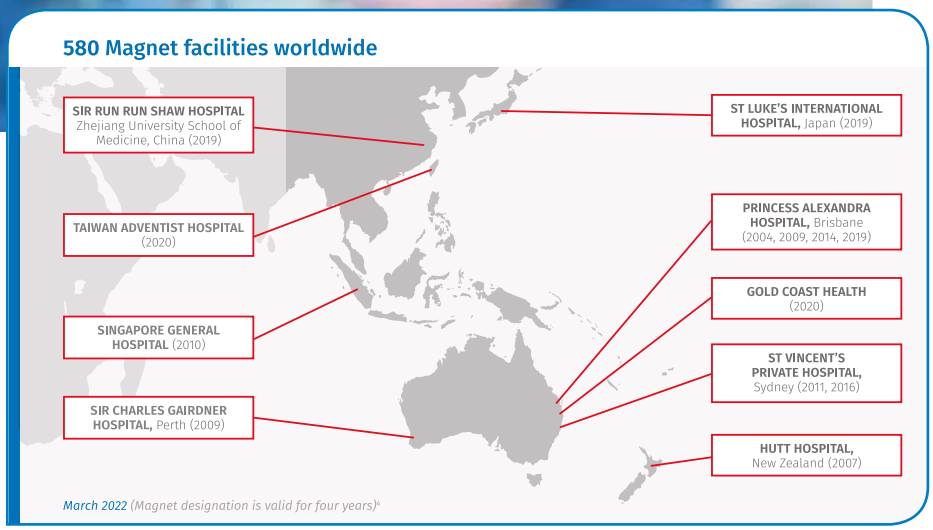
Digital priorities

Mr Garcia says that by making digital connections and analysis a priority in healthcare, we have the ability to improve the overall system and to drive better health outcomes.

"Bringing visibility to all systems and structures across a healthcare facility means we can build a dynamic and flexible infrastructure which is sustainable and future-ready," Mr Garcia says. "Preventative maintenance, better visibility and a clearer understanding of how systems can work together, will give us better insights and understanding for the future. This means that our everyday health services, as well as our emergency response, can be better managed as we pivot quickly to ensure fast, optimal outcomes."

For more information about Schneider Electric's Healthcare solutions for the future visit se.com/au/buildings-of-the-future.

A commitment to healthcare excellence has nurses at its heart



Nursing shortages, job dissatisfaction and burnout continue to impact hospitals around the world. Yet nurses play a vital role in the delivery of safe, effective and quality healthcare to the community.

While nurse retention strategies have had varying degrees of success[1], hospitals that invest in shared governance systems and professional practice models are being recognized internationally for their nursing excellence.

Developed by the American Nurses Credentialing Center, the Magnet Recognition Program[2] is designated to healthcare organizations worldwide where nursing leaders successfully align their nursing strategic goals to improve patient outcomes.

Hospitals can use the Magnet model to continually evaluate their strengths, weaknesses, and performance to embody a collaborative culture, and nurses are valued as integral partners in the patient's healthcare journey.

According to the 2019 Centre for Clinical Effectiveness literature report, the Magnet Hospital program is a valuable assessment tool for Australian hospitals as they grapple with shortages and the difficulties they face in attracting and retaining good nursing staff[3].

"Magnet is the only program for attracting and retaining nurses that has a body of evidence to support it — 20 years of rigorous research that shows powerful outcomes. Research also provides clear evidence that they also deliver higher quality care and a significantly lower patient mortality rate," the report said.

Working together to advance health care for all

Nurses are not the only ones squeezed for time. Hospitals often do not have the resources or time to regularly develop new or update existing procedures, which means nurses may not have access to the latest evidence to inform their practice and clinical care.

- How do you manage change in an ever-evolving clinical environment?
- How do you and your nurses keep pace with new technologies, emerging developments, and unanticipated challenges such as staffing shortages, knowledge gaps, and public health emergencies?
- How do you increase compliance and quality metrics, improve nurse motivation, competency, and confidence, while keeping patient outcomes at the forefront?

Having quick access to current evidence-based knowledge allows nurses to make well-informed decisions and provide safer and consistent care right at the bedside.

Integrate evidence into bedside practice

Pandemics and fast-changing, complex healthcare environments highlight the importance of implementing standardized procedures, up-to-date guidelines and technologies across a hospital to increase clinical efficiency, improve outcomes, and reduce cost and waste.

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1. www1.health.gov.au/internet/publications/publishing.nsf/Content/work-review-australian-government-health-workforce-programs-toc-chapter-7-nursing-midwifery-workforce%E2%80%93education-retention-sustainability--chapter-7-nursing-midwifery-retention
2. www.nursingworld.org/magnet
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4. www.nursingworld.org/organizational-programs/magnet/find-a-magnet-organization

Securing our future health

Located at 122 Pyrmont Bridge Road, Camperdown Modern — a new healthcare facility proposed to be developed by partners Mathieson Property and PWD — aims to meet the growing demand for health services in Sydney's inner west.

Consulting firm Destravis Group and healthcare demand modelling company Hardes Data's clinical services assessment shows that both the primary and secondary catchments to Camperdown are significantly undersupplied by health services with increased demand predicted on the back of robust population growth and demographic changes.

The assessment found that at least an additional 30,000 square metres of healthcare space will be required to meet increased health needs by 2032. In addition, a shortfall of 332 overnight and day surgical recovery beds is also anticipated.

The proposed purpose-built facility, a private health offering in close proximity to the Royal Prince Alfred Hospital (RPA), hopes to address the shortfall in hospital services amid a backlog of demand from the impacts of COVID-19 compounded by population growth and demographic changes.

It will deliver 10,300 square metres of health facilities, with large floorplates ranging from 1300 to 1700 square metres and a flexible design that can accommodate a range of health services, including day surgeries, pathology, radiology, mental rehabilitation, consulting suites and potentially 120–130 patient beds.

Mathieson Property Director Alex Sicari said Camperdown Modern can provide a purpose-designed facility for health users across large, flexible contiguous floor plates that are extremely difficult to amalgamate in the small and fragmented private land holdings surrounding RPA Hospital. "With NSW Health confirming a $750 million expansion for RPA Hospital, demand is set to increase for private health services in what is an already undersupplied market," Sicari said.

Phillip Rossington, Principal at BVN, said the unique site and design creates an activated ground plane incorporating sunny outdoor areas, retail opportunities and an easily accessible pick-up and drop-off entry experience.

"The exterior of the space is designed to break down the massing of the building into a scale that is more relatable to human experience. This methodology provides a smaller floor plate, which offers clearer internal circulation and better access to daylight. The interior of the space would also be designed with human experience as one of the top priorities. Natural material with warm tones like timber would be

applied to provide a harmonious, stress-free user experience, for patients, staff and visitors alike.

"The next phase of the project presents exciting opportunities to embody some innovative engineering solutions. Potential of using local, renewable and recycled materials would also be explored to optimise the energy efficiency during construction."

Destravis was engaged to assist in a health service activity investigation and functional design review of the Camperdown Modern Private Hospital. Investigations identified the site is well located to deliver services for the inner Sydney community, according to Destravis. "It is in close proximity to the Sydney CBD and the Royal Prince Alfred Hospital, with strong present demographic, wealth, workforce and projected private health service activity into the future. This serves as a strong foundation for a private hospital to establish on the site."

Anthony Colwell, Associate Director, Destravis Group, said his company also undertook a functional design review of the facility, ensuring the layout, area and make-up of each floor of the hospital, the flows between floors and access for patients will support a functional, contemporary and efficient private hospital facility.

"Destravis' input ensured the design of the facility puts patient-centred care first, while creating an efficient and safe environment for future operators of the facility — both key to the success of all private hospitals."

The project is strategically located in the Camperdown Health Education Research Precinct (CHERP), the future focal point of Sydney's health, innovation and technology community, connected to the Tech Central 'super' precinct. It offers access to over 100 research institutes and centres of excellence including leading tertiary education institutions.

Camperdown Modern Project Director Michael Lochtenberg said the development would suit a major private healthcare or hospital operator looking to expand its services within a purpose-built facility.

"The facility will be attractive to a diverse range of tenants including private surgical facilities, general hospital services and mental health service providers. It is expected to respond to the community's socio-economic demographic, bolstered by a growing population with a high take-up of private health insurance," Lochtenberg said.

Camperdown Modern is being leased by Mathieson Property, currently fielding enquiries from several large health user groups, with completion planned for late 2025.

The anatomy of a decarbonised building

Ian Richardson, Building Solutions Technical Specialist, ABB Australia

Digital technologies and energy management solutions that sense, monitor, control and optimise the built environment while it interacts with individuals are at the core of decarbonising hospitals and healthcare facilities. And they play an important role in reducing energy consumption, increasing energy efficiency and the adoption of renewables.

There are five key steps to achieving carbon neutral hospitals and healthcare facilities and buildings:

1. The first step is to deploy digital solutions and energy management such as monitoring, control and optimisation, which is at the core of decarbonising buildings.
2. Next is to increase energy efficiency by utilising building management systems and installing new, highly efficient motors and drives for example.
3. Expanding electrification is also important. For example, heat-pumps and having an electric vehicle (EV) charging infrastructure.
4. The installation of distributed renewable energy solutions should also feature in a low-carbon strategy — from photovoltaic technology and wind turbines, through to battery energy storage systems and thermal energy storage.
5. The final step is to procure renewable energy from the grid and offset any remaining emissions.

The technology blueprint

It is important to point out here that achieving carbon neutrality in a new building is easier to achieve 'by design' than in older building stock that requires retrofitting. In the absence of a 'one size fits all' blueprint, our customers understand that their projects are unique, and feature a combination of existing systems and equipment built over time. This is why open-source technology and the interoperability between systems is so important. In order to meet Net Zero building targets, we must be able to retrofit a large percentage of existing buildings. And solutions need to be easy to install, with impact and return on investment clearly defined.

Whilst not all technology blueprints for a smart, carbon neutral site are exactly the same, a typical customer smart building will use interconnected technologies to improve comfort and performance across energy management, water use, air conditioning, access, automation, lighting, remote monitoring, and communication networks.

Thanks to ABB's solution areas within the ABB Ability™ Building Ecosystem, for example, hospital and building operators and facility managers can have digital control of all these elements, and smart buildings will capture the transformative opportunities to become more environmentally friendly — from substantially contributing towards carbon reduction targets through efficiency gains in heating and cooling equipment and in the building itself.

The ABB digital solutions enable constant surveillance and optimum control of energy production, consumption and storage. Largely autonomous, this learning system calculates the optimum energy flow based on predictive data and compensates for deviations in real time. In a carbon neutral site, these technologies are combined for a holistic approach that can be easily scaled according to the requirements of the building.

The digitalisation of buildings through connected technologies and building automation also has a key role to play in helping to manage grid resilience and reliability as well as reducing energy costs and increasing energy efficiency. Moreover, it is an important step towards the energy transition. It enables the building to provide value-adding services towards the modern energy grid and thus supports the shift from "consumer" to "prosumer" — facilitating concepts such as virtual power plants and maximising the value of distributed energy resources (e.g. photovoltaic, batteries) on a broader scale.

Within that context, our carbon reduction programs strongly leverage the ABB Ability™ Energy and Asset Manager*, for monitoring, optimising and maintenance prediction using big data and artificial intelligence.

In short, the typical solution scope for a carbon neutral building project includes distributed energy resources — such as on-site photo voltaic technology, EV-chargers, energy storage, motors & drives, power supply & protection — as well as digital solutions for energy management including monitoring, control and multi-purpose optimisation. Also, building automation & heating, ventilation and air-conditioning (HVAC) controls such as digital integration platforms, building automation & control, HVAC control & optimisation, space management and wellness & productivity.

The solutions are here to power the decarbonisation of the built environment. More and more digital technologies are coming together and demonstrating new possibilities in the generation, use and production of energy for work, transportation and domestically.

Download ABB's comprehensive Health Solutions e-book that reviews the technology needed to support smarter, sustainable operations via the QR code or visit new.abb.com/buildings/healthcare.

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Writing an asthma action plan

Professor Nick Zwar, Executive Dean of the Faculty of Health Sciences & Medicine, Bond University and Chair of the National Asthma Council Guidelines Committee

The flu season provides a reminder about how colds and flu could trouble us — especially people with asthma, for whom respiratory infections can trigger severe attacks.

For patients with asthma, knowing what to do and acting quickly could help prevent worsening asthma symptoms that result in a trip to the emergency department and another course of oral corticosteroids.

That's why we need to make sure every child, adolescent and adult with asthma has their own up-to-date action plan, recorded in a format they (or their parents) can easily understand, and kept somewhere they can access immediately when needed. Asthma action plans should provide clear, individualised instructions on how to adjust medication in response to asthma symptoms, and state when and how to get medical care, including during an emergency. The instructions need to be specific and based on the person's usual treatment.

What, when and how many inhalations?

This is key advice that patients need to know and needs to be included in the action plan, but the wide range of day-to-day asthma treatment regimens now in use — particularly for adolescents and adults — can make it complicated. A patient's day-to-day treatment could be salbutamol or terbutaline taken as needed, low-dose budesonide–formoterol as needed; an inhaled corticosteroid maintenance treatment plus salbutamol as needed; one of an increasingly long list of inhaled combinations of corticosteroid and a long-acting beta2 agonist (again with salbutamol as needed); or a combination of an inhaled corticosteroid and formoterol taken both daily as maintenance treatment and as-needed for symptom relief. The list is growing as more treatments are approved by the TGA and PBS.

This means there are now at least seven different options for a patient's usual symptom reliever. These cover a long list of brand names and can be delivered by either metered-dose inhalers or dry-powder inhalers. The number of inhalations taken to relieve symptoms varies between products, and each has a different daily maximum.

All these variations mean that prescribers need to be familiar with a lot of variables — or have a reliable cheat sheet on hand. This is where the Australian Asthma Handbook can help.

How-to information on asthma plans

The recently updated Australian Asthma Handbook (asthmahandbook.org.au) includes detailed information on writing asthma action plans. It shows specific recommended options for increasing treatment in response to worsening symptoms for each of the possible current regimens. The latest update includes new and updated key tables to guide us in preparing asthma action plans.

There is a library of action plan templates available on the National Asthma Council website (nationalasthma.org.au). Choose *Asthma action plans* from the *Health Professionals* menu. There you can also find How-to videos with step-by-step guides on correct inhaler technique.

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How IoT-enabled chemical systems can help with cleaning staff retention

Even with much of the world past the worst of COVID-19, the pandemic has left a permanent legacy of increased hygiene awareness, with the public now having greater expectations on cleaning standards. Quite simply, the old approach is no longer enough.

However, as the cleaning and hygiene industry continues to face the long-standing problem of staff retention (with the hospital and healthcare sector no exception), operators are increasingly turning to high-tech solutions in order to keep personnel engaged, satisfied and motivated.

For example, cleaning staff, especially those working on larger sites, regularly walking between multiple hand sanitizer dispensers and checking product level only to find that the systems do not need refilling is monotonous and disheartening, not to mention inefficient.

Therefore, if personnel are able to ensure dispensers are full at all times and do not need to be reminded to refill, not only is the process more efficient, but the operative is empowered and feels a greater sense of value and purpose in their work.

SEKO is helping the healthcare sector to achieve this with its DispenserONE® hand sanitizer system, which not only provides 3,000 doses between refills but is also compatible with the SekoWeb app which allows remaining product level to be viewed 24/7 via smart device or PC.

With this information at their fingertips, operatives need only visit each DispenserONE unit when refilling is required, which not only means users always have access to sanitizer, it minimizes replenishment frequency. This provides staff with a continuing sense of achievement as they do not need to be repeatedly reminded to refill dispensers.

Another area within hospital and healthcare where staff disenchantment can be high is the on-premise laundry, where inadequate dosing provision such as manual addition of detergent, softener and additives results in inadequate or excessive chemical levels within each load.

This leads to inconsistent wash results and the need for regular rewashing. As well as wasting chemical, this is an inefficient use of staff time and can cause the operative to become despondent at rewashing because of the limitations of the system rather than their own error.

SEKO's fully-automated Wash Series laundry dosing systems help to solve this challenge, with detergent dosing taken out of the operative's hands entirely. As well as protecting staff from exposure to harsh concentrated chemicals, this ensures that wash results are consistently successful which vastly reduces the need for rewashing.

The award-nominated Wash Series' main benefit, however, is its compatibility with SekoWeb, which allows operators to access live and historic chemical consumption data on demand 24/7 via smartphone with the option to see results in terms of cost per load.

This, together with the ability to view number of washes per day, means managers can use the figures to engage with staff and reward performance. This inclusive, collaborative approach helps to ensure operatives are motivated, fulfilled and that the laundry runs at maximum efficiency.

SekoWeb — available as an iOS or Android app as well as online via web browser — is compatible with an increasing number of SEKO systems. A major benefit of the system is its ease of use, with an intuitive interface meaning that if the regular cleaner is absent, their replacement can quickly be shown how to use the system and carry out their duties without risk of error.

It's clear that as the healthcare sector continues its adjustment to a post-COVID world, managers should think "technology first" when making decisions to help retain staff as part of a well-functioning cleaning operation.

Food safety and training

Andrew Thompson, Director Think ST Solutions

A basic skills training program is critical for the success of any employee to perform their job well. An ongoing training program promotes a greater understanding of all aspects of the food business and sends a strong message to employees and customers about an organisation's commitment to doing business better.

A well-trained and knowledgeable employee is your best protection for a healthy business and provides employees with information and skills that allow them to play a greater role. This is particularly true when it comes to quality food safety training — it is a good prevention program to reduce the incidence of foodborne illnesses. It is also a compelling reason for the national food regulator Food Standards Australia New Zealand in P1053 Food Safety Management Tools to propose mandatory food safety training for food handlers working in foodservices and food retail businesses — these operations have been linked to foodborne illness outbreaks. This requirement was one of many issues canvassed in the public consultation phase. Other key requirements include:

- FSANZ is seeking a positive food safety culture within foodservice and retail food businesses.
- Creation of Food Safety Standard 3.2.2A Food Safety Management Tools.
- The introduction of a nationally consistent risk classification system for food businesses across Australia.
- National requirement for food business to have a food safety supervisor who has completed an accredited training course. Currently, this short course is only applicable in Queensland, Australian Capital Territory, New South Wales and Victoria.
- Records demonstrating that basic food safety controls such as cooking, cold storage and training are in place will have to be kept.

Category 1: Foodservice businesses, such as caterers (onsite and offsite), restaurants, takeaways and retailers who make and serve potentially hazardous foods, also referred to as 'temperature control for safety (TCS) foods'. These businesses face the highest food safety risks. Three regulatory measures for food safety management (food safety supervision, food handler training and evidence) are applicable for these food businesses.

Category 2: Retailers of unpackaged ready-to-eat potentially hazardous foods. Two new regulatory food safety management tools (food supervision and handler training) are applicable here.

Category 3: Retailers of pre-packaged ready-to-eat potentially hazardous foods that remains packaged during the sale fall into this category. No new regulatory measures would be applied to these food businesses.

There is already a mandatory requirement for aged care providers serving food to vulnerable populations to have a food safety program. This proposal will require any potentially hazardous food served or sold to the public through catered functions, a cafeteria, kiosk and onsite vending machines to incorporate these activities into their existing food safety program.

Food law requirements don't have to hold you back, they can be a point of difference for your food business. A great training program should be for everyone and it should be ongoing. Not only is it an important motivational tool that will reward them with greater employability because of the additional knowledge and skills, but will also create relationships based on respect.

Strengthening mental health response

The World Health Organization (WHO) has released the largest review of world mental health since the turn of the century, providing a blueprint for governments, academics, health professionals, civil society and others with an ambition to support the world in transforming mental health.

In 2019, nearly a billion people — including 14% of the world's adolescents — were living with a mental disorder, according to the WHO. Suicide accounted for more than 1 in 100 deaths and 58% of suicides occurred before age 50. People with severe mental health conditions die on average 10 to 20 years earlier than the general population, mostly due to preventable physical diseases, according to the WHO.

Drawing on the latest evidence available, showcasing examples of good practice and voicing people's lived experience, WHO's report highlights why and where change is most needed and how it can best be achieved. It calls on all stakeholders to work together to deepen the value and commitment given to mental health, reshape the environments that influence mental health and strengthen the systems that care for people's mental health.

WHO Director-General Dr Tedros Adhanom Ghebreyesus said, "Everyone's life touches someone with a mental health condition. Good mental health translates to good physical health and this new report makes a compelling case for change. The inextricable links between mental health and public health, human rights and socioeconomic development mean that transforming policy and practice in mental health can deliver real, substantive benefits for individuals, communities and countries everywhere. Investment into mental health is an investment into a better life and future for all."

All 194 WHO Member States have signed up to the Comprehensive Mental Health Action Plan 2013–2030, which commits them to global targets for transforming mental health.

Dévora Kestel, Director of WHO's Mental Health and Substance Use Department called for change: "Every country has ample opportunity to make meaningful progress towards better mental health for its population. Whether developing stronger mental health policies and laws, covering mental health in insurance schemes, developing or strengthening community mental health services or integrating mental health into general health care, schools and prisons, the many examples in this report show that the strategic changes can make a big difference."

The report urges all countries to accelerate their implementation of the Comprehensive Mental Health Action Plan 2013–2030. It makes several recommendations for action, which are grouped into three 'paths to transformation' that focus on shifting attitudes to mental health, addressing risks to mental health and strengthening systems of care for mental health. They are:

Deepen the value and commitment to mental health

For example, stepping up investments in mental health, not just by securing appropriate funds and human resources across health and other sectors to meet mental health needs, but also through committed leadership, pursuing evidence-based policies and practice, and establishing robust information and monitoring systems.

Including people with mental health conditions in all aspects of society and decision-making to overcome stigma and discrimination, reduce disparities and promote social justice.

Reshape environments that influence mental health

For example, intensifying engagement across sectors, including to understand the social and structural determinants of mental health and intervening in ways that reduce risks, build resilience and dismantle barriers that stop people with mental health conditions participating fully in society.

Implementing concrete actions to improve environments for mental health such as stepping up action against intimate partner violence and abuse and neglect of children and older people; enabling nurturing care for early childhood development, making available livelihood support for people with mental health conditions, introducing social and emotional learning programs while countering bullying in schools, shifting attitudes and strengthen rights in mental health care, increasing access to green spaces and banning highly hazardous pesticides that are associated with one-fifth of all suicides in the world.

Strengthen care by changing where, how and by whom care is delivered and received

Building community-based networks of interconnected services that move away from custodial care in psychiatric hospitals and cover a spectrum of care and support through a combination of mental health services that are integrated in general health care, community mental health services and services beyond the health sector.

Diversifying and scaling up care options for common mental health conditions such as depression and anxiety, which has a 5 to 1 benefit–cost ratio. Such scaleup includes adopting a task-sharing approach that expands the evidence-based care to be offered also by general health workers and community providers. It also includes using digital technologies to support guided and unguided self-help and to deliver remote care.

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Effective healthcare cleaning — saving lives and healthcare costs every day

Housekeeping staff responsible for cleaning within the healthcare environment are often at the forefront of patient safety and infection prevention, yet they do not always receive the focus they deserve.

Potentially infectious organisms can persist in the environment for prolonged periods, posing an ongoing risk for transmission and acquisition to patients and healthcare workers.

Contaminated surfaces serve as a mode of transmission for viruses with pandemic potential[1]. Touchable surfaces in the environment can harbour harmful microorganisms, including drug-resistant organisms, cold & flu viruses and coronaviruses[2, 5].

A Healthcare-associated infection (HAI) is an infection occurring in a patient during the process of care in a hospital or other healthcare facility, which was not present or incubating at the time of admission. They are associated with increased morbidity and mortality and excess healthcare costs[2]. An estimated **170,574 HAIs** occur in **adults admitted to public hospitals alone in Australia each year**, resulting in **7583 deaths**[1]. This makes HAIs the most common complication affecting patients within the hospital setting.

HAIs can be classed as a potentially preventable adverse event rather than an unpredictable complication. It is possible to significantly reduce the rate of HAIs through effective infection prevention and control, including effective cleaning practices[3].

Making surfaces safer

Implementing a bundled approach to environmental cleaning with well executed educational interventions can dramatically improve the frequency and quality of decontamination[4]. A 2017 study by Hall et al.,[5] Researching Effective Approaches to Cleaning in Hospitals (REACH), evaluated an environmental cleaning bundle for reducing HAI rates in 11 Australian hospitals. Reflecting current evidence, five interventions were introduced.

These targeted improved cleaning practices, with an emphasis on engaging environmental services staff and included:

Training — Tailored for new and existing cleaning staff, with content reflecting cleaning roles and responsibilities[5].

Technique — Including a defined and consistent cleaning sequence, a focus on high touch points, the use of sufficient pressure and movement, and adherence to product manufacturers' instructions for use[5].

Product — Disinfectant for discharge cleans and daily cleans of high-risk rooms, plus wipes at point of care for medical equipment[5].

Audit — Regular audit feedback for cleaning staff, with summarised results provided to clinical governance committees[5].

Communication — Promoting a team approach, including daily contact between cleaners and ward managers. Cleaners represented on relevant clinical governance committees[5].

A follow-up cost effectiveness review concluded that a bundled, evidence-based approach to improving hospital cleaning is a cost-effective intervention for reducing the incidence of HAIs[6].

Implementing the REACH cleaning bundle generated AUD$147,500 in cost savings.

Infections prevented under the cleaning bundle returned a net monetary benefit of AUD$1.02 million and an incremental cost-effectiveness ratio of $4,684 per quality-adjusted life year (QALY) gained[6].

GAMA Healthcare provides support for all five components of this Cleaning Bundle, further reducing the impact on healthcare facilities as they struggle to find resources to facilitate change.

Contact GAMA Healthcare for more information on safe cleaning and disinfection and how we can support your cleaning team on (03) 9769 6600 or email australia@gamahealthcare.com.

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Surgery, a common anaesthetic

and contraceptive effectiveness

Women undergoing operations are not being routinely informed that a common anaesthetic may make their contraception efforts less effective, according to UK doctors.

The drug, sugammadex, is widely used in anaesthesia and is known to interact with the hormone progesterone, a main component of hormonal contraceptives, including the pill, implants and IUDs. Administered towards the end of the operation, ahead of waking the patient up, the drug reverses the action of drugs given earlier in the procedure to relax the patient's muscles.

The researchers surveyed 150 health professionals in a UK hospital and found that 70% of the respondents said they do not routinely discuss the drug interaction with their patients. Additionally, of the 48 patients given sugammadex while on a hormonal contraceptive during the researchers' six-week audit, none had medical records referring to have spoken about it. This is according to research presented at Euroanaesthesia, the annual meeting of the European Society of Anaesthesiology and Intensive Care (ESAIC) in Milan, Italy.

Current guidance is to inform women of child-bearing age (WCBA) that they have received the drug and, due to increased risk of contraceptive failure, advise those taking oral hormonal contraceptives to follow the missed pill advice in the leaflet that comes with their contraceptives and advise those using other types of hormonal contraceptive to use an additional non-hormonal means of contraception for seven days.[1]

In the experience of the authors, robust methods for identifying at-risk patients and informing them of the associated risk of contraceptive failures is not common practice across anaesthetic departments within the UK, and likely further afield. To find out more, Dr Neha Passi, Dr Matt Oliver and colleagues at the Department of Anaesthesiology, University College London Hospitals NHS Foundation Trust, London, UK, surveyed consultants, junior doctors and physician assistants. 94% of the 82 anaesthetists who responded said they were aware of the risk of contraceptive failure. 70% of respondents said they do not routinely discuss sugammadex with the patients who have received the drug. 234 patients were administered sugammadex during the six weeks covered by the audit. 65 (28%) of the patients given sugammadex were WCBA and 48 of these should have received advice on the risks of contraceptive failure. There was no record of it, however, in the medical notes of any of the 48 women. (The other 17's medical history meant they weren't at risk of pregnancy and so not eligible for the advice.)

Dr Passi said, "It is concerning that we are so seldom informing patients of the risk of contraceptive failure following sugammadex use.

"Use of sugammadex is expected to rise as it becomes cheaper in the future, and ensuring that women this receiving medicine are aware it may increase their risk of unwanted pregnancy must be a priority."

"We only studied one hospital trust but we expect the results to be similar elsewhere in the UK," Dr Oliver said.

Dr Passi said it is important to note, however, that most patients receiving an anaesthetic do not need a muscle relaxant[2] and that sugammadex is one of several drugs available to reverse muscle relaxation.

In response to their findings, the study's authors have created patient information leaflets and letters and programmed the Trust's electronic patient record system to identify 'at-risk' patients and deliver electronic prompts to the anaesthetists caring for them in the perioperative period. Sugammadex is the only anaesthetic drug known to have this effect, according to the doctors.

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Surface Cleaning and Disinfection — What to use?

What product to choose for cleaning in the Healthcare Environment?

A clean healthcare environment is an important part of an infection prevention and control (IPC) programme[1]. A growing body of evidence suggests that the transmission of pathogens whilst being treated in a healthcare facility, from environmental surfaces and equipment in the patient's surroundings contributes to the increasing problem of healthcare associated infection (HAI)[2]. A wide range of decontamination technology, methods and products are currently available[3]; however, there is much debate as to what is best practice and this is demonstrated in the diverse application and acceptance of methods and cleaning and disinfection agents. Here we will explore the use of a neutral detergent and separate disinfectant for surface cleaning and disinfection as part of a two step decontamination process.

Factors that influence successful removal of pathogens from surfaces

The increase in resistant organisms, novel pathogens and emerging infectious diseases has led to a growth in research looking at the efficacy of environmental decontamination in the healthcare setting. This has been further accelerated by the COVID pandemic which has seen a rapid shift in environmental cleaning and disinfection protocols as both awareness and understanding of transmission pathways became more apparent. Factors that can determine the effectiveness of an environmental cleaning program and subsequent reduction in surface based transmission rates include the following:

- Cleaning and disinfection agents, type and efficacy
- Level of training provided to cleaning personnel
- Variation in cleaning personnel performance and consistency of process
- Monitoring of cleaning practices
- Bio-burden (Biofilm) of the surface
- Properties of surface being cleaned
- Frequency the surface is touched e.g. high-touch surfaces or low-touch
- Adherence to manufacturer recommendations for correct product use and appropriate application of suitable contact time
- Resistance of pathogens to routine cleaning and/or disinfection

What most studies have concluded is that human factors play the most important part in effective decontamination of the environment if all other factors are equal and effective adherence to suitable process is essential for optimum outcomes.

Choosing a neutral detergent or disinfectant

The choice of cleaning agent is very much an independent one and relevant to the facility, local risks, environmental surfaces and equipment in use. Different products may be suitable for different situations within the same facility; for example, some facilities may use a neutral detergent for everyday routine cleaning but change to a disinfectant in the event of an outbreak. As a result of the pandemic we have seen changes to traditional protocols with a significant increase in active disinfectant application, adjustment to the frequency of cleaning and disinfection in order to prevent transmission from surfaces.

Broadly the difference between cleaning and disinfection is simple.

Cleaning is the removal of soil and contaminants from surfaces, whereas Disinfection relates to the inactivation, neutralisation or killing of pathogens by use of a chemical disinfectant.

The topic of whether routine environmental cleaning should be undertaken with a neutral detergent or a disinfectant remains controversial as the ongoing concern that overuse of disinfectants may lead to additional micro-organism mutation resulting in a possible rise in antimicrobial resistant organisms, clostridium difficile infections and other outbreaks associated with an environmental source.

Neutral detergent

For regular, everyday cleaning of healthcare surfaces, a neutral detergent product is a good cleaning agent to choose and provide a cost-effective solution. Additionally, by virtue of the cleaning process and the removal of dirt and contaminants that can harbor pathogens, the process will minimize pathogens and micro-organisms

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in the environment. Use of the detergent and regular removal of dirt and dust should minimise the build-up of bacteria and viruses and the formation of a biofilm. It has been found though that bulk detergent solutions that are then diluted for broader application have been known to become contaminated with bacteria if not changed frequently. This can result in the cleaning process contributing to the spread of pathogens around the environment instead of removing them. This can also occur if you re-use a cloth or wipe on multiple surfaces. Without a disinfectant this can result in further spread.

This risk can be minimised by using pre-moistened wipes, that are single use only and disposed of as per manufacturer recommendations. Recommended process for use of wipes is as follows:

- Use an S shaped motion to reduce cross contamination
- Clean Equipment and surfaces from the Top to the Bottom
- Wipe from Clean to Dirty to stop re contamination of clean areas
- Ensure contact times are as per instruction to ensure effective disinfection
- Use one wipe per surface /equipment — minimise the risk of cross contamination

There is also a reduced environmental impact to a broader use of disinfectant wipes instead of disinfectant products due to the reduction in overall chemical use. They are also non toxic and pose significant less risk of reactions and exposure to potentially toxic ingredients. Care should always be taken for users of products to take the relevant protective measures when using any product. Disinfectants by definition are chemicals that kill or render inactive pathogens at a cellular level, so a detergent will nearly always be less toxic than a disinfectant.

Disinfectants

There are several indications when a disinfectant would be the product of choice, primarily in situations of high levels of contamination. Disinfectants reduce higher bacterial counts than detergents but the product still relies on the removal of organic soil to be effective. It should be noted that many disinfectant compounds can be inhibited by dirt and soil and the presence of which may significantly reduce the relevant efficacy. It is for this reason that it has been widely accepted that a surface should be cleaned first prior to the use of a disinfectant.

It is recommended to use a disinfectant to decontaminate the room after the discharge of a patient who had been colonised or infected with MRO or other infectious disease. Multiple studies have demonstrated that a patient is at a higher risk of MRO acquisition if they were admitted to a room previously occupied by a patient positive for MRO. A disinfectant product is also used when there is persistent contamination with a pathogen, such as during an outbreak or when the area has endemic rates of disease. Additionally, there are some pathogens which have potential resistance to detergent-based cleaning including C. difficile, MROs, and norovirus.

Aside from the potential environmental toxicity issues, one of the draw-backs of disinfectants is that they require a minimum contact time to kill the pathogens. Having a robust process that facilitates the adherence to the contact time is essential in the optimal disinfection outcome. Contact time can be defined as the minimum time a pathogen needs to be exposed to the active ingredient in order for it to be killed or rendered inactive. In practice this is effectively wet exposure time so a surface needs to be wet with disinfectant for 60 seconds in order to achieve a 60 second contact time. It should be noted that contact time can change from product to product and pathogen to pathogen.

More recently there is an increase in combination detergent and disinfectant products that use the latest generation disinfectant active ingredients combined with detergent surfactants. The active ingredients in these are typically less affected by dirt and soil and will clean and disinfect the surface. For best outcomes it is still recommended that two wipes are used on any surface, the first to clean and the second to disinfect. These products should be treated with the same precautions as any other disinfectant.

Surface compatibility

Important to note that detergents and disinfectants have different material compatibility profiles that will differ from product to product. Care should be taken to assess the surfaces that the products will be applied to for compatibility prior to use. Of particular importance are surfaces and materials on pieces of medical equipment. These can be comprised of a variety of materials including metals, alloys, plastics, polymers and glass. All of these may react differently to cleaning and disinfection ingredients and you should always consult with the equipment manufacturer for guidance. Use of the correct products will ensure the lifespan of the surface or equipment is not unduly compromised by the environmental cleaning protocol.

Summary

In summary, there are positive and negative aspects to using both detergents and disinfectants. The end users need to consider the environment, current HAI and pathogen risks, existing protocols and processes, staff competence and choose their products appropriately. The process and effective application of any environmental cleaning and disinfection protocol is essential in achieving the very best outcomes. Remember you can have the best product available but if it is not used correctly it is not going to achieve the desired end state and if you do not adhere to contact times for disinfection you may as well use water as you will not achieve effective disinfection at all.

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Egg freezing, IVF and age-related fertility decline

A US study of elective fertility preservation has found that 70% of women who froze eggs when they were younger than 38 — and thawed at least 20 eggs at a later date — had a baby.

The report is based on 15 years of 'real life' frozen egg thaw outcomes for women who had delayed childbearing and faced natural, age-related fertility decline. It also found that a considerable number of the women studied had more than one child through egg preservation. Reportedly, there were a total of 211 babies from egg freezing.

In comparison — and using fresh eggs or embryos from women trying to conceive — at age 40 fewer than 30% undergoing in vitro fertilisation (IVF) become pregnant and fewer than 20% gave birth to live babies as a result, according to statistics gathered by the Centers for Disease and Prevention from the nation's nearly 500 fertility clinics.

Egg freezing and thawing at a later date provides a higher pregnancy success rate than using fresh embryos during assisted reproductive technology, said authors of the study led by experts at NYU Grossman School of Medicine and the NYU Langone Fertility Center.

"Our findings shed light on the factors that track with successful births from egg freezing, which include careful screening of embryos to be thawed and implanted," said study lead author Sarah Druckenmiller Cascante, MD, fellow in the Division of Reproductive Endocrinology and Infertility, within the Department of Obstetrics and Gynecology at NYU Langone.

"A better understanding of the live birth rate from egg freezing for age-related fertility decline is necessary to inform patient decision-making.

"Importantly, our study is based on actual clinical experience rather than mathematical modelling with limited data, which is most of what has been published on the chance of births from egg freezing thus far," Cascante said.

Study details

Within the study, 543 patients participated with an average age of 38 years old at the time of the first egg freeze, which is older than the optimal age to freeze eggs (35 years old or younger). These patients underwent 800 egg freezing cycles, 605 egg thaws and 436 embryo transfers between 2005 and 2020.

The investigation found that overall, 39% of women between 27 and 44 years old, with a majority between 35 and 40 years old at egg freeze, had a least one child from their frozen eggs, which is comparable with age-matched IVF outcomes.

Across all ages, women who thawed more than 20 mature eggs had a 58% live birth rate, which was profound and unexpected as this group included patients past their reproductive prime. In fact, 14 patients who froze eggs at the age of 41–43 years successfully had children from their frozen eggs. As noted, women under 38 years old who had 20 or more mature eggs thawed achieved a 70% live birth rate per patient. The length of frozen egg storage did not change the success rate, the study found.

Results also showed that preimplantation genetic screening with embryos from frozen and eventually thawed eggs resulted in lower miscarriage rates and higher live birth rates per transfer. Such screening also allows for single embryo transfers, yielding singleton pregnancies, which are safer for both the mother and child, according to the authors.

"Freezing eggs at a young age becomes an option to be one's own egg donor at advanced age. As younger patients freeze eggs and do more than one cycle, the success rates will be even higher than reported in this study," said study senior author James A Grifo, MD, PhD, director of the Division of Reproductive Endocrinology and Infertility and the NYU Langone Fertility Center.

Grifo, also a professor in the Department of Obstetrics and Gynecology at NYU Langone, cautioned that the study was limited by the number of patients. Future larger studies are underway to increase the data set from which patients can benefit and model their expected success rates. He said that additional studies from a variety of geographic locations and centre types are also necessary.

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A patient's perspective

vs clinician-based tools

A patient's perspective on their physical well-being can provide a better indication of their response to cancer treatment than clinician-based tools, according to a study by Flinders University. The findings highlight the importance of shared decision-making in treatment.

"An essential component of patient-centred care, shared decision-making is a process in which the clinician and patient collate and discuss the available evidence on the benefits and harms of treatments, ensuring the most appropriate and informed decision is made for the patient," says study lead author Natansh Modi, an NHMRC PhD candidate in the Clinical Cancer Epidemiology Lab at Flinders University.

Two tools can be used during shared decision-making: the Eastern Cooperative Oncology Group performance status (ECOG PS), a tool interpreted by the doctor, and patient-reported outcomes (PROs), structured tools whereby a patient self-reports their perspective on their physical, social, emotional, and functional abilities.

"PROs are generally used as secondary data in clinical trials to help with interpreting results; however, they have recently shown to be important in providing a prognosis to the patient for cancer types including bladder, lung and skin cancers, but their value to HER2-positive advanced breast cancer had yet to be fully explored," Modi said.

"The research highlights the importance of listening to patients, with both types of tools providing helpful independent prognosis information."

The study pooled data from several trials to look at almost 3000 patients who underwent drug treatments for human epidermal growth factor receptor 2 (HER2)-positive breast cancer.

"We found that a number of patient-reported outcomes, including those on physical well-being and mental health, were identified as significant factors associated with either the patient's overall survival of cancer, with cancer not progressing or severe adverse events during treatment," Modi said.

"The results indicate that information provided by the patients themselves was better able to predict their reaction to the treatment and their overall prognosis than the clinician-interpreted scores.

"Significantly, patient-reported physical well-being was found to be the most useful patient-reported outcome in determining a diagnosis for all available treatment outcomes."

In some cases, the study found very different results between the clinician-based data and the patient-reported data.

"We determined that around 70% of the patients who their clinicians defined as 'fully active, and able to carry on all pre-disease performance without restrictions' went on to report limitations in their physical well-being status when asked to self-report," Modi said.

The authors say the research highlights the importance of listening to patients, with both types of tools providing helpful independent prognosis information.

"This study demonstrates that patient-reported physical well-being can predict prognosis better than clinician-interpreted ECOG PS. It is, therefore, essential that clinical practice transforms to place a greater emphasis on the patient's perspective and voice," Modi said.

"By combining patient-reported questionnaires and clinically interpreted measures, we can provide the best clinical insights that allow for shared decision-making in cancer treatment, while also enhancing the design of future clinical trials."

Cybersecurity digital health check for our Healthcare system

Thomas Fikentscher, Regional Director ANZ, CyberArk

Technology has transformed the healthcare sector at a phenomenal rate, but in doing so it has also elevated it to become one of the most targeted industries for cyber-attacks.

The healthcare industry now has the dubious honour of having the highest number of notified breaches in Australia and a 650% increase in ransomware attacks year on year.

One of the most recent of these was the breach of an Australian NDIS third-party client management system which resulted in highly sensitive health data being compromised and uploaded to the dark web.

But we aren't alone — in May 2021, the Health Service Executive (HSE) of Ireland suffered a ransomware cyberattack which caused all the national and local IT systems across core services in more than 40 hospitals to shut down. It severely impacted health and social care services with many appointments cancelled, including all outpatient and radiology services, affecting CT and other scans. It was more than a month until the HSE could decrypt the IT servers and get 70% of computer devices back in use, and a further four months until it managed to get 95% of servers and devices restored.

Cybersecurity in the healthcare sector has gained so much attention that a ransomware attack even featured in Season 4 of *New Amsterdam*. It may have been fictional, but it was grounded in reality and painted an accurate picture about the potentially life-threatening nature of healthcare-targeted cyber threats. In this instance, viewers saw a complete halt to all departments' operations, a takeover of the hospital's critical infrastructure with automated, robo-enabled surgeries and Internet-connected chemo injections being compromised; and patients' sensitive data being hacked.

One of the self-evident risks for the healthcare systems is ensuring medical data is safely shared. The pandemic has been a catalyst in accelerating the digital integration and deployment of data, particularly with the introduction of Telehealth paired with the existing My Health Record in Australia. Privileged and sensitive patient information is now shared across complex ecosystems with a highly connected internal and external workforce.

Today, hospitals are part of integrated campuses, with multiple locations and research facilities working closely together, while pharmaceutical companies are extensively collaborating with GPs. The stakeholders on the system leverage a rapidly growing number of Internet-connected medical equipment and devices which are rich in medical and pharmaceutical data.

For those managing security, the requirements are two-fold — besides ensuring the security of human identities is maintained to prevent or minimise the impact of cyber security attacks, there are now significant risks posed by the increasing use of devices and machines throughout hospitals to look out for.

In fact, the devices — or operational technology (OT) — are poised to become the highest risk factors for healthcare organisations unless appropriate security controls are in place for these machine identities. With most medical technology now connected to the Internet, from endpoints to MRTs and scanners, the gateways for malicious actors to wreak havoc are considerable both in metropolitan locations and in digital or remote surgery environments where machines can outnumber the doctors operating in the room.

Taking a risk-based approach to cybersecurity and ensuring OT, and thus critical healthcare infrastructure and facilities, aren't compromised should now be a table-stakes consideration.

It all comes back to ensuring the delivery of reliable healthcare services that practitioners can trust without the risk of disruption to ensure they can deliver essential services to their patients. It's about supporting human capability with reliable technology.

Ultimately, people are the greatest assets in healthcare. So, when we talk about cyber security in digital health, the focus should be on supporting those great people with safe technology, making them more efficient and better informed with secured data, devices, and infrastructure.

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A day in the life of a Neonatal Critical Care Nurse

Ebony Blewer

04:30: I tend to wake up at 4:30 am before a 12-hour day shift to get to a CrossFit (gym) class at 5:00 am.

05:00: My gym class kicks off and I stay at the gym afterwards to shower and eat breakfast. I believe breakfast is the most important meal of the day when you're a nurse because you never quite know when you're going to have your first break. I usually have yoghurt, muesli or fruit!

06:00: I jump in my car and drive to work.

06:35: The first thing I do when I arrive at the NCCU is check my patient allocation for the day. I usually care for two babies each shift; however, this can change depending on the level of care required and their anticipated needs. If a baby is considered more unstable or critical, I will care for just one baby for the entire shift. I could be caring for a baby as small as 400 g and as young as 23 weeks gestation. The team leaders try really hard to allocate nurses with babies that they have previously cared for to ensure continuity of care. Having continuity can be safer and easier for patients and their families as you start to become a familiar face along their NCCU journey. Sometimes, I will also be allocated the role of the Code Nurse for the shift, which means I carry the emergency code pagers, attend high-risk births and provide support to colleagues.

06:45: The oncoming day shift team meets for a 'shift huddle'. This is something that is done prior to the commencement of every shift. I use this as an opportunity to ensure that I am prepared for the day by discussing any key updates, safety concerns, identifying the team on duty and any potential admissions.

Afterwards, I head to my designated allocation to receive handover from the night duty team. A few things that usually discussed include why the baby requires intensive care, their medical history, an assessment of their current condition, any risks and expectation for future care and relevant documentation.

07:15: Once the night team has gone home, I start my safety checks and make sure that the clinical space is well stocked and tidy for the day ahead. I then sit and write a loose plan for the day, with the intention that it could change based on each baby's cues or unexpected events and ensure there is an opportunity for family-centred activities.

08:00: If I'm feeling organised, I head out for an early coffee and morning tea. I like to eat early because the day almost always gets busy and then it becomes difficult to find time to take a break.

Ebony Blewer joined Mater Hospital Brisbane's Neonatal Critical Care Unit (NCCU) team almost four years ago.

She works across two different roles in the NCCU — registered nurse in the Preterm and Medical Intensive Care and trainee neonatal Clinical Nurse Consultant (CNC).

As part of the CNC team, Ebony works across the unit to provide support and guidance to all members of the NCCU. This may include providing an expert opinion for different aspects of patient care, reviewing and developing policies, leading research projects, collaborating with other neonatal units to achieve best practice goals and facilitating developmental care rounds. The NCCU team also work closely with the Mater's Maternal Fetal Medicine team by providing support and antenatal counselling to families whose baby may require intensive care at birth. The support for these families continues upon admission to the NCCU and up until discharge to ensure that their journey is as smooth as possible.

With 79 cots in the NCCU, including intensive care and special care cots — the unit cares for babies with congenital heart disease, anomalies requiring surgery, the spectrum of prematurity and a number of other medical conditions — Ebony never knows what her day has in store.

"The babies within our care can be very unwell, meaning that their needs and the level of care they require constantly changes," she said.

08:30: Ward rounds usually begin. This is when the medical team and other members of the multidisciplinary team, like the pharmacists, physiotherapists, dieticians and social workers, will walk around to each cot and create an individualised plan for the baby. Families are encouraged to be present and involved in these discussions for their baby.

09:00–13:00: I'm carrying out the plans and decisions that have come out of the ward rounds. This could include admitting and stabilising a new patient from birth suites or theatre, assisting the medical team to place intravenous access under sterile conditions, commencing new fluids or medications, feeding babies, taking bloods, commencing or stopping respiratory support and updating documentation.

Every baby needs milk feeds, nappy changes, cleaning and moisturising of their skin, care for pressure areas, a complete head-to-toe assessment, as well as weighing and bathing — if appropriate.

My favourite part of the day is meeting with each patient's parents and encouraging them to be involved with their baby's care as much as possible, including changing nappies, reading and talking to them, and having lots of skin to skin.

13:30: If everything is up to date in the room and my colleagues don't need an extra hand, I will sneak out for some lunch!

14:00–17:30: The care continues. We are a 24-hour unit and babies are born at all times of the day and night. It's very unpredictable, so you have to be prepared for everything and anything.

17:45: I start writing my notes and finishing my documentation.

19:15: I have completed my shift so drive home, have dinner (which my partner Josh usually has prepared) and get ready to do it all over again tomorrow.

08:30 09:00 13:30 14:00 17:45 18:45 19:15

18:45: The night shift staff arrive and we begin the handover process again!

A Day in the Life is a regular column opening the door into the life of a person working in their field of health care. If you would like to share a day in your working life, please write to: **hh@wfmedia.com.au**.

Type 2 diabetes and brain aging

In people with type 2 diabetes, brain aging speeds up by 26% compared to those without the disease, according to an analysis of UK Biobank data from 20,000 people aged 50 to 80 years old.

The researchers evaluated the relationship between typical brain aging and that seen in type 2 diabetes, and observed that type 2 diabetes follows a similar pattern of neurodegeneration as aging, but progresses faster. One important implication of this finding is that even typical brain aging may reflect changes in the brain's regulation of glucose by insulin.

The results further suggest that by the time type 2 diabetes is formally diagnosed, there may already be significant structural damage to the brain. Sensitive ways to detect diabetes-associated changes to the brain are therefore urgently needed.

Despite strong evidence linking type 2 diabetes with cognitive decline, few patients currently undergo a comprehensive cognitive assessment as part of their clinical care. It can be difficult to distinguish between normal brain aging that begins in middle age, and brain aging caused or accelerated by diabetes.

"Routine clinical assessments for diagnosing diabetes typically focus on blood glucose, insulin levels and body mass percentage," said Botond Antal, a PhD student at the Department of Biomedical Engineering, Stony Brook University, New York, US, and first author of the study published in *eLife*.

"However, the neurological effects of type 2 diabetes may reveal themselves many years before they can be detected by standard measures, so by the time type 2 diabetes is diagnosed by conventional tests, patients may have already sustained irreversible brain damage."

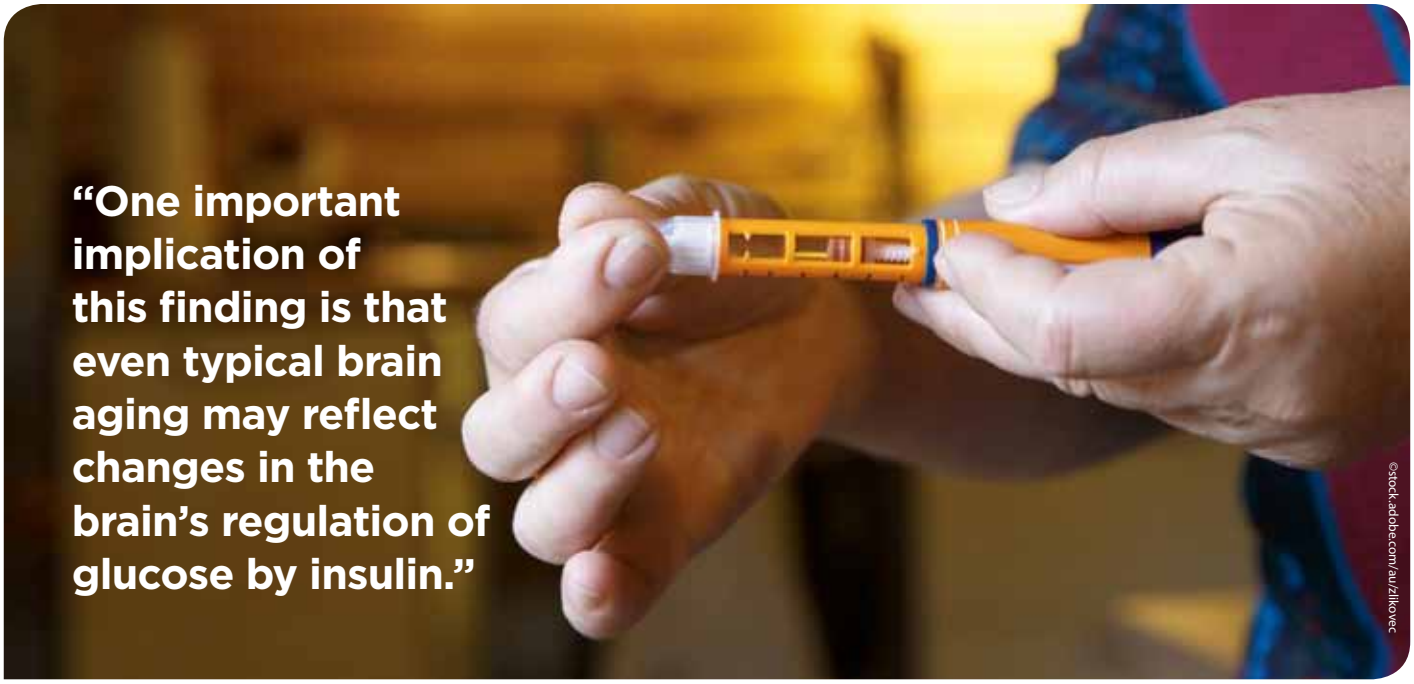
The team used the brain structure and function dataset across human lifespan from UK Biobank to define the impact of diabetes on the brain over and above normal aging. This dataset includes brain scans and brain function measurements and holds data for both healthy individuals and those with a type 2 diabetes diagnosis. They used this to determine which brain and cognitive changes are specific to diabetes, rather than just aging, and then confirmed these results by comparing them with a meta-analysis of nearly 100 other studies.

Their analysis showed that both aging and type 2 diabetes cause changes in executive functions such as working memory, learning and flexible thinking, and changes in brain processing speed. However, people with diabetes had a further 13.1% decrease in executive function beyond age-related effects, and their processing speed decreased by a further 6.7% compared to people of the same age without diabetes. Their meta-analysis of other studies also confirmed this finding: people with type 2 diabetes had consistently and markedly lower cognitive performance compared to healthy individuals who were the same age and similarly educated.

The team also compared brain structure and activity between people with and without diabetes using MRI scans. Here, they found a decrease in grey brain matter with age, mostly in a region called the ventral striatum — which is critical to the brain's executive functions. Yet people with diabetes had even more pronounced decreases in grey matter beyond the typical age-related effects — a further 6.2% decrease in grey matter in the ventral striatum, but also loss of grey matter in other regions, compared with normal aging.

"Our findings suggest that type 2 diabetes and its progression may be associated with accelerated brain aging, potentially due to compromised energy availability causing significant changes to brain structure and function," said senior author Lilianne Mujica-Parodi, Director of the Laboratory for Computational Neurodiagnostics, Stony Brook University.

"By the time diabetes is formally diagnosed, this damage may already have occurred. But brain imaging could provide a clinically valuable metric for identifying and monitoring these neurocognitive effects associated with diabetes. Our results underscore the need for research into brain-based biomarkers for type 2 diabetes and treatment strategies that specifically target its neurocognitive effects."



Living the digital dream in a hybrid world

All clinical data impacts decisions made by clinicians. Information in one place, at the point of care is core to patient wellbeing. Data sitting outside of the Electronic Medical Record (EMR) leads to the potential for errors that might ultimately prove fatal to the patient.

On the pathway to the Nirvana of Hospital Electronic Health Records, the care administered outside of hospitals isn't always incorporated. Indeed, the bulk of a person's health and illness data resides within non-hospital systems (GP's, Specialists, pharmacy, aged care and so many more).

Even within the boundaries of tertiary care, digital systems do not cover 100% of clinical communications, activities, and actions. Whilst public hospital Electronic Medical Record (EMR) rollouts are progressing across Australia, the implementation across each state and territory is far from paperless.

Whilst we are achieving greater levels of interoperability between EMR's via Integrating the Healthcare Enterprise (IHE) initiatives, this assumes that all providers of care use digital records and, if they exist, that those systems are able to or prepared to share patient information electronically.

Even in organisations that declare themselves to be digitised, a good deal of information remains on paper. This ranges from results that have written annotations, through to specialties that still use paper records as well as the EMR down to organisations that are paper lite.

Regardless of the differing levels of interoperability, and despite the obvious advantages of systems that can communicate with shared meaning, as the majority of a person's clinical data resides within non-hospital systems, it's crucial that we incorporate all valid sources of information or updates to current data for readiness at the point of care.

In Australia, EMR implementations have been in progress for the better part of 30 years. Regardless, not all hospitals or primary care practices with EMR's systems are completely digital. Whilst public hospital EMR rollouts are progressing at varying rates across Australia (EMRs are used by approximately 65 per cent of Australia's public hospitals) the implementation across each state and territory is far from paperless. In the private sector, adoption is yet to gain the traction evident in public health. Internationally, we are seeing similar trends.

Still, despite the apparent digitisation of health, healthcare providers still demand paper records. In 2021, the Australian Digital Health Agency announced the Australian health information gateway. A plan to create an electronic data exchange across all venues of care. The benefits of such a system are obvious.

Nevertheless, the challenge is clear. How do you link national records when?

- There is no national guideline for electronic health records
- Not all clinical data is digital
- Crosses geographical boundaries
- Information is in multiple languages
- Not all systems (paper or digital) share a common vocabulary
- The ability to link other information exchange technologies between states and territories is not guaranteed
- Health data isn't exclusive to hospitals
- Currently, no organisation operates without the use of paper for clinical or administrative data

Given the hybrid nature of healthcare data collection and retention, and acknowledging that a single source of information is the safest and most efficient option, how do you as a clinician, healthcare professional or informatician ensure your patient record is as complete as possible?

This discourse isn't intended to be a criticism of EMR implementations. A complete digital record has demonstrated benefits to patient care and clinical communication. Still, given that the sharing of clinical information is often incomplete, and that semantic interoperability is possibly even further behind, how do we deal with the patient who presents to your ED with a handful of paper?

For further information on Lexmark Healthcare and their solutions for hybrid to digital records, please contact Melanie Ford — melanie.ford@lexmark.com

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Telehealth: Critical Connectivity is only a product away

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Telehealth services have been on the rise for several years now. Since early March 2020 telehealth services skyrocketed, more than 86.3 million COVID-19 MBS telehealth services have been delivered to 16.1 million patients, with $4.4 billion in Medicare benefits paid. More than 89,000 providers have used telehealth services.

To protect patients and healthcare providers from COVID-19 transmission, the Australian Government expanded telehealth services. Recognising its important role, on 1 January 2022, the Australian Government made telehealth a permanent feature of our primary healthcare system. This allowed more health professionals to provide care remotely.

On 16 January 2022 the Australian Government announced further changes to the Medicare Benefits Schedule. These changes were aimed at supporting the community and the health system through this evolving health emergency investing $308.6 million, including $106 million for a permanent telehealth for Australian patients.

Telehealth has been transformational to Australia's universal health care and has played a critical role in ensuring the continuity of care for hundreds of thousands of Australian patients during the COVID-19 pandemic, protecting the health of patients and health professionals. It offers greater flexibility to health care as part of universal Medicare.

Telehealth can assist healthcare systems, organisations, and providers expand access to and improve the quality of rural healthcare. Using telehealth in rural areas to deliver and assist with the delivery of healthcare services can reduce or minimise challenges and burdens patients encounter. It can also improve monitoring, timeliness, and communications within the healthcare system.

Using information and communications technologies (ICTs) to deliver health services and transmit information over both long and short distances. It is about transmitting voice, data, images and information rather than moving care recipients, health professionals or educators. It encompasses diagnosis, treatment, preventive (educational) and curative aspects of healthcare services and typically involves care recipient(s), care providers or educators in the provision of these services directed to the care recipient.

Video conferencing is the preferred approach for substituting a face-to-face consultation and is one of the main ways of improving access to healthcare services for patients who live in regional, rural and remote areas.

"While Telehealth has been an important lifeline for people in rural, regional and remote Australia during the pandemic connectivity remains a big issue in rural Australia, and we need to be improving internet infrastructure in the bush otherwise telehealth is difficult or impossible for patients and health practitioners to use," said National Rural Health Alliance CEO Dr Gabrielle O'Kane.

Telehealth is only as good as the bandwidth it occupies.

The post pandemic workforce has emerged from lock down and created an unprecedented demand for connectivity, as we settle into the 'new normal', the need for innovative connectivity solutions is now more critical than ever.

The Cellferno is a revolutionary product to the Australian market, developed using innovative mobile technology which delivers high-speed data for basic internet access to mission-critical applications. Connectivity is the new currency in light of current global restrictions, with connectivity solutions like Cellferno critical for consumers and businesses in order to digitally navigate restrictions.

Cellferno can provide users with super-fast internet speeds and connectivity, with the single box design containing multiple antennas and a built-in modem to capture the best possible signal outdoors. With a single ethernet cable powering the Cellferno device, it can be connected directly to a computer, network switch or a WIFI access point to provide high-speed internet to devices within range.

Cellferno's focus is on speed, it can act as a primary internet for areas with poor internet, cellular or NBN service with speeds up to 2.5Gb/s. The Cellferno M2000 5G Fixed Wireless unit provides multi-gigabit data speeds by combining both 4G and 5G carriers. Supporting the latest 5G NR standard along with an incredible Cat-22 4G LTE chipset. The unit has dual-sim redundancy, IP67 weatherproof casing that supports Australia's temperature extremes, this unit is ideal for enterprise and industrial customers demanding high data rates with high reliability.

"The need for better connectivity is still critical, with people staying at home, organisations are continuing to support a return to work and work from home balance, businesses using online tools or platforms, and the necessity of web-based learning."

"Cellferno is an extension to Powertec's current mobile broadband product offering, providing an additional high-speed connectivity solution to our product portfolio."

— Powertec Training Manager, Paul Boyce.

In this current climate of wireless dependency, Cellferno delivers the ultimate high-speed internet connectivity solution, especially where cable-based internet is not available. The Cellferno has allowed Powertec to provide fast reliable internet connectivity to clients in a previously fragmented area. The fixed wireless solution is taking on the NBN, or inadequate broadband connections, across many rural areas across Australia.

Australians living in the bush are missing out on billions of dollars of medical care each year because there aren't enough doctors and nurses to treat them, says the sector's peak body, which is calling for an overhaul of how governments pay for rural healthcare.

The National Rural Health Alliance (NRHA) estimates that 7 million people, or about 28 per cent of Australia's population, are forgoing $4 billion of healthcare because of a lack of GPs, specialists and allied health workers such as psychologists and physiotherapists in rural and remote areas.

The Australian Broadband Advisory Council released the Health Expert Working Group's report into enhancing Australia's digital health ecosystem. The report focuses on how connectivity, technology and data can support new models of care, like the accelerated use of telehealth during the COVID-19 pandemic. One of the key recommendations from the report was extended reach of health services, particularly in regional rural and remote areas and for Aboriginal and Torres Strait Islander communities by improving patient connectivity.

Although internet infrastructure is available to almost all Australians, more than 2.5 million remain offline, the take up of the NBN continues to close the gap in access for rural Australia, however, there are substantial differences in digital inclusion between Australians living in rural and urban areas.

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Reinventing aged care

through improved support and flexibility

Ben Johnston, Country Manager, Homage Australia

The COVID-19 pandemic has exacerbated the shortage of aged care workers in Australia that has been ongoing since at least 2016.

One-fifth of aged care workers recently said they planned to resign due to 'hopelessness' spurred by burnout from over two years of battling COVID-19 breakouts in aged care homes — nearly 46% of all homes nationwide had an outbreak as recently as March 2022. This further accelerates the exodus and looming workforce crisis.

According to the Committee for Economic Development of Australia (CEDA), the aged care sector could face a shortage of at least 110,000 workers in the next decade.

As the industry struggles to find certified staff to support more than one million Australians who need aged care, what is clear is that we must rethink aged care as a profession. We need to listen to what aged care workers are saying and provide them with more support, structure and career opportunities to holistically address this critical shortfall in the sector.

Leveraging technology to plug the gaps

Across the aged care industry, workers often cite low pay, long working hours and a lack of career development pathways as some of their top challenges. To add to that, the new recommendations from the Royal Commission into Aged Care Quality and Safety, which include stipulations such as increasing the minimum number of minutes spent with each residential aged care resident from 20 to 200 a day, are placing added stress on the system. Supporting facilities and teams will face additional pressures to juggle these requirements, especially in the wake of the pandemic.

These longstanding, multifaceted problems require innovative solutions to address. Many of the answers almost certainly lie in leveraging technology, whose potential for change and disruption has been accelerated since the pandemic. For instance, artificial intelligence and mobile apps could streamline a significant amount of admin work such as filing patient data. This would allow workers to focus on what they do best — delivering quality care.

Technology could also set the stage for a redefinition of the working structure and processes of the aged care sector. Advancements in healthtech have led to the rise of digital platforms with intelligent matching engines, which can match care professionals with the patients who most need their expertise. Not only does this make it possible for care professionals to serve a wider pool of patients instead of being limited to traditional care facilities, but it also allows them to set their own hours and routes for maximum flexibility.

Empowerment for a better care ecosystem

The importance of job flexibility cannot be underestimated, especially in an industry prone to high burnout such as aged care. Aged care workers need to be able to earn a competitive salary that is commensurate with their hours and effort. They also need more autonomy to manage their work around their personal lives. To enable them to consider a career in aged care sustainable for the long term, we must empower them — mentally, physically and financially.

This support can be expanded beyond the individual to positively impact care organisations. Many aged care facilities are struggling with staffing and rostering challenges for their support workers — further compounded by the proposed industry reforms. But with healthtech platforms enabling them to tap into a vetted pool of certified care professionals on-demand, it is now much easier for them to adapt to evolving requirements — such as filling shortfalls in expanded rosters at short notice without sacrificing care availability or quality.

Finally, empowering aged care workers also benefits the patients themselves. Just as technology enables workers to choose their work preferences, patients can also choose when, where and how they prefer to receive their care. Well-cared-for workers will also be able to deliver a higher quality of care to patients without risking burnout. Ultimately, patients and workers can enjoy better peace of mind and have a more productive care relationship.

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“More is needed to support aged care professionals so that a career in this sector remains tenable for them, such as providing better job flexibility, autonomy and chances for progression.”

A sustainable way forward

Measures such as retention payments and a surge workforce from the Australian Defence Force are a step in the right direction, but they are only stopgap solutions that will not stem the aged care workforce attrition in the long term. More is needed to support aged care professionals so that a career in this sector remains tenable for them, such as providing better job flexibility, autonomy and chances for progression.

With Australia expected to hit around four million people aged over 65 this year, and that growth anticipated to accelerate in the next decade, the demand for care is only going to increase exponentially. There is an urgent need to proactively address the current issues within the industry to prepare for future challenges. Homage is ready to be part of the solution — both for our elderly Australians and the dedicated care professionals who take care of them.

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A stronger, unified voice

Sean Rooney, LASA CEO and AACC spokesman

Now that the federal election is over there is much work ahead for the aged care sector. As the Australian Aged Care Collaboration (AACC), both LASA and ACSA have led a campaign.

The priority will be funding for a much-needed pay rise for the aged care workforce, many of whom are among the lowest paid workers in the health and care sectors. Pledges to have a registered nurse (RN) 24/7 in every aged care home means immediate attention will be needed to increase the supply of RNs.

There is also a need for a reset of the reform program announced by the Coalition government in May last year in response to the final report of the Royal Commission into Aged Care Quality and Safety.

There is no time to lose as the economic sustainability of the industry is in dire straits. The StewartBrown financial viability data for the six months to the end of December 2021 found that more than 60% of residential aged care providers are operating at a loss while home care providers, on average, report a 25.5% decline in their operating result.

The decline in financial performance had worsened when compared to the first six months of 2021.

New research released in May 2022 by the Ageing Research Collaborative at the University of Technology Sydney (UTS) using the StewartBrown data takes a deeper look at the sustainability of the aged care sector and finds an array of complex issues facing the sector.

The continuing poor financial performance of the sector has occurred despite the injection of funds through the $10 Basic Daily Fee supplement and reflects declining occupancy and the severe impact of two years of the COVID-19 pandemic.

It also finds the smaller residential providers and those in the regional and rural areas are facing the toughest challenge to keep their doors open. Staff shortages are felt even more acutely by those providers.

As reflected by the AACC election campaign, the key asks focus on wages and workforce:

- A Workforce Partnership Supplement to spend on boosting wages, training, minutes of care, 24-hour nursing, COVID-19 prevention and workforce retention costs.
- A minimum wage increase for aged care workers by funding the Fair Work Commission Work Value Case, and award wage increases from July 2022.
- A commitment to a multidisciplinary workforce by putting in place an allied health needs assessment and funding model by July 2024.

The aged care sector representative bodies have themselves responded to a Royal Commission recommendation which called for a unified voice and more collaboration among aged care peak bodies.

In a vote held in April 2022, members of LASA and ACSA voted 99% in favour to unite and create the Aged Care and Community Providers Association (ACCPA) which will come into being on 1 July.

It was a historic decision and one which will take over the responsibility of being the voice of aged care as it advocates on behalf of aged care workers and providers, and the people they care for and support.

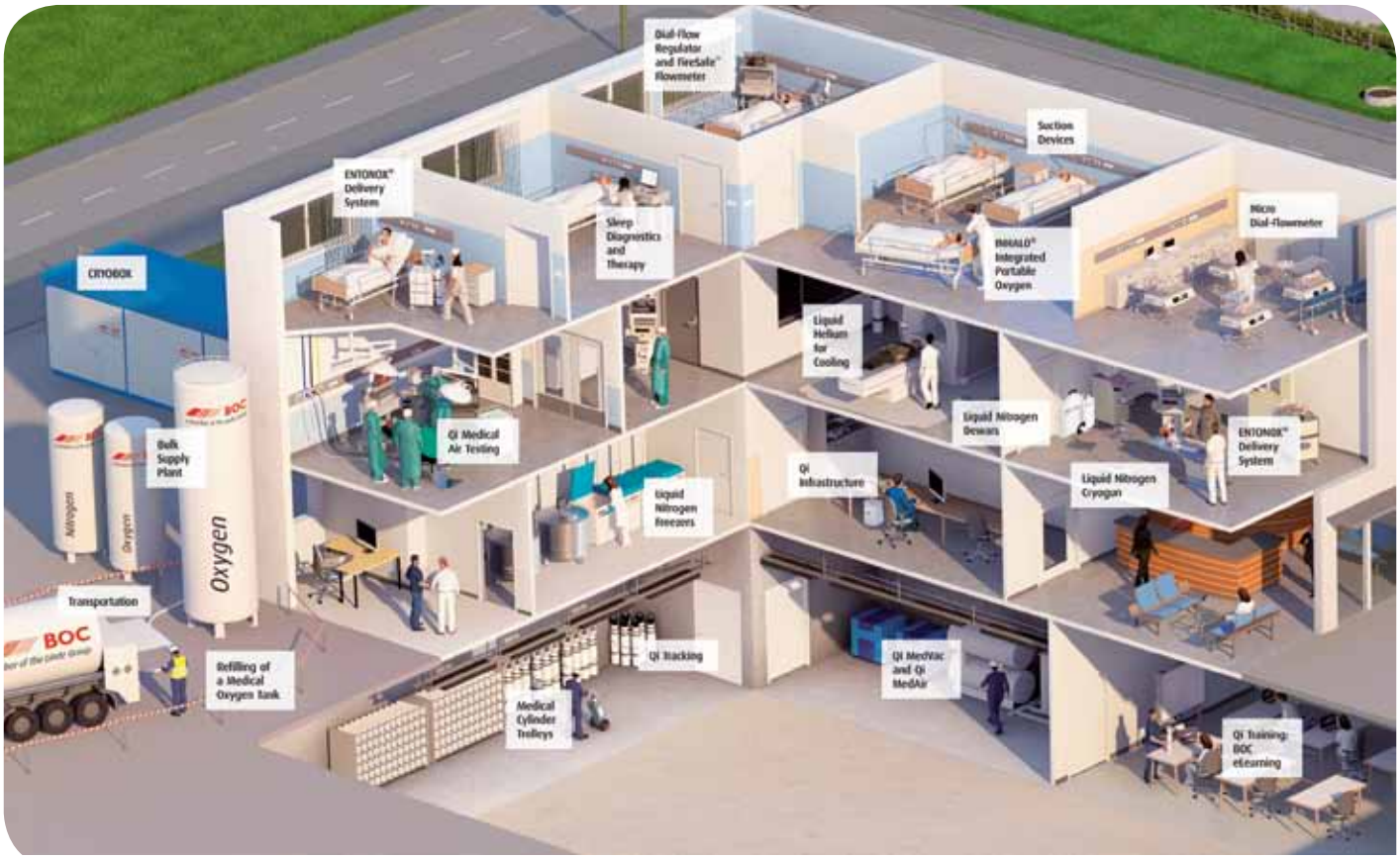
It is now up to the entire sector to get behind the new leadership at ACCPA to advocate for the sector to achieve the reform needed to create a sustainable aged care sector, resourced and enabled to deliver quality care and services with quality, safety and compassion — always.

We, as a sector, will be seeking from the new government an active role in realising a detailed and prioritised reform program and timetable, and reform process which involves greater collaboration in the design and delivery of the reforms.

The fact that Australians nominated aged care as among the top issues of concern for them in survey after survey during the election campaign reflects the public's desire for real reform, not to mention the pressing needs of older Australians that deserve good quality care.

As we look to the future we can reflect on the achievements of the AACC, LASA and ACSA as we pass the baton to ACCPA to take up the mantle of voice of aged care. The issues of ageing and aged care are issues of national importance. ACCPA is now an organisation of national importance. I encourage everyone involved in aged care in Australia to throw their full support into ACCPA.

As CEO of LASA for the past six years, I am proud that working with my team we have been able to turn LASA into a high-performing and respected aged care association and I'm also proud that we have been able to succeed in creating a stronger and unified voice for the aged care sector.



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When trauma patients arrive in the emergency department, there's no time to lose. Night or day, OR must be ready. With the flexible Maquet Yuno II Operating Table, it's easy to configure the table to meet the needs of the procedure and surgeon, even with limited staff on call.

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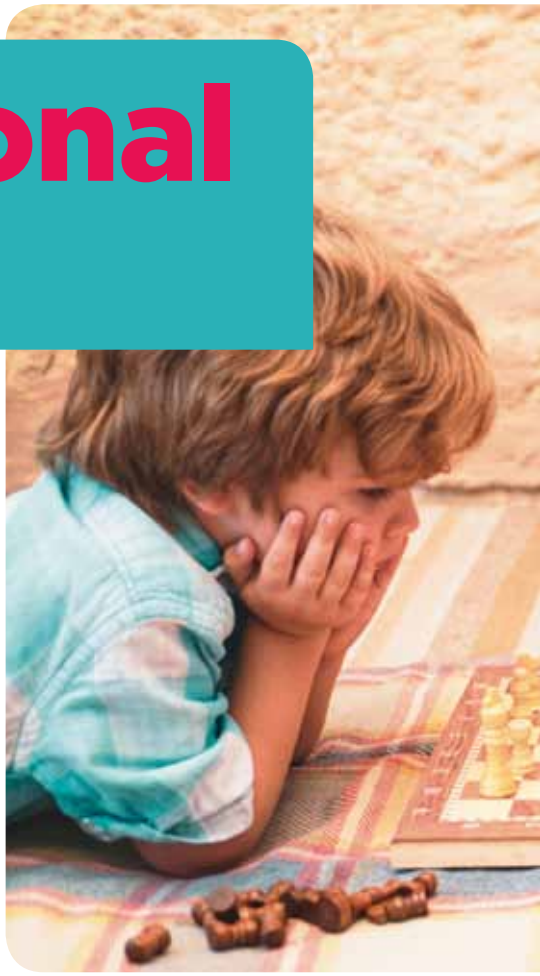
Vitamin D and dementia

Around 487,500 Australians live with dementia and it is the country's second leading cause of death. But what if you could stop this degenerative disease in its tracks?A new study from the University of South Australia could make this a reality as new genetic research shows a direct link between dementia and a lack of vitamin D.

Investigating the association between vitamin D, neuroimaging features and the risk of dementia and stroke, the study found: low levels of vitamin D were associated with lower brain volumes and an increased risk of dementia and stroke; genetic analyses supported a causal effect of vitamin D deficiency and dementia; and in some populations as much as 17% of dementia cases might be prevented by increasing everyone to normal levels of vitamin D (50 nmol/L).

The genetic study analysed data from 294,514 participants from the UK Biobank. Professor Elina Hyppönen, Senior investigator and Director of UniSA's Australian Centre for Precision Health, said the findings are important for the prevention of dementia and appreciating the need to abolish vitamin D deficiency. "Vitamin D is a hormone precursor that is increasingly recognised for widespread effects, including on brain health, but until now it has been very difficult to examine what would happen if we were able to prevent vitamin D deficiency," Hyppönen said. "Our study is the first to examine the effect of very low levels of vitamin D on the risks of dementia and stroke, using robust genetic analyses among a large population," Hyppönen claimed.

Intergenerational intervention



A four-year INTErGenerational Intervention to Reduce frailTY (INTEGRITY) trial is set to bring together older adults and preschool children in community settings for activities that target physical, cognitive and social engagement.

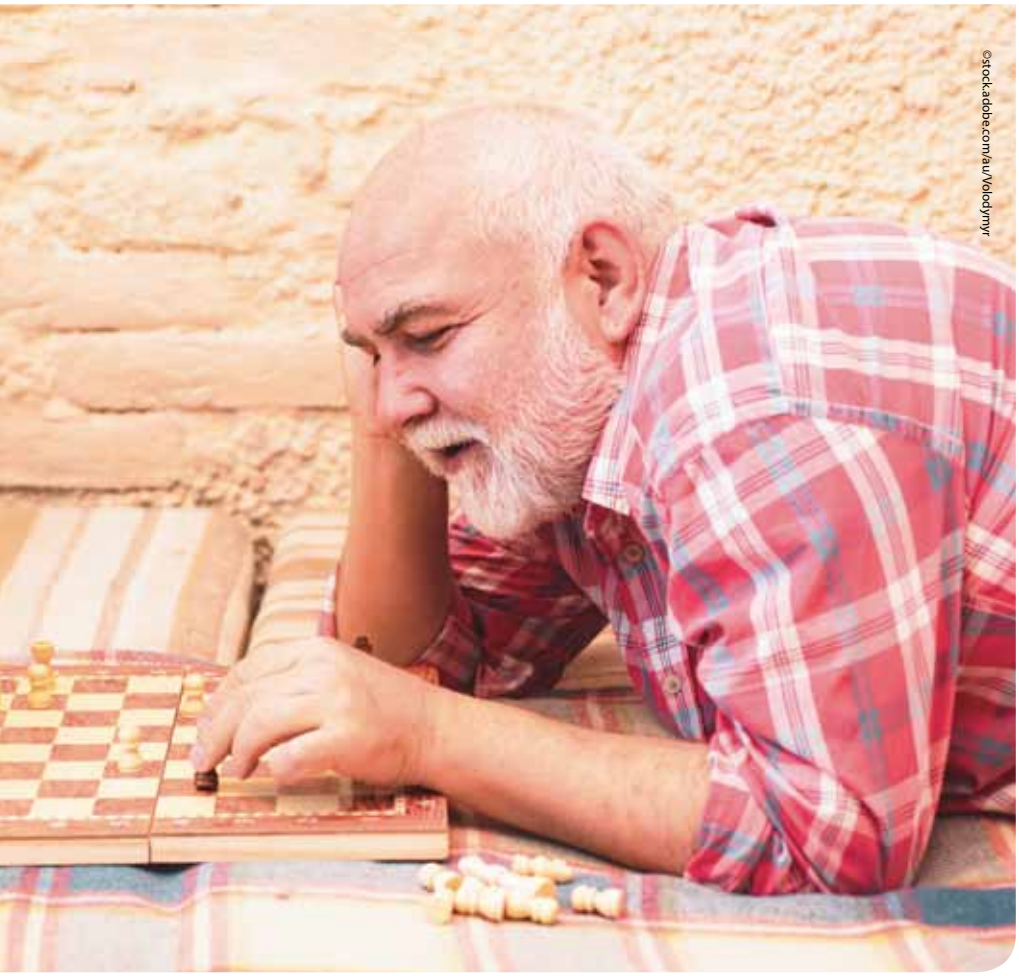
Associate Professor Ruth Peters, senior researcher at Neuroscience Research Australia (NeuRA) and UNSW Science, has received a $3.7 million National Health and Medical Research Council (NHMRC) Clinical Trials and Cohort Studies Grant for the project aimed at investigating and evaluating in community settings the potential for intergenerational practice to reduce frailty in older adults and improve school readiness in children.

Frailty has been described as a public health crisis for an aging society. It is defined as a multidimensional syndrome characterised by a loss of reserves (physical ability, cognition, health) that results in vulnerability and often leads to increased care needs, early transition to aged care, morbidity and mortality.

An estimated 12–24% of older adults are defined as frail, and a further 40% are considered 'pre-frail' or mildly frail. Peters said reducing frailty and helping older adults to remain independent are vital to the whole community.

The trial will see researchers establish up to 44 'clusters' of approximately 10 local adults 65 and over and 10 local children aged 3–5 to test a community-based and co-developed program that is designed to be generalisable, replicable and led by communities in preschools and within community spaces anywhere in Australia. The project involves researchers from eight Australian and international universities and research institutes.

"Being frail is associated with five times the risk of transition to residential care and double the risk of hospitalisation. If intergenerational



practice programs can stabilise, reverse or slow the progression of frailty, they have the potential to help maintain independent living, delay transition to aged care, reduce the requirement for healthcare resources and strengthen our societies," Peters said.

"TV shows like the ABC's award-winning *Old People's Home for 4 Year Olds* have shown the potential on-screen benefits of bringing together older adults and preschoolers. But a TV show is not the same as everyday life. This significant grant funding will now enable us to provide the first robust empirical evidence of the impact community-based intergenerational practice programs have for young and old across Australia."

The study will combine multidisciplinary expertise in frailty, aging, intergenerational practice, neurology, geriatric medicine, psychology and physiotherapy, and builds on pilot studies that illustrate the feasibility and potential for implementing intergenerational practice programs on a national scale at relatively low cost.

If the results of the trial show that intergenerational practice programs can reduce frailty, the next step will be to develop evidence-based materials that communities can download and use to build their own local programs.

VR tool to improve quality of life

A toolkit to help aged care providers integrate virtual reality into the lives of residents has been launched, following a QUT Design Lab-led trial conducted in facilities in Queensland and Victoria.

Chief Investigator Professor Evonne Miller said the Transforming Aged Care with Virtual Reality (VR) project was a collaboration between researchers from QUT, Griffith University, the University of Melbourne and La Trobe. It was funded by a philanthropic research grant from Facebook.

"COVID-19 has been especially hard on people in aged care. One way to improve their lives is to use technology like virtual and augmented reality, which allows them to leave the four walls of their home," Professor Miller said.

"We integrated VR technologies into three Australian aged care facilities to find ways of better socially connecting residents with each other, staff and their families during this pandemic; and to provide older aged care residents with creative, novel and intellectually stimulating leisure activities — ensuring daily life is exciting, rather than mundane and monotonous.

"VR can take them back to their honeymoon, let them reconnect to something important from their past or travel to a country they always wanted to visit. They can skydive, ride a gondola through Venice, sail a yacht and so much more. The possibilities are limitless and overcome mobility and health problems."

"The Transformational Toolkit is now freely available online and outlines how to implement VR into aged care."

Professor Miller said the project had produced a Transformational Toolkit launched on 25 May as part of The Big Reach, presented at QUT by The Big Anxiety Qld.

Leonie Sanderson, a visiting fellow with the QUT School of Design and director of Brisbane-based The Ageing Revolution, was VR Project Manager for Transforming Aged Care with Virtual Reality (VR).

She said the Transformational Toolkit was now freely available online and outlined how to implement VR into aged care. It includes advice on the cost of headsets, how to get started, where to find apps, safety assessments and physical space requirements.

"It can cost as little as $600 to get the right VR headsets with storage cases and adjustable head straps. We recommend aged care facilities set themselves up with at least two or more headsets so multiple residents can enjoy the experience at the same time," Sanderson said.

"To integrate VR into aged care needs support from senior management and a staff champion but it is very doable, and the effort is worth the investment of time and money. Our trials produced levels of happiness and resulted in stories being shared and people feeling more valued and engaged," she said.

One activities manager involved in the trial said: "I ran a session all by myself and it was a bit hard but still could manage to take Heather to Alaska, Keith on a helicopter and Rita to Africa. It was a short session, but I had five residents that attended. New people want to give it a go, so I think it's going well!"

Interoperability in Australian aged care: why it's essential for quality care

Chris Osborn, Australian Federal Director and WA & SA Regional Director, Dell Technologies ANZ

Australia's older generation, aged 65 and over, numbered 4.2 million people in 2020. By 2057, that number is projected to more than double. Our future belongs to our senior Australians, yet our aged care system is alarmingly inadequate.

The COVID-19 pandemic exposed systemic weaknesses, particularly in residential aged care homes. The Royal Commission Aged Care report in 2021 delved further into the issue. Citing limited access to support, lagging technology, poor governance, and ultimately substandard care, the report painted an accurate picture of the state of our aged care sector; it's a disheartening read.

Everyone deserves respect, care, and dignity. To ensure we provide this as our senior population grows, our aged care system must grow with it. Future-proofing the Australian aged care sector begins with putting people first. And the best way to do that is by leveraging aged care data to inform quality, personalised care.

The state of technology in aged care

Technology is a key enabler of better healthcare — it underpins the aged care sector's communication and business systems and the direct provision of care. Whether individuals receive support at home or in an aged care facility, evolutions in digital technology shape the care they receive.

In 2021, the Aged Care Royal Commission found that the Australian aged care system is well behind other sectors for research, innovation, and the use of new technologies. The report states that the Australian Government has often treated the sector as a lower order priority and has not received the investment necessary to ready it for the aging population.

While assistive technologies, linked IoT devices, improved telehealth services, and advancements in AI can improve the daily lives of our senior Australians, the effective management of data is the foundation for better care. Currently, aged care data is not being given the consideration it deserves.

The Royal Commission report supports this. It identified that the aged care system lacks a clear information and communications technology (ICT) strategy. Aged care providers and other healthcare organisations have not been able to access relevant data when they need it to support quality care. The report recommended government investment in ICT to enable better services through interoperability, standardisation, improvements in data quality, and the development of real-time and automated systems.

In response to the Royal Commission report, the Australian Government committed to investing $154 million over two years towards a major upgrade of aged care ICT to improve the reporting and sharing of information as part of a generational plan for aged care in Australia. Though this investment is promising, and the COVID-19 pandemic accelerated the sector's digitalisation, there's still a long way to go.

Interoperability of systems

As of 2020, only 59 per cent of aged care operators were using electronic health records, with the remainder still relying on paper-based systems. On top of that, senior Australians are likely to use multiple services to meet their complex care needs — including private general practitioners, allied health professionals, and aged care support providers.

These different services may maintain their own clinical records, meaning the individual's information is not shared completely and freely between services. If the person lives in an aged care facility, their data may be integrated with the facility's records using outdated and inefficient means like fax machines, photocopying, or copying and pasting from an email. Though initiatives like My Health Record have attempted to standardise health-related data sharing to improve clinical workflows, aged care provider uptake of My Health Record remained low in 2021.

Regardless of where or how the information is recorded, the sector does not suffer from a lack of data. Medication prescriptions, clinical history, care plans, handover notes, and other essential information are stringently collected and stored. But due to the siloed nature of digital systems and the lack of agreed data exchange standards and protocols, the sector can't use the data effectively. Though this data paradox affects businesses across all industries, the issue is far more pressing for aged care, where the use of data directly affects the lives of our seniors.

Different digital record storing systems need to be interoperable to facilitate the seamless and efficient sharing of information. Tools like secure cloud storage solutions and as-a-service offerings are invaluable for the aged care sector, giving providers the data they need when and where they need it — without time-poor staff having to spend time managing complex systems. Improved data sharing is vital to inform the sector's research, resource management, and regulation; however, it best serves our seniors when leveraged for their immediate care. If record-keeping systems were connected and all data was accessible in real-time — aged care providers could meet the needs of each unique individual and offer the highest quality of care possible.

Interoperable systems can improve care in numerous ways: they reduce the risk of communication errors, save time, and maintain patient privacy by cutting the need for clinical staff to update records. Crucially, they give care nurses, support workers, and health providers the up-to-date data they need to quickly assess an individual's needs and deliver person-centred care. Ultimately, better data sharing means improved quality of life for our seniors and optimal outcomes.

Respect, care, dignity

Prioritising the respect, care, and dignity of our older Australians means valuing the information we collect from them and using it to their best advantage. Improving the availability and reliability of clinical data through the interoperability of digital systems will deliver better outcomes for older Australians. By leveraging the power of aged care data, we can improve the current level of service while ensuring our aged care sector can weather the challenges of our aging population.

In a heartbeat

Mansi Gandhi

Jessica Maris was feeding her baby when her husband Bryan, 31 and a keen cyclist, suffered a sudden cardiac arrest (SCA) in bed. In a bid to expose the immense grief many thousands of Australian families are subjected to each year while the causes of SCA remain a mystery, Jessica shared her story at the inaugural National Summit for Cardiac Arrest held in Canberra in June. She hopes more can be done to understand and prevent cardiac arrests in the future.

As a cardiologist practising at St Vincent's Hospital Melbourne and PhD Fellow, Baker Heart & Diabetes Institute, Dr Elizabeth Paratz shares the pain and understands the importance of solving this mystery and improving survival. It is with this intention in mind that Australia's first sudden cardiac death (SCD) registry and genetic database project — led by Head of Sports Cardiology at the Baker Institute Associate Professor Andre La Gerche and Professor Christopher Semsarian — kicked off in April 2019.

A registry to better understand the condition

Funded by the EndUCD.org Foundation — in memory of Ross Dennerstein, a pilot and father of three who suddenly died in his late forties due to cardiac arrest — the project aims to serve as an important resource to researchers investigating the causes and potential treatments for SCA.

Paratz's PhD will draw on research from the registry — optimising the genetic and forensic analysis of sudden cardiac death. The End Unexplained Cardiac Death Registry records all episodes of SCA occurring in Victorians aged 1–50 years old.

"We combine ambulance, hospital and forensic data to evaluate rates of SCA, causes, circumstances, potential preventability and variations in care. We also offer state-of-the-art screening to affected families who wish to have their heart health checked, access psychological support or participate in our genetic biobank.

"We currently have over 2000 patients included in the registry and 16 papers written to date. We hope to increase the number of families we are seeing in the post-COVID era and expand the number of insights we have made," she said.

United action to improve outcomes

Approximately 20,000 Australians are affected by SCA each year and unfortunately 90% of people who suffer an SCA will die, with 2000 of them being under the age of 50[1].

Now, a new alliance of the country's leading heart experts, paramedics, CPR and victim family groups have now united to take action against the issue. The alliance includes: The Australian Cardiovascular Alliance; Baker Heart and Diabetes Institute; Centenary Institute; End UCD; National Heart Foundation of Australia; Heart of the Nation; and Victor Chang Cardiac Research Institute.

Sudden cardiac deaths come with two large costs: in the form of untold grief to the thousands of families left behind each year and nearly $2 billion annually to the economy[2].

At the inaugural National Summit for Cardiac Arrest in Canberra in June, the alliance members — under the tagline "a race to save lives" — called for the development of an urgent strategy to encourage governments to prioritise funding in key areas. These include: education and awareness for bystanders — increasing the survival rate by helping more people understand how they can try to restart a person's heart should they be a bystander to a cardiac arrest; understanding who is at risk and how it can be prevented — a greater commitment by governments to fund research that will unlock the mystery behind the cause of sudden cardiac arrest, leading to better prevention.

Addressing risk factors

There are a range of red flags that suggest elevated SCA risk, Paratz said. For those

who have a diagnosed heart condition, have symptoms of chest pain, unexplained shortness of breath or blackouts, it would be an excellent idea to see a cardiologist, she said, noting that for those who have had a first degree family member (that's a parent, sibling or child) die aged under 50 from a heart problem, it would be worth discussing this with the GP or a cardiologist to ensure they are not at higher risk.

In older people the cause is most likely to be a heart attack where a coronary artery suddenly becomes blocked, according to the alliance. These generally occur on a background of known risk factors. In middle-aged and younger people there are several causes of SCA that are not reliably identified by risk factors. Genetics is a factor but sometimes the cause remains unknown.

It is, however, important to note that the majority of SCA cases occur in young people who did not have cardiac risk factors or symptoms, and this is what makes prevention particularly challenging, reminded Paratz.

"Our survival rates are amongst the best in the world, but that still means thousands of young people are dying each year. Everything we can do to chip away at number is of the utmost importance."

Clearing the confusion

Also, people often get confused between a cardiac arrest and a heart attack. That is probably the biggest misconception, she said. "A cardiac arrest is when the heart stops suddenly, and it can be due to a variety of causes. A heart attack is when there is a blockage in the coronary arteries, and this is reducing blood flow to the heart muscle. Only about 10% of people who are having a heart attack have a cardiac arrest, so the terms are very much not interchangeable."

Although many questions about SCA remain unanswered there are a range of preventative therapies. "Some people who are recognised to be at higher risk might be on medications that reduce their risk of an SCA," Paratz said.

"Other people might undergo interventional procedures (for example, ablation of an abnormal rhythm or removal of excess heart muscle blocking the exit of blood from the heart). Finally, some people who are recognised to be at very high risk of an SCA might have a defibrillator implanted, which is a small device that will shock the heart if the person goes into cardiac arrest."

Personalised medicine and cardiogenetic investigations

Reflecting on where Australia stands compared to other countries in terms of SCA programs, practices and funding, Paratz said, "In Australia, we have some world-leading resources. Firstly, our ambulance services are not only providing frontline care to people experiencing cardiac arrest, they are also leading the world in developing comprehensive and innovative research programs. Our forensic documentation and resources are also excellent. Our registry puts this all together along with hospital resources to examine the full spectrum of clinical care."

Unfortunately, however, nine out of 10 people who suffer cardiac arrest still end up dying, so how can we improve survival rates? "Our survival rates are amongst the best in the world, but that still means thousands of young people are dying each year. Everything we can do to chip away at number is of the utmost importance," she said.

Hopefully, with a focus on personalised medicine and cardiogenetic investigations, we can continue to identify the causes underlying cardiac arrest in more cases, opening up the possibility of proactive prevention of young deaths, Paratz concluded.

1. Help End Unexplained Cardiac Death https://www.enducd.org/
2. Sudden cardiac arrest costs Australia nearly $2 billion annually https://baker.edu.au/news/media-releases/ucd-cost

A step ahead with OneConnect

OneConnect by LINAK is a new, powerful, state-of-the-art app subscription developed by LINAK for our OEMs to better communicate with their end-users and distributors, as well as provide quick, simple troubleshooting and diagnostics tools to improve the lives of both nurses and doctors and the tech support teams that support them. It's so much more than just an app, though, and in this article, we'll take a quick deep dive into the technology behind this app that makes OneConnect one of the most effective tools for troubleshooting LINAK systems and communicating with end-users.

Improving troubleshooting

When troubleshooting any electromechanical system, the wide range of controls, actuators, control boxes, and auxiliary accessories can make it incredibly difficult to diagnose a problem in a system. Sometimes error codes can be used, but on more complex systems, these can be unintuitive and difficult to understand. This only becomes more difficult when a product issue must be diagnosed over the phone from a great distance away.

With OneConnect, we've made a point to target these issues and develop the best solution possible. Via the app, service technicians can log in with an authorized account and Bluetooth connect to the control box to access system status, actuator status, and troubleshooting data locally — in person with the product — and remotely from thousands of miles away. The latter is called "remote access", and it allows a nurse or doctor to download the app and, in seconds, allow an authorized technician to "remote in" and view pertinent troubleshooting information for the system that can help diagnose the location of the issue in seconds — a massive improvement on the traditional and more confusing calls that can only be supported via discussing system behaviour.

A great example is a scenario where support is called regarding a four-actuator bed system that is not functioning and is only generating a system error beep. A technician can ask the end-user to download the OneConnect app from the iOS or Android store, and by simply typing in a code and giving access, the end-user can allow the technician from another device with the app to view the system data. From there, a technician might notice the system error on the "control box status" screen, then flip over to "actuator channels" to see that there is a "position lost" error on channel 2, flip to channel two statistics to see that there have been a few overloads on that channel, and if the actuator can't be homed again by the end-user and cables are all tightly affixed, the technician now knows that:

- The issue is being caused by the actuator on Channel 2.
- The issue may have been created by multiple overloads on Channel 2, likely due to an obstruction.
- Instead of sending the entire system back for analysis, the technician can have a replacement channel two actuator sent to the end-user, saving both time and money for both parties.

Improving Communication with End Users

In addition to troubleshooting tools, the OneConnect app allows OEMs to create custom "Help Content" for nurses, doctors, and other end users that aren't logged into the app.

This can include open text fields, web links to videos (such as "how to adjust the head cushion"), user manuals, phone numbers, and email addresses for customer service lines — all unique to that particular application.

This is all done through the OneConnect web portal — a beautiful web tool accessible from any device with a browser that allows OEMs to assign roles for the OneConnect environment (such as the technician role, "advanced app user") as well as update the help content for each of their products live and 24/7. This means an OEM can communicate with doctors, nurses, and other end users faster than ever before with a simple interface that immediately pushes the content to the app for their customers to view.

OneConnect™ by LINAK® is available today from the Apple and Google Play app stores and is compatible with all Bluetooth LINAK control boxes.

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For more information visit
LINAK Australia Pty Ltd
www.linak.com.au/oneconnect

Celebrating two decades of healthcare design and construction leadership

2022 marks 20 years in business for Medifit Design & Construct. Established in 2002, the company has grown to become a nationally recognised leader in healthcare practice design and construction.

For many healthcare practitioners, setting up a practice is a defining moment in their career. Being able to help healthcare professionals realise their dream practices is a privilege.

In 2002, establishing a healthcare practice in Australia typically meant that a busy doctor or dentist would contact an architect or interior designer to provide a design solution for their practice before a host of suppliers and generalist construction subcontractors would be engaged to construct the building and execute the interior fitout.

Unaware of the many specialist requirements of healthcare disciplines, mistakes and stories of costly remediations were common. Unlucky healthcare practitioners often found themselves caught up in a "blame game" with third party contractors refusing to take responsibility for errors and omissions.

Medifit was established to change this paradigm.

By offering a holistic design, construction and interior fitout solution tailored specifically to the needs of doctors, dentists and healthcare specialists, Medifit was able to reduce the mental load for practitioners taking the leap into setting up their own practices. The benefits were immediate. One company, operating exclusively in healthcare, taking responsibility for the entire project lifecycle and delivering superior results.

Founding Director Sam Koranis remembers the early years.

"When I started looking into healthcare practice design, I could barely believe what I found. Healthcare practitioners in Australia were being completely underserviced and the process was unnecessarily complicated and difficult. We saw an opportunity to do things better."

Founding Director John Gullotto had a long and established history of award winning cabinetry and interior fitout services based primarily in the retail sector. A certified fabricator for all major solid surface materials, John was a natural fit as Construction Director.

"Over the years, we had fielded enquiries from the healthcare sector and had seen first hand the gaps in the services provided. Successful healthcare fitout requires a combination of specialist design and construction working in tandem, and this is where the idea for Medifit was formed."

The third Founding Director, Geoff Raphael brought acclaimed interior design skills to Medifit and completed the service offer. With a family history in Dentistry, Geoff had valuable insights into how dental surgeries operated and the design intelligence to create solutions that delivered functionally and aesthetically.

"Good design is far more than making things look aesthetically pleasing. From day one, we aimed to deliver solutions that not only looked great but also improved the day to day productivity of every practice we design."

Over the past twenty years, Medifit has been recognised with several national industry awards from organisations including the Interior Fitout Association and Master Builders. These awards are testament to a company-wide commitment to deliver quality healthcare practices.

From day one, Medifit has been committed to operate with honesty and integrity and never compromise on quality. This simple mantra has been the foundation of their success.

There is an ancient Chinese proverb which states, "the journey is the reward".

As Medifit's journey heads into its third decade, the team of dedicated staff, industry connections, suppliers, trades and the growing list of beautiful practices and happy customers has been a reward greater than they could have imagined.

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An infrastructure prescription for an accelerated transformation

Sanjiv Verma, Vice President, Asia Pacific, Ruckus Networks, CommScope

Healthcare digital transformation and innovation have become essential in providing patients with convenient access to timely medical care.

More than ever, hospitals and other organisations in the healthcare ecosystem depend on network infrastructure to ensure that information flows freely, accurately and reliably. While the bulk of healthcare data traffic generated by IT devices flows through the cloud, confidential patient data must be properly handled and secured in compliance with regulatory requirements. Data security and privacy is a critical challenge.

Few commercial spaces can even approach the type of data processing needs of a modern healthcare institution or hospital. The fast and dependable movement of information is mission critical, physical and data security must both meet strict regulatory standards, widely distributed staff and patients require far-reaching connectivity, and both inventory and equipment must be closely managed.

Additionally, the value of the Internet of Medical Things market globally is set to hit US$158 billion this year. The growth of health-focused Internet of Things (IoT) devices and wearables, the increasing healthcare data breaches, and the adoption of telemedicine, clinical informatics and mobile initiatives have led healthcare institutions to invest in modernising infrastructure.

The healthcare industry is changing fast, driven by new technology and patient expectations. Here are three key areas public and private healthcare organisations need to consider when accelerating their own transformation and innovation.

Patient safety, data security in digitalised health care

Modern healthcare networks are under growing pressure to meet increasing demand for telemedicine. Accelerating healthcare digitalisation has placed the spotlight on patient safety and staff security as well as data security and privacy.

Leveraging healthcare data and ensuring data privacy and regulatory compliance are imperative factors in reliable healthcare delivery. Actionable insights are derived from data gathered through mobile health applications and wearables to improve patient care. They help care teams promote clinical best practices.

Apart from data centres hosting confidential patient and medical data, patient care is governed by regulations, and lives rely on the network. This makes standards-compliant connectivity — from the server room to emergency room, from nursery to the nurse's station — critical.

Infrastructure security must prevent unauthorised access by an unauthorised person. It should also detect and repel unauthorised access by an authorised person by tracking all changes to the physical layer in real time.

IT–operations technology synergies for smart, efficient health care

Modern healthcare organisations rely on free and timely information flows for efficient operations. Faced with mounting pressure to do more with less resources, healthcare operations require solutions that help optimise operational expenditure (OpEx) as key systems become more connected and more capable.

With this aim in mind, IT and operations technology teams can develop shared avenues of efficiency to attain the industry's ultimate metric of success — improved patient outcomes and patient experience. The healthcare industry has a continuing commitment to provide affordable, high-quality care to a growing number of patients while lowering operational costs in the process.

IT infrastructure plays a big role in streamlining operations. Sharing a common physical network unlocks the potential for more efficient network administration and facilities operations.

Working together on a converged network, IT and operations technology teams are leveraging IoT capabilities that have led to exponential growth in the number of wired and wireless network devices as well as requirements for PoE.

For example, Wi-Fi 6/6E is connecting smart beds, oxygen monitoring devices and real-time access to X-rays, among other staff alert and patient monitoring applications. IoT adoption has also gained traction in lighting, HVAC, physical security, asset tracking, smart parking, smart locks and security cameras. These real-world IoT deployments operate on a complex and costly array of network protocols, equipment and disparate management tools.

Patient experience at the heart of healthcare future

Health care is transforming, with patient experience at the heart of everything from patient care delivery to personalised health care. Adoption of digital technologies helps to improve remote patient monitoring and care delivery to achieve the best possible outcomes. Meanwhile, monitoring and control of patient experience, staff productivity, recruitment and inventory can be vastly enhanced with simpler and automated processes.

The bottom line is that healthcare organisations need to strike a smart balance between operational efficiency and patient experiences while supporting next-generation services like telemedicine and virtual ICU centres. The use of artificial intelligence (AI) and big data analytics provides insights that improve patient care while reducing healthcare costs.

"Leveraging healthcare data and ensuring data privacy and regulatory compliance are imperative factors in reliable healthcare delivery."

According to an Accenture report, 84% of healthcare executives believe that AI will fundamentally alter how healthcare providers gain information from patients and interact with consumers. For example, AI tools analysing data from personal health devices, IoT solutions, DNA testing, genome sequencing, electronic medical records and more help clinicians to personalise treatments and experiences for the individual patient.

Health Sector Chooses Darwin

The multi award-winning Darwin Convention Centre has long identified the health sector as one of its strongest source markets for business events.

The Centre recently hosted a group of association conference planners, many of whom represented health organisations such as the Australian Society of Medical Imaging and Radiation Therapy, the Australian Psychological Society and the Australasian College of Sports and Exercise Physicians.

'Meet Darwin 2022' was jointly hosted by the Darwin Convention Centre in partnership with NT Business Events. The event coincided with the staging of the Spine Society of Australia (SSA) 33rd Annual Scientific Meeting which provided an excellent showcase of the Convention Centre's capacity and capability as a venue for national medical conferences.

More than 320 delegates, sponsors and exhibitors participated, with the trade show component comprising the equivalent of 68 standard display booths.

The SSA Executive Committee experienced the Darwin Convention Centre's stunning Larrakia 'Seven Seasons Dinner', with a menu inspired by the Gulumoerrgin (Larrakia) seasonal calendar. Dishes included mud crab tian, crocodile terrine, kangaroo dumplings and NT barramundi complemented by river mint, wattle seed, Kakadu plums and quandong gel. Each course was introduced by sound and vision explaining the different seasons and the cultural tone enhanced by live music and performances delivered by local organisations, The Youth Mill and the NT Dance Company.

One of the Spine Society conference organisers from DC Conference and Association Management (DCC&A) had joined the 'Meet Darwin' familiarisation when it was staged in 2021.

Jo Robinson, Business Development & Sponsorship Manager with DCC&A, talked about how her participation had assisted with the SSA Conference in 2022.

"It was invaluable in helping us fine-tune so many aspects of the conference and exhibition organisation and logistics, as well as planning the social program," she said.

"I extended my stay in Darwin last year so I could meet with additional suppliers and seek out special elements to enhance the conference. I was delighted to find how well situated the Darwin Convention Centre was in the Darwin Waterfront Precinct — accommodation, dining and entertainment all in such close proximity."

For over 30 years, DCC&A has successfully managed hundreds of national and international conferences and specialises in the not-for-profit, medical and healthcare sectors.

Darwin is a popular choice for health industry conferences, with NT offering specialisations in remote and rural health, trauma and emergency response, tropical and Aboriginal health. Darwin's capacity for interesting offsite technical tours, locally-based speakers and specific expertise enhances that appeal.

One of the 'Meet Darwin' participants, Anne Romanjuk from the Australian Society of Medical Imaging and Radiation Therapy, met with local contacts while in Darwin.

"'Meet Darwin' was an awesome experience!" she said. "For me, there was the added bonus of meeting with industry contacts at the Alan Walker Cancer Care Centre at Royal Darwin Hospital, to gain their insights and perspective and get them on board for technical tours and site visits, with the prospect of our conference coming to Darwin."

The Darwin Convention Centre is set to host more health sector conferences this year including the Australian College of Nursing National Forum and the Australasian College of Dermatologists Meeting, both scheduled for August. In September, DevelopingEM and the International Foster Care Organisation Conference will be held and October sees the Australasian Professional Society on Alcohol and Drugs Scientific Conference come to town.

"Darwin and our award-winning, world-class convention centre have established an impressive track record for hosting highly successful national and international conferences," said Peter Savoff, General Manager of the Darwin Convention Centre.

"Based on the glowing feed-back received from this year's event planner participants, 'Meet Darwin' has served to well and truly enhance that reputation."

DARWIN CONVENTION CENTRE

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For more information, visit
www.darwinconvention.com.au

Expo puts health and hygiene on the radar

The plaudits have come thick and fast for the cleaning sector during COVID-19 — and justifiably so.

Cleaners, chemical suppliers and hygiene-products distributors have been at the forefront of saving lives and safeguarding hospitals, aged-care centres and healthcare facilities during the pandemic. In many cases, they have put their own health at risk.

This hard-won respect and reflections on high-touchpoint cleaning and the use of chemicals will be among the big discussion points as the cleaning world reconnects at the 2022 ISSA Cleaning & Hygiene Expo in Sydney on September 14–15.

ISSA, the worldwide cleaning industry association, is hosting the event at the Sydney International Convention Centre, where cleaning contractors, product distributors and healthcare representatives will be among the crowd.

Lauren Micallef, Oceania Manager ISSA, says the Expo is the first chance since the outbreak of COVID-19 for the wider cleaning industry to come together to acknowledge its impact on health and hygiene during COVID-19. "This is a real opportunity for the industry to celebrate its efforts over the past two years and to discuss strategies to excel in the years to come," Micallef says.

This year's event will feature more than 3000 attendees, 70 exhibitors, more than 40 speakers, 16 free-to-attend speaker sessions, plus four other workshops.

Product showcase

Mark Phelan, Commercial Director – Professional at Freudenberg Home and Cleaning Solutions, is one of those who will be attending. He says the Expo is the "perfect stage" to introduce new products and solutions to the market. "We're looking to this event to show our cleaning solutions and see what the other exhibitors are proposing," he says.

One of Freudenberg's brands, Vileda Professional, has been developing and manufacturing cleaning systems for the healthcare market across Europe for more than 25 years and is known for its microfibre mops, among other products. While showcasing products will be important, Phelan believes that making connections and understanding the latest trends in healthcare and other sectors is the key. "It's the possibility to talk to people, understand what the new directions and challenges are and be inspired to improve and be better in what we do."

The two-day, free-to-attend event in Darling Harbour is the only show in the southern hemisphere that is dedicated to the cleaning and hygiene industry. Exhibitors will unveil their latest products, services and innovations.

Dr Greg Whiteley, Executive Chairman of Whiteley, says the Expo is a vital part of the cleaning industry, "especially this year as it gives all attendees the ability to tap into the latest industry trends as businesses emerge from COVID-19 lockdowns and restrictions".

"Our industry is dynamic and everything is subject to constant change and evolution," he says. "If you do not keep up with changes, new products and technologies, as well as changes in processes, then you and your business will be left behind the competition. You will ultimately run the risk of losing business to your competitors. Sometimes the changes only benefit your customers, but there are often other innovations that will improve profitability for those that adopt the changes effectively and in a timely manner."

Educational focus

The education program at the Expo promises to be a highlight and will include presentations from Dr Gavin Macgregor-Skinner, Senior Director at the Global Biorisk Advisory Council, and Dr Whiteley, whose ongoing research interests focus on biofilms found within healthcare settings, healthcare hygiene, and the cleanliness of medical devices.

Education sessions will cover a wide range of important topics, including corporate social responsibility; technology and innovation; aged-care cleaning and hygiene; the risk of working with chemicals; the importance of collaboration; coping with change; and delivering successful tenders and quotes.

"One of the things that the pandemic has brought to the table is the lack of education in some parts of the industry about disinfecting and how to maintain effective cleaning regimes," says Stuart Nicol, ISSA Advisory Council chair and a director of Quipment. "The Expo's education sessions will help address that."

To register for free for the 2022 ISSA Cleaning & Hygiene Expo, visit www.issacleaninghygieneexpo.com.

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Four tips for optimising the modern workforce

Darren Kilmartin, head of healthcare, UKG

The health sector, like many others, has experienced significant disruption due to the pandemic and the so-called 'Great Resignation'.

As the frontline are fighting the impact of the coronavirus, healthcare workers have experienced stress and burnout like never before. Research from Edith Cowan University (ECU) conducted during Australia's first COVID-19 wave showed that three-quarters of respondents had wrestled with their obligation to work and the risk of infecting themselves and their families, and 42% were less willing to work than they had been prior to the outbreak.[1]

With the pandemic now in its third year, the healthcare sector and its labour force have been under continued stress and pressure, with many staff reconsidering their future in the industry. However, despite the challenges, the sector is also in a position to identify and harness new opportunities.

For example, government research shows employment in the industry has increased by 22% over the past five years, with a further projected growth of 14% by 2025.[2] This is due to new employees entering the workforce as well as past staff returning to previous roles. However, fluctuations in the labour force make health care increasingly competitive. As such, delivering a great employee experience is essential for healthcare organisations looking to attract and retain good talent.

Technology can help to provide a better experience for healthcare workers, particularly when it comes to optimising staffing. Many healthcare organisations are turning towards smart scheduling solutions to help mitigate the risks of excessive overtime and burnout.

There are four ways smart scheduling solutions can help healthcare organisations optimise their operations, helping to recruit and retain valuable talent:

"Improving the management of shifts, scheduling and overtime can help to keep healthcare workforces engaged, combating dissatisfaction that causes workers to seek opportunities elsewhere."

1. Optimised scheduling

Different areas within the healthcare sector have unique requirements when it comes to scheduling. For example, complex and dynamic environments like emergency rooms or surgical units may require a constant realignment of resources based on demand, whereas a general practitioner clinic might be more static. By deploying an automated scheduling solution, healthcare organisations can ensure they're placing the right people, with the right skills, into the right shift, at the right time.

Having real-time visibility into attendance and productivity data means leaders can pivot quickly to ensure staffing levels meet the needs of patients in a cost-effective way, while eliminating time-consuming manual rostering. Leveraging an automated scheduling solution lets managers more efficiently manage staff changes in real time and quickly rebalance staff levels based on coverage and workloads.

2. Overtime control

It should go without saying that excessive overtime can be damaging to the health and wellbeing of any worker, and especially those in health care, as fatigue and burnout can filter down and ultimately lead to reductions in the quality of care delivered to patients. It's critical that healthcare organisations put solutions in place that help them better manage overtime across their workforce.

By leveraging automated scheduling solutions, healthcare organisations can create rosters that reduce over- and understaffing, as well as occurrences of unplanned overtime. Smart scheduling solutions can take anticipated patient demand into account in conjunction with company and regulatory policies, helping to anticipate each shift's needs more accurately and decrease fatiguing, excessive overtime.

3. Efficient shift management

Shift changes can be a cumbersome process, especially for industries like health care that require around-the-clock support. However, savvy healthcare organisations are increasingly investing in technology solutions that leverage artificial intelligence (AI) and employee self-service options to automate routine, time-consuming processes such as time off or shift swap requests.

Using digital solutions to automate this process can eliminate the need for healthcare staff and managers to call around for other potential workers to cover shifts when an employee is unavailable, especially when changes are required last-minute. Solutions that open up shift availability to the wider workforce also ensure that shifts can immediately be filled by those who want them, without causing any compliance violations.

4. Automate and access more benefits

Improving the management of shifts, scheduling and overtime can help to keep healthcare workforces engaged, combating dissatisfaction that causes workers to seek opportunities elsewhere. Healthcare professionals can also deliver an improved quality of care to patients when controls are in place to reduce fatigue or burnout. When healthcare organisations fail to do this, they risk losing talented, engaged employees, impacting both their care effectiveness and the bottom line.

To mitigate these risks, healthcare organisations should consider investing in digital solutions that streamline and automate workforce management. This includes solutions that: empower and engage the healthcare workforce with self-service functionality available from anywhere, on any device; leverage mobile tools and self-service to streamline time off and shift swap requests; and automate policies and processes to ensure consistency across the organisation.

1. https://www.ecu.edu.au/newsroom/articles/research/australian-healthcare-workers-facing-burnout-less-willing-to-work-since-covid-outbreak
2. https://lmip.gov.au/default.aspx?LMIP/GainInsights/IndustryInformation/HealthCareandSocialAssistance#:~:text=Health%20Care%20and%20Social%20Assistance%20employs%20approximately%201%2C875%2C300%20persons%20(ABS,increased%20by%2022.8%20per%20cent

Improve Outcomes with the HIMSS EMR Adoption Model and the Right Solutions

Becoming a digital healthcare organization by increasing access to digital information can help improve patient safety, increase caregiver satisfaction, reduce errors and more.

The HIMSS Electronic Medical Record Adoption Model (EMRAM) is a trusted resource for understanding the EMR journey. The summary of the key stages and our recommendations for relevant technology solutions below will help support digital growth in your organization.

Stage 0

Your organization has not yet installed all the key department systems.

Recommended equipment: Start with a non-powered mobile medical cart like the StyleView® Laptop Cart or CareFit™ Slim Laptop Cart. This allows the care team to experience the benefits of a flexible solution for transporting devices and supplies without an overwhelming feature set.

Stage 1

All major clinical systems are installed with more than 90% of lab data 90% of images available in the Clinical Data Repository (CDR).

Recommended equipment: Implement space-saving wall workstations that are often more budget-friendly but still provide convenient in-room access to digital information.

Stage 2

Caregivers can access the CDR to review results. Policies and procedures for workflows and security training are in place.

Recommended equipment: Choose a mobile laptop cart like the StyleView Laptop Cart. Purchasing a platform for existing technology will help users focus on adapting workflows without learning a new device.

Stage 3

More than 25% of documentation is created using online tools and in the CDR. An electronic medication administration record application (eMAR) is implemented for all medications.

Recommended equipment: Consider the CareFit Slim 2.0 LCD Cart and LiFeKinnex™ Power System. You can easily alternate batteries without having to rely on an outlet. Look for battery technology that's long-lasting and reliable.

Stage 4

More than 50% of orders are placed using computerized practitioner order entry (CPOE). More than 50% of clinical documentation is created online and in the CDR. Caregivers have access to patient databases for decision making.

Recommended equipment: Look for technology that can accommodate multiple configurations and upgrades. The StyleView Cart with LCD Pivot is a versatile cart that supports several set-ups.

Stage 5

More than 75% of clinical documentation is created using online tools and available in the CDR. More than 25% of medications are electronically identified at the bedside. The organization is tracking timeliness of care to improve efficiency.

Recommended equipment: With the LiFe-powered StyleView Cart with LCD Pivot, you can rely on a long battery life and fast recharge to help ensure uptime.

Stage 6

Medical devices are integrated into the EMR in ICUs. Patient satisfaction is measured using automated digital tools, and patients can access and update some of their personal data. A clinical governance committee helps oversee clinical care outcomes.

Recommended equipment: In addition to non-powered and powered carts, incorporate a variety of wall workstations. This hybrid approach will help meet the needs of a diverse set of users and workflows to encourage adoption.

Stage 7

Your organization works to evaluate and improve patient safety and satisfaction by providing EMR information when and where clinicians need it. The EMR ensures the workflow and content meets the needs of the clinical teams while monitoring compliance.

Recommended equipment: Invest in a fleet of powered, full-featured medical carts like CareFit Pro. It will adapt to your needs and let you view critical information on a large screen to drive care decisions.

Solutions for Each Phase of Your Digital Journey

It's important to work with a trusted partner like Ergotron who understands the unique equipment needs at every EMR implementation stage. Learn more at healthcare.ergotron.com.

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Opinion:

Health care must bolster privacy, security efforts

Carol Chris, Regional General Manager for Australia and New Zealand, GBG

A recent report from Australian cybersecurity consultancy CyberCX found the healthcare industry ranked second last when it comes to protecting the online privacy of its customers and users.

In an industry that deals with incredibly sensitive and personal information, such as medications, mental health history, and drug and alcohol use, the implications for a lack of privacy within the sector are severe, both at an individual and organisational level.

Privacy threats are growing in the healthcare industry, in both frequency and sophistication. Macquarie Health Corporation was hit by a cyber attack in late 2021 with thousands of patients' highly sensitive documents leaked by hackers. Just last week Western Australia's COVID-19 contact tracing system was deemed by the auditor-general to be riddled with privacy and security concerns, putting the personal and medical information of hundreds of thousands of citizens at risk.

During COVID-19, when significantly more medical appointments were both made and conducted online than ever before, the risk for cybercrime also increased as patients divulged personal and medical information via apps and websites. Indeed, in the final few months of 2021, more than 12 million telehealth appointments were conducted via phone and videoconference — representing 25% of all Medicare Benefits healthcare appointments.

Recent research from GBG found that in the last 12 months, two-thirds of Australians had created up to six new online accounts. It also showed Australians want faster, easier and more secure ways to verify their identity as they increase their volume of online activities.

Such a sudden digital migration meant many more channels and opportunities for hacking were opened — a payoff for the convenience of online health care that no patient should have to endure. Healthcare organisations and the industry overall must act swiftly to catch up to patients' expectations on how their personal data is handled and stored. It will protect not only the data in question, but also the reputation of individual healthcare providers and agencies.

As the healthcare sector continues to evolve patient care through online consultations and digital appointment-making, the need for digital trust amongst patients will grow. Digital-first patient experiences are becoming increasingly mainstream in health care, and patients will demand their highly personal medical histories are kept secure and confidential.

The potential of a further decline in trust, through high-profile privacy hacks, could be that patients avoid making appointments or withold key information because they don't trust their provider with their medical information and data. In the private sector, patients may choose to manage their health with another provider who offers a higher level of digital trust. This could lead to messy record keeping and a cohort of patients who do not properly engage with the relevant healthcare practitioners, which could in turn lead to poorer health outcomes.

Taking a preventative approach to cybersecurity in healthcare is now the only way forward. Addressing the challenge must start with understanding the varied threat landscape that exists across patient management, record keeping, and the allied health network — crucially, no one organisation or agency can counter cyber attacks on their own. It must be a collaborative effort.

Technology-based solutions that use artificial intelligence and machine learning are an essential and proactive step the healthcare sector can take in this digital climate. One such example is better identity verification — ensuring the identity of the patient on the other side of the screen is who they say they are, and not a cybercriminal. Without taking immediate precautions, the healthcare industry puts the personal data of millions of Australians at risk every day.

Data and Connectivity in Aged Care

By Nathan McGregor, senior vice president Asia Pacific, Cradlepoint

I recently attended an Aged Care IT Summit in Sydney where I moderated a panel discussion on the future of aged care and there were many interesting points that were raised. The role that technology plays within an aged care environment was at the heart of the discussion, highlighting that technology has moved from being a back-office function to a trusted partner.

Digital Technology Connecting People

The pandemic, specifically, has been responsible for the introduction of telehealth in the aged care environment. A large proportion of aged care organisations are now offering a telehealth service as part of their client's care to protect clients from virus exposure risk and maximise the number of clients that can be assessed by a health practitioner.

Although we are in the third year of the pandemic, many aged care facilities are continuing to make investments in connectivity technologies to ensure people can stay connected while also providing Internet of Things (IoT)-enabled practices like automated thermal scanning at visitor check-in points.

While some people feel that aged care is at the start of the software and data journey, this sector is also leading the way in the use of some smart technologies. Many aged care facilities are considering investing in technologies that enable real-time data visibility of client health statistics and live reporting for immediate decision-making. Some are even looking at how predictive analysis based on trend data can be used to predict health outcomes based on patient health data over time.

Connectivity and Security

While many aged care organisations understand that quickly enabling connectivity has been crucial over the last few years, many are now working to ensure that the rapid growth of connected IoT devices in aged care aren't compromising data security. This is no surprise, as recent research from IDG found that 44 percent of organisations globally named security as a challenge with their IoT deployments.*

IoT and Data

The ongoing technological frontier for the aged care sector is further incorporating IoT more widely across organisations to help improve and streamline client care, as well as support a workforce strained from staff shortages, growing workloads and more required reporting. IoT or connected devices can support a data-focused aged care environment. IoT in aged care can look like anything from connected medical devices such as blood pressure monitors that send client readings to a centralised health record database, to monitoring transfusions, and in more mature environments, applications like voice activated safety controls.

These applications are available today, however many aged care facilities don't yet have the connectivity infrastructure needed to implement these tools.

5G for Data-Driven Care

Any application of IoT that collects and manages data for client care requires uninterrupted, secure and agile connectivity. While Wi-Fi is currently used widely across the sector, it has limitations as soon as a clinical or aged care worker leaves a site or works with in-home clients. The pervasiveness of care in a variety of environments and care settings means that Wi-Fi has limitations when it comes to seamless data driven healthcare. Wireless Wide Area Networking (WWAN) connectivity allows aged care providers to use technology to provide seamless care, anywhere. To future-proof their organisations, aged care providers should consider the fifth generation of wireless technology — 5G will be a game-changer for wireless networks designed to meet the needs of the future. 5G offers faster speed, reliability, and security compared to 4G LTE, which has been the WWAN standard for many years. 5G also has lower latency and higher bandwidth than older generations of wireless technology, making it a more efficient solution for transmitting and processing data.

5G wireless routers are the next generation of enterprise-grade wireless routers that will enable a whole new level of connectivity for aged care organisations.

As aged care organisations continue researching and assessing where 5G might fit into their networking plans, they're also asking key questions about security. For instance, they're concerned about their enlarged attack surface resulting from rapidly increasing IoT. They're also considering the impact of the increasing prevalence of edge computing and virtualisation.

Enhancing network security with strategies at the edge

At the network edge, organisations can and should keep using the advanced network security technologies they've likely already been using with wired, Wi-Fi and 4G broadband. It's also a good idea to explore and try some newer strategies and tools that have been gaining popularity amid the rise of 5G, including ZTNA and SASE to secure network endpoints.

Carriers can also provide network slicing to give businesses tailored services, as well as the precise level of security that's ideal for each use case. In a nutshell, the network services available in each "slice" are tailored to its users' unique application, traffic and security needs and charged accordingly.

ZTNA is a security concept that assumes anyone attempting to access a network or application is a malicious actor whose access must be restricted through ongoing verification of user identity, location, device, request timestamp, and previous patterns of use. This robust trust algorithm requires computational power that is made more efficient and effective through 5G, which ultimately improves Quality of Experience.

SASE solutions use real-time context based on enterprise compliance policies to identify end computing points including users, branch offices, cloud services, applications, and IoT devices. If the traffic is legitimate, the SASE edge control allows it to pass through. Adding this layer of security into an existing SD-WAN solution not only creates more secure communication, but also helps optimise the flow of data by reducing the bandwidth dedicated to unsecured traffic.

The aged care sector is moving towards more data-driven care and 5G connectivity will enable better, more efficient care that so many providers are already exploring.

**State of the Wireless WAN, IDG Research, 2022*

In Conversation

with Bronwyn Le Grice

Mansi Gandhi

In Conversation provides a glimpse into the life of an 'outlier' — an exceptional person going above and beyond to improve outcomes in their field. We speak with Bronwyn Le Grice, Founder and Director, ANDHealth, Australia's only dedicated digital health accelerator.

A passionate digital health commercialisation advocate with more than 20 years' experience under her belt, Bronwyn Le Grice needs no introduction.

Her name is synonymous with digital health commercialisation, and under her leadership, ANDHealth has worked with over 550 emerging digital health companies to drive commercialisation of their technologies. Bronwyn has worked across the health technology sector spanning commercialisation, venture capital, capital raising and industry advocacy.

She founded ANDHealth — Australia's only digital health commercialisation organisation — with a specific focus on digital medicine and digital therapeutics, in 2017, in collaboration with a consortium of industry partners. ANDHealth's unique cooperative commercialisation model has led to significant growth within Australia's nascent digital health sector and continues to be a driving force for the development of sovereign capability in evidence-based, regulated digital health technologies.

In 2021, Bronwyn was named the recipient of the Victorian Pearcey Entrepreneur of the Year Award for contributions to Australia's technology sector, and the 2020 BioMelbourne Network's Most Valuable Women in Leadership Award. Here she reflects on innovation commercialisation, exciting developments in digital health and challenges ahead.

Bronwyn, could you please summarise the focus of your current work?

ANDHealth's purpose as an organisation is to accelerate the commercialisation of Australian digital health technologies. We support digital health innovators and entrepreneurs to take their technologies from idea to scale-up and international market entry. We do this through a series of programs that are funded by both government and industry which allow us to support Australian innovators in the space. All of our programs are tailored to the specific challenges that digital health companies — versus medical devices or biopharmaceuticals technologies — face as they commercialise.

In the past four and a half years that ANDHealth has been running, we have supported over 550 Australian digital health companies to drive the commercialisation of their technologies. It is encouraging to see both the number of new technologies and the maturity of those technologies is consistently increasing with ANDHealth's support.

What are the major hurdles facing healthcare commercialisations?

Within the digital health sector, we are seeing that policy structures, as in many sectors, lag the types of technologies that are trying to reach the market. We see really interesting digital health interventions which have shown that they can significantly improve patient outcomes in clinical trials but lack any clear framework to secure reimbursement to drive commercial-scale uptake. This means that, once these companies have secured regulatory approval, they really are dependent on their ability to find a paying customer that sits outside of a traditional reimbursement pathway in order to get to become a sustainable business.

In the past couple of years, we have seen significant improvement in the Australian landscape, including the Therapeutic Goods Administration's guidance of Software as a Medical Device (SaMD) in 2021, which

established a clear regulatory path for digital health solutions and the rapid adoption of telehealth and telemedicine technologies during the COVID pandemic. As we return to normal, we need to ensure that key policy frameworks don't return to pre-COVID settings. Rather, we need to continue to incentivise the use of technologies that continue to support the delivery of care and improvement of patient outcomes outside the physical clinical setting.

Australia now has a strong regulatory environment for digital therapeutics and digital medicines that provides health professionals and consumers with access to safe, evidence-based digital health products that improve patient outcomes. Importantly, it also supports digital health innovators and entrepreneurs to build an internationally competitive digital health sector.

The other major challenge that digital health companies we work with report is access to funding — both grant funding and private capital — and specifically funding that is geared towards digital health.

Although the technology base of digital health solutions may be more aligned with IT investment, the market that digital health companies operate in is very much health care, which can involve long sales pipelines, complex procurement pathways and global enterprise-scale customers. Attracting 'smart capital' and appropriate grant funding streams for digital health companies is a key focus for ANDHealth.

What's your advice for health professionals turned entrepreneurs or for aspiring startup founders?

My first piece of advice for digital health innovators is to make sure they can verify and validate that there is a market and a clear paying customer for their health intervention, and that they can deliver a strong value proposition that will incentivise the prospective customer to pay. Whilst solving a clinical need is clearly key, there are many clinical needs that can be solved but which don't provide a market that can sustain and grow a globally competitive company.

It is common for innovators to highlight how much their technology can save the healthcare system, but unfortunately, overall system savings don't always result in a purchasing decision. That's why it's important to validate that there is a paying customer early on when developing a product, especially if it is a Software as a Medical Device (SaMD), or another intervention that has a clinical efficacy requirement and which might spend significant time in clinical trials before achieving a clearance to market the product in key markets.

One of the most common areas of company failure in the digital health sector occurs when companies solely focus on their clinical need, clinical trials and product design for end users, and fail to verify at scale that their proposed paying customer is able or willing to pay for the product. Internationally, there are a number of case studies where companies have been forced to shut down because the company's target customers are simply unwilling or unable to pay.

Whether your target customer is a hospital system that's under extreme budget pressures, a clinician who may see your technology as a nice to have and not a must have, or a patient that doesn't want to pay out of pocket for health care, digital health companies must verify the commercial pathway as well as the clinical need for their product early, in order to efficiently capitalise on their early-stage investment.

What are some of the most exciting projects you are currently involved in?

In September 2021 we hit a major milestone of receiving $19.75 million from the Medical Research Future Fund (MRFF), which is the largest ever federal government investment specifically into commercialisation of digital health technologies.

Using this MRFF funding, the ANDHealth Digital Health Accelerator Fund and the ANDHealth+ program offer the most substantial funding and support opportunity for digital health companies focused on preventing, diagnosing, treating, mitigating or managing disease.

The support offered by ANDHealth involves national and international industry leaders and advisors, providing specialised help that is not available anywhere else in Australia. Seeing this support translate into successful companies and technologies which have impacted over 500,000 patients so far is by far the most rewarding aspect of our organisation.

Any specific areas within the health industry where you'd like to see more startup activity, and why?

Throughout the pandemic and to this day we are seeing a significant increase in funding in global markets for digital therapeutics and mental health interventions. This is promising because when you start to see increasing investment, it is often related to market dynamics improving in those key areas.

Our goal at ANDHealth is to support as many evidence-based digital and digitally enabled health technologies as possible to enter the Australian healthcare system. The Australian Government's Modern Manufacturing Initiative established a strong focus on medical technologies as a driver of post-pandemic growth, but we cannot overlook the critical role of software in the modern medical technology industry. Very few medical devices do not require some level of connectivity in today's market, and the value add of a medical technology that's impact is augmented by sophisticated software cannot be underestimated.

Out & About

Nurses and midwives recognised

Winners of the 2022 HESTA Australian Nursing & Midwifery Awards have been announced, with Nurse practitioner Sue Hegarty revealed as the 2022 Nurse of the Year.

Nurse of the year

Sue Hegarty, Ovarian Cancer Australia (OCA), Melbourne, Vic

Sue Hegarty is recognised for her exceptional advocacy and support for women with ovarian cancer. Hegarty said she was delighted to be named 2022 Nurse of the Year, calling it a "great honour" to represent her colleagues.

"I work with a team of devoted ovarian cancer nurses, counsellors, psychologists and allied health professionals who have helped women and their families through the toughest times of their lives," she said.

"I accept this award for all the nurses and the team I work with at OCA. To be a winner is recognition of the essential work we have done and will continue to do to ensure no woman with ovarian cancer walks alone."

With a 26-year career dedicated to cancer nursing, Hegarty has worked tirelessly to support women with ovarian cancer and their families. She has been instrumental in the development of programs offered through OCA, attracting millions of dollars in funding.

Hegarty said she would use the prize money to enhance the OCA team's communication skills.

Outstanding organisation

Beaudesert Hospital Maternity, Beaudesert, Qld

Beaudesert Hospital Maternity is recognised for its commitment to improving the health and wellbeing of women and babies in rural Queensland by providing high-quality maternity services to the local community.

Jacquie Smith, Beaudesert Hospital's Nursing & Midwifery Director and Facility Manager, said the win was exciting for the maternity unit and a welcome opportunity for the team to celebrate their hard work and commitment to providing maternity care to the community.

"I'm privileged to lead my team and it's also fitting to acknowledge and appreciate the contributions of the wider hospital team who support our maternity service and without whom we would not be able to provide our service."

Smith said it was rewarding to realise how much the community values the local maternity services. "It's not like a hospital, it's like a second home. A true testament of this is when we had three generations of family members born at Beaudesert Hospital, with the last two generations being cared for by the same midwife," she said.

Midwife of the year

Melanie Briggs, Waminda South Coast Women's Health & Welfare Aboriginal Corporation, Binjilaanii Maternity Services, Nowra, NSW

Melanie Briggs is recognised for her tireless work to improve First Nations' maternal and infant health.

A descendant of the Dharawal and Gumbaynggirr peoples, Melanie is the Director and Founder of Binjilaanii, the first Aboriginal-led maternity model of care in Australia. She is also a Senior Midwife at Waminda South Coast Women's Health and Welfare Aboriginal Corporation.

Briggs said she was honoured to hear she had been named Midwife of the Year.

"Being recognised and being an Aboriginal midwife and caring for women on Country is a privilege and I feel incredibly proud," she said.

"My team should be here standing here with me. This award is in recognition of the amazing work our team and organisation do in the community to ensure that our First Nations mums and bubs receive the best start to life."

Briggs plans to use the prize money to conduct further research and embed cultural practices into the Birthing on Country model of care.

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