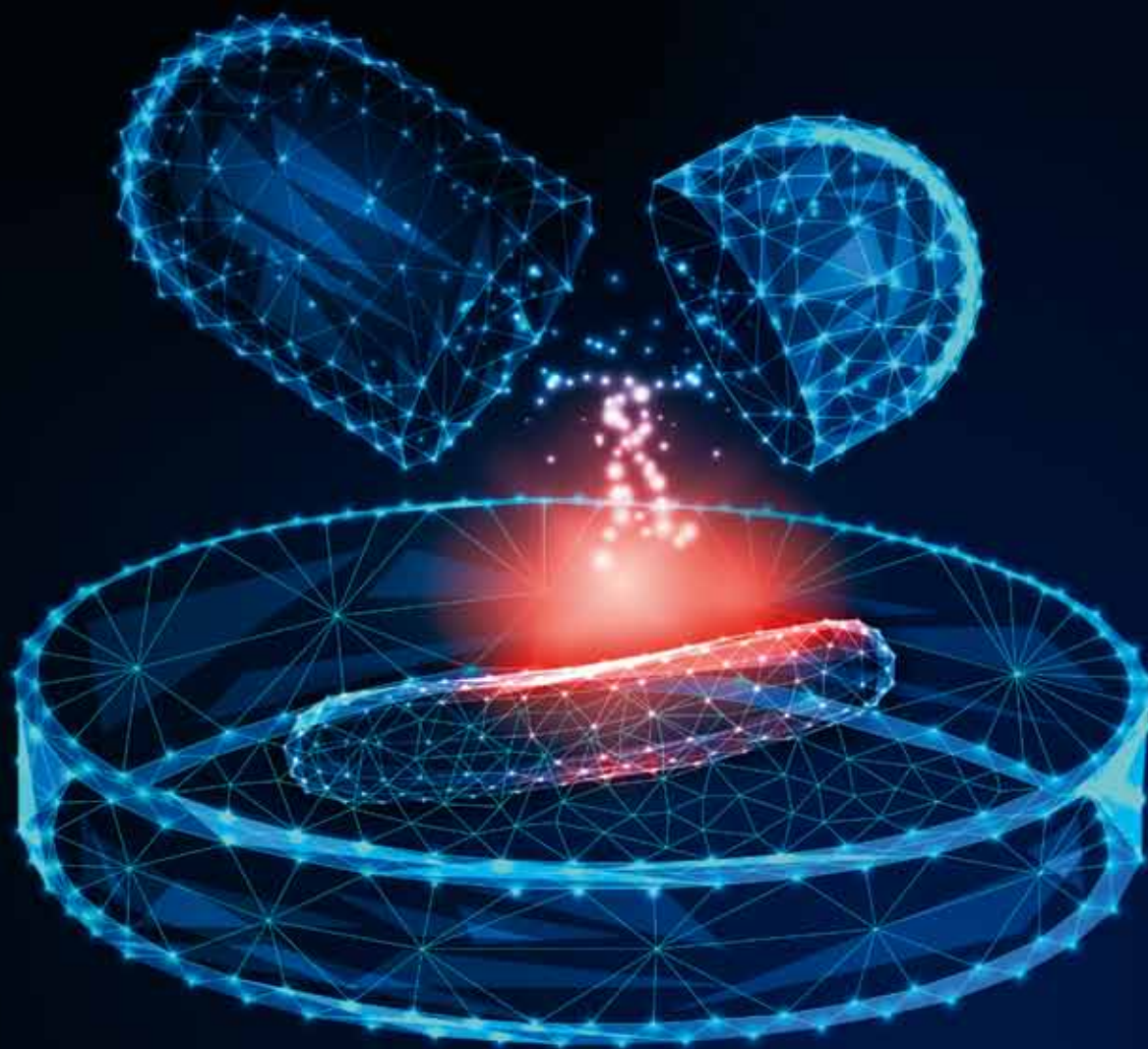


HOSPITAL AND HEALTHCARE

SUMMER 2022

**AGED CARE
ISSUE**



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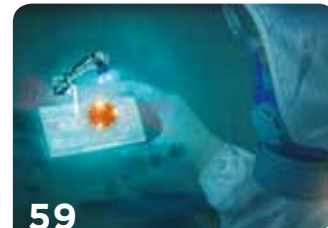
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Disability leaders recognised

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Welcome to our Summer Aged Care issue!

Latest analysis of 204 countries and territories around the world has shown that antimicrobial resistance is now a leading cause of death worldwide, higher than HIV/AIDS or malaria. More than 1.2 million people died as a direct result of antibiotic-resistant bacterial infections in 2019, and antimicrobial-resistant infections played a role in 4.95 million deaths, according to analysis published in *The Lancet*.

In this issue, we interview Distinguished Professor Antoine van Oijen and Associate Professor Spiros Miyakis from the Molecular Horizons Research Institute at the University of Wollongong who compare AMR to the current climate crisis for three important reasons. They explain these reasons to our Contributing Editor Amy Sarcevic and offer insights on how to best combat the challenge.

This issue also features two local developments in the space — a locally developed copper surface that is said to kill bacteria over 100 times faster than standard copper and could help combat antibiotic-resistant superbugs in a range of settings including hospitals; and nanoparticles-antibiotics combination therapy to overcome multidrug resistance and reduce antibiotic dose intake.

Speaking of dose intake, this issue features insights from pharmacist and biostatistician Dr Amy Page on challenges

associated with polypharmacy in the elderly and how we can address them.

In his article, LASA CEO Sean Rooney reflects on the aged-care sector's perennial problem — workforce, and how we can solve it to improve care. He notes the problems have become a "genuine crisis" and highlights the need for urgent action.

Health care and aged care have faced challenges on multiple fronts in the last few years. But it's not all doom and gloom. Despite the challenges, the sector is pushing new boundaries in its quest to improve standards, according to Dr Rachel Winterton, Senior Research Fellow at the John Richards Centre for Rural Ageing Research. Read her thoughts on the sector in the article on page 23, which also features an aged-care home in Bathurst, New South Wales, that took the challenges in its stride and achieved positive resident outcomes throughout the pandemic. As always, there are many more inspiring and insightful pieces on a range of topics throughout the issue.

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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The Rounds

Updates in health care



Eating well on the night shift

Around 1.5 million Australians are employed as shift workers, with more than 200,000 regularly working a night or evening shift. When people work irregular hours, they often eat at irregular hours, increasing the risk of weight gain, type 2 diabetes and cardiovascular disease.

Now a study, funded by the National Health and Medical Research Council (NHMRC), and conducted by the University of South Australia and Monash University is investigating strategies to help shift workers better manage their eating habits when they work at night.

The aim is to find suitable diet plans that can empower shift workers to better regulate their health. UniSA researcher Dr Michelle Headland said that the combination of irregular sleep patterns and eating around the clock can seriously affect shift workers' health.

"When you work irregular hours, your eating and sleeping patterns are affected, causing metabolic changes that can affect your health," Dr Headland said.

"Our body relies upon regular rhythms of energy storage and usage, guided by day and night. When we upset this balance by eating or sleeping at odd hours, our body can't compensate, and we end up with higher levels of glucose which contributes to weight gain.

"Shift work makes traditional weight loss plans extremely hard to follow, so what we've been doing is exploring alternatives."

Co-researcher and UniSA colleague Professor Alison Coates said, "Prevention often comes hand in hand with education. If we can ensure that Australia's shift workers are informed about healthy food options for the night shift, they can learn to make simple and sustainable changes to their diets."

"Being prepared is key. By spending as little as 10 minutes a day on planning and preparing your meals, you're more likely to snack on healthier foods and avoid treats from the vending machine.

"Of course, a healthy variety of foods increases your chance of optimal nutrition, and if you include high-fibre and low-GI foods, you'll not only stay fuller for longer, but also regulate your glucose and cholesterol levels.

"Choosing smaller serves or meals when you're on a night shift can stop you from feeling drowsy, without taking on too many calories; and drink water to stay hydrated, as opposed to a coffee — it may perk you up, but too much can drag your health down."

The study has over 200 enrolled participants and is currently on a final round of recruitment. To find out more or to participate, visit www.unisa.edu.au/research/research-volunteers/weight-loss-study/.

Elevated BP at young, middle age impacts brain ageing

People with elevated blood pressure that falls within the normal recommended range are at risk of accelerated brain ageing, according to a study by The Australian National University.

The ANU team, in collaboration with colleagues in Australia, New Zealand and Germany, examined more than 2000 brain scans of 686 healthy individuals aged 44 to 76.

The blood pressure of the participants was measured up to four times across a 12-year period. The brain scan and blood pressure data were used to determine a person's brain age, which is a measure of brain health.

The research found that participants with an elevated blood pressure, but within the normal range, also had older looking brains and were at risk of health problems such as heart disease, stroke and dementia. Optimal blood pressure helps our brains stay at least six months younger than our actual age, according to the researchers.

The researchers are now calling for national health guidelines to be updated to reflect their important findings.

The findings have been published in *Frontiers in Aging Neuroscience*. "This thinking that one's brain becomes unhealthy because of high blood pressure later in life is not completely true. It starts earlier, and it starts in people who have normal blood pressure," said Professor Nicolas Cherbuin, Head of the ANU Centre for Research on Ageing, Health and Wellbeing.

Normal blood pressure is defined by pressure below 120/80, whereas an optimal and healthier blood pressure is closer to 110/70.

The new research comes after a large international study found the number of people over 30 with high blood pressure has doubled globally.

Cardiologist and co-author of the study Professor Walter Abhayaratna said if we maintain optimal blood pressure our brains will remain younger and healthier as we age.

"It's important we introduce lifestyle and diet changes early on in life to prevent our blood pressure from rising too much, rather than waiting for it to become a problem," he said.

"Compared to a person with a high blood pressure of 135/85, someone with an optimal reading of 110/70 was found to have a brain age that appears more than six months younger by the time they reach middle age."

Lead author Professor Cherbuin said the findings highlight a particular concern for young people aged in their 20s and 30s because it takes time for the effects of increased blood pressure to impact the brain.



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The Rounds

Updates in health care

Aged care: education program to strengthen leadership, governance

The federal government has launched an education program to help aged-care providers strengthen organisational governance and leadership.

Minister for Senior Australians and Aged Care Services Richard Colbeck said strong leadership within the sector is critical for driving the cultural change required for high-quality levels of care.

“All aged-care providers need to review their current practices to ensure they are ready to embrace the future.”

The program will be led by the Aged Care Quality and Safety Commission and will specifically target all leaders and members of governing bodies of approved aged care, aiming for approximately 3700 participants. Enrolment in the program is free and will continue to June 2023.

Minister Colbeck said it was an opportunity for leaders and governing bodies to play an active part in the transformation of culture across the sector.



A daily dose of yoghurt could help manage high blood pressure

A daily dose of yoghurt could be the next go-to food for people with high blood pressure, according to new research from the University of South Australia.

Conducted in partnership with the University of Maine, the study examined the associations between yoghurt intake, blood pressure and cardiovascular risk factors, finding that yoghurt is associated with lower blood pressure for those with hypertension.

Globally, more than a billion people suffer from hypertension (high blood pressure), putting them at greater risk of cardiovascular diseases (CVDs) such as heart attack and stroke.

CVDs are the leading cause of death worldwide — in the United States, one person dies from CVD every 36 seconds; in Australia, it's every 12 minutes.

UniSA researcher Dr Alexandra Wade said this study provides new evidence that connects yoghurt with positive blood pressure outcomes for hypertensive people.

“High blood pressure is the number one risk factor for cardiovascular disease, so it's important that we continue to find ways to reduce and regulate it,” Dr Wade said.

Dairy foods contain a range of micronutrients, including calcium, magnesium and potassium, all of which are involved in the regulation of blood pressure, Dr Wade said.

“Yoghurt is especially interesting because it also contains bacteria that promote the release of proteins which lowers blood pressure.

“This study showed for people with elevated blood pressure, even small amounts of yoghurt were associated with lower blood pressure.

“And for those who consumed yoghurt regularly, the results were even stronger, with blood pressure readings nearly seven points lower than those who did not consume yoghurt.”

The study was conducted on 915 community-dwelling adults from the Maine–Syracuse Longitudinal Study. Habitual yoghurt consumption was measured using a food frequency questionnaire. High blood pressure was defined as being greater than or equal to 140/90 mmHg (a normal blood pressure level is less than 120/80 mmHg).

Researchers say that future observational and intervention studies should continue to focus on at-risk individuals to examine the potential benefits of yoghurt.

Digital resource to help clinicians prevent childhood obesity

Dietitian and University of Queensland Research Fellow Dr Oliver Canfell and team have developed an online resource to help prevent childhood obesity.

The resource is being developed as part of the Precision Support for Preventing Childhood Obesity (PRECISE) program, a partnership between UQ and Health and Wellbeing Queensland (HWQld).

Almost 20 health professionals including GPs, child health nurses and dietitians have been recruited from across Queensland to design the digital solutions to focus on prevention in routine practice.

The tools designed in the PRECISE program will be available via Clinicians Hub, a central digital platform created by HWQld to help health professionals effectively prevent and manage childhood obesity.

HWQld Chief Executive Dr Robyn Littlewood said, “It can be a challenging topic to raise with families, and research shows many doctors feel ill-equipped to manage this complex and sensitive health issue.

“Clinicians Hub offers a variety of clinical tools, resources and training to help health workers identify, prevent and talk about childhood obesity with confidence and impact.

“One in four Queensland children and two in three adults live above a healthy weight range. These patterns are usually well established before five years of age — so we really need to get in early. We need to work smarter together and this is exactly what digital health does.”





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The Rounds

Updates in health care



Common sleep disorder combo could be deadly

People who suffer from both insomnia and obstructive sleep apnoea are more likely to suffer from heart problems and are almost 50% more likely to die than those without either condition, according to researchers from Flinders University.

The researchers studied a large US-based dataset of over 5000 people to understand the risks of co-morbid

insomnia and obstructive sleep apnoea (COMISA). The participants, aged around 60 years at the beginning of the study and 52% female, were followed for approximately 15 years, with 1210 people dying during that time.

The researchers found that participants with COMISA were two times more likely to have high blood pressure and 70% more likely to have cardiovascular disease than participants with neither insomnia nor sleep apnoea.

The study also showed participants with COMISA had a 47% increased risk of dying (for any reason) compared to participants with no insomnia or sleep apnoea, even when other factors known to increase mortality were taken into account.

"Insomnia and obstructive sleep apnoea are the two most common sleep disorders, affecting 10 to 30% of the population, but people can often suffer from both at the same time," said Dr Bastien Lechat from Flinders Health and Medical Research Institute: Sleep Health.

"Previously, little was known about the impact of COMISA but what we did know is that for people with both conditions, health outcomes are consistently worse than those with neither condition or those with either condition alone."

While further research is needed to investigate what might be causing the higher mortality risk for those with COMISA, researchers say further investigation is also warranted to ensure treatments are working effectively.

"Specific treatments may be needed for people with co-occurring disorders so it's important we examine the efficacy of insomnia and sleep apnoea treatments in this specific population," Dr Lechat said.

3D-bioprinted urogynaecological repair treatment

The search for new treatments for pelvic organ prolapse (POP) will take Hudson Institute researcher Kallyanashis Paul to New Zealand and Singapore as part of a veski fellowship.

The Victoria Fellowships are funded by the Victorian Government and delivered by veski, allowing promising young researchers the opportunity to broaden their experience, develop networks, and better identify where their activities fit into the local and international community.

The \$18,000 prize will support Dr Paul to undertake international study and advance his 3D-printing work in a global setting. Dr Paul's project, titled 'Designing bioinks for improving uterine stem cells bioprinting for women's urogynaecological health', aims to create pelvic mesh products from a woman's own cells, which would be better tolerated than existing products.

"I have shown that bioprinted 3D degradable construct is a promising new alternative, which can significantly be improved by bioprinting of therapeutic eMSCs," said Dr Paul.

"However, this needs a robust 'bioink' that can print and retain cells with their therapeutic value intact.

"My overseas research activities in this mission will ultimately fabricate a clinically relevant bioprinted tissue engineering construct for transvaginal POP surgery."

He will spend four months at the University of Otago and two months at the National University of Singapore working on his project and collaborating with other leaders in the field.



Trial hopes to improve care for rare cancer

A Flinders University-led trial aims to improve care for people with neuroendocrine tumours (NETs).

The trial will establish the effectiveness of a shared-care model, shifting follow-up care for those with NETs away from acute hospital settings and maximising the involvement of local health professionals.

"Neuroendocrine tumours are rare cancers that affect fewer than 1 in 5000 Australians, but those who live with them suffer from a lot of distressing symptoms and treatment side effects and the current health system can't always meet these patient needs," said Professor Raymond Chan, Director of Flinders University's Caring Futures Institute, who will lead the trial.

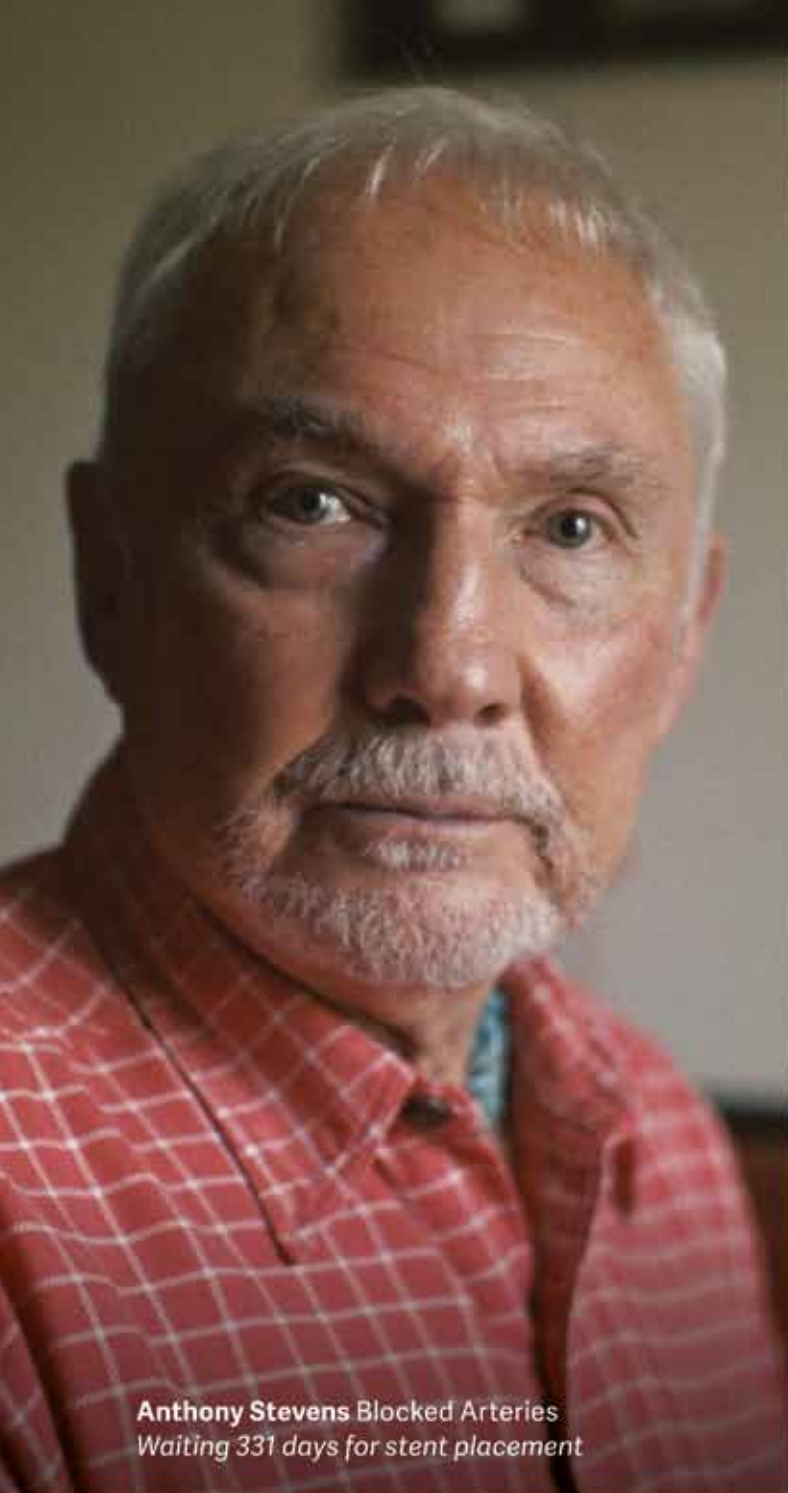
"What our model will do is to treat people away from specialised cancer centres, in some cases reducing the need to travel, and instead shift the care to a multidisciplinary healthcare team, including the patient's specialist team, general practitioners, practice nurses and community allied health practitioners."

The trial, known as AUS-NET, will involve 504 people currently receiving treatment for NETs at five cancer centres of excellence in South Australia, New South Wales, Victoria, Queensland and Western Australia.

While shared-care models have been implemented previously for more common cancer types including breast cancer, colorectal cancer, prostate cancer and lymphoma, this will be the first trial to test it on the management of rare cancers, with the care model not currently undertaken anywhere in Australia or around the world.

Professor Chan said, "With mounting pressure on our acute care and hospital system, beyond the issues we've seen during the pandemic, capitalising on the expertise of primary care is one key strategy for ensuring the sustainability of our health system.

"The knowledge generated from the trial will inform healthcare policy and transform the way people with neuroendocrine cancer, and in the future other rare cancers, are cared for," Professor Chan said.



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Solving the aged-care workforce crisis

Sean Rooney, CEO, LASA

Staffing has been a perennial problem for the aged-care sector for too long.

Relatively low pay, a lack of career progression, fewer training opportunities and the perception that working in aged care is unrewarding and unattractive, all add to a troubling picture.

Back in 2011, the Productivity Commission in its Caring for Older Australians report outlined workforce challenges as demand increases over the next 30 years unless urgent action was taken to address the workforce gap.



The situation had worsened considerably when, in 2018, an independent aged-care workforce taskforce delivered a plan with 14 recommendations for prioritised implementation over a three-year period.

And then COVID-19 hit. Since then our workforce problems have become a genuine crisis.

Providers have struggled to attract skilled staff, they've been given no support to

improve pay or career progression and many have seen an exodus of experienced, highly trained staff fed up with a lack of resources to do their jobs.

With international borders closed, it has been difficult to find enough candidates of sufficient quality to fill the vacancies. We have seen many qualified staff poached by state health authorities and state-run aged-care homes where they are better paid.

We are not alone in Australia with our workforce issues. A recent LASA virtual forum, From Pandemic to Endemic, heard speakers from North America and New Zealand describe identical issues faced by providers and workers in their respective aged-care sectors.

While in Australia there has been some movement by the federal government in response to sector advocacy and the Royal Commission into Aged Care Quality and Safety, much more is needed.

In its \$17.7 billion May Budget response, the government pledged to create 80,000 new home-care packages over two years and to attract and train 13,000 home-care staff. It also announced an increase in the minimum amount of daily staff care time for people in residential aged care.

The new packages and additional care time, while welcome, further increase workforce pressures to breaking point.

In order to meet the required new minimum standards of care at the current rate of aged-care workforce growth, the Committee for Economic Development Australia (CEDA) estimates in its 2021 report, Duty of Care: meeting the aged care workforce challenge, the sector will need an additional 110,000 direct care workers by 2030.

The impact of lockdowns, single-site working arrangements and staff having to be furloughed due to close contacts has further stretched the time available to provide care in aged-care homes. With this being further exacerbated by the growth in administration requirements and compliance. Providers have found just trying to fill a weekly roster a major challenge.

A LASA-Mercer Workforce Benchmarking Survey conducted earlier this year suggests that the number of shifts missed equates to about half an hour of time available per aged-care home resident per week.

In its 2020 Aged Care Workforce Census the ABS identified at least 22,000 vacancies with most in residential aged care (9400), home-care packages (6480) and home-support services (6120).

To add to this picture, the CEDA report projected a further shortfall of at least 17,000 aged-care staff each year for the next 10 years. It also predicted that more than 400,000 additional aged-care workers would be needed by 2050 to cater for our ageing population.



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“Little is being done to ensure new residents are not turned away or in-home services refused because of staffing shortages.”

The result of all of this means that existing staff have had to work harder, in many cases for longer hours, as providers struggled to avoid cutting services. Further, the ability of providers to consistently deliver high standards of care and service is being compromised.

Providers and unions are united in their support for a significant increase in wages for staff working in aged care as a work value case proceeds in the Fair Work Commission.

There is no question as to the passion and commitment of the women and men who work

in aged care who elected to get vaccinated so they could protect the residents they care for and their colleagues, achieving close to 100% full vaccination.

The Australian Aged Care Collaboration of six major provider representative organisations, which represents more than 1000 aged care providers — LASA, ACSA, UnitingCare Australia, Anglicare Australia, Catholic Health Australia and Baptist Care Australia — recently called on the government to take urgent action on workforce.

The AACC wrote to the Health Minister and the Minister for Ageing seeking an emergency response to fill gaps in staff in residential and home care to:

- support providers to pay a competitive wage by agreeing to fund the outcome of the Fair Work Commission Work Value Case
- encourage student nurses to consider a career in aged care and encourage personal care and support work as a career
- allow foreign workers to fill vacancies where local workers are unavailable

- develop with states and territories an aged-care VET pathway program for school leavers
- offer a subsidy to enrolled nurses in aged care to become registered nurses.

The response to this request has been disappointing. Since the Royal Commission ended in March the government has taken some measures including introducing an aged-care nurse retention bonus, home-care workforce support program and an easing of temporary visa restrictions for care staff.

While these measures are welcome, they do little to address the urgent need to fill unfilled shifts happening daily in services right across the nation. Little is being done to ensure new residents are not turned away or in-home services refused because of staffing shortages. Much more needs to be done right now if we are to meet the demands of an ageing population today and succeed in providing high-quality care that meets the needs of older Australians.

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paper with high filtration efficiency being maintained for the life of the filter.

InovaAir is proudly Australian owned and manufactured on the Central Coast of NSW.

¹ Marshall, Caroline, and Busing, Kirsty, et al. "Use of portable air cleaners to reduce aerosol transmission on a hospital COVID-19 ward". Infection, Disease & Health, vol.26, 2021, pp. S4-S4.

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How IoT is transforming on-premise laundry dosing in aged healthcare

In the aged healthcare sector, site management have a choice between the installation, operation and maintenance of an on-premise laundry or outsourcing the washing of items such as bed sheets, blankets, towels, clothes and uniforms to a contractor.

A common argument against an in-house setup is that, beyond the initial outlay, it brings with it ongoing costs such as utilities, chemicals, maintenance and repair. However, should the service be outsourced, it is likely that the selected contractor faces the same costs which would ultimately be passed on to the customer — in this case the care facility.

And while outsourcing laundry removes responsibility for managing the process and the need for a dedicated laundry room, it does leave the operator bound to the contractor's inflexible turnaround times and the potential for service interruption. Meanwhile, mass cleaning methods may cause chemical and mechanical damage to laundry which leads to more frequent replacement and subsequently increases costs.

Despite the many pros and cons, it is generally accepted that an on-premise laundry ultimately delivers a better wash performance, longer fabric life and greater flexibility than can be achieved via outsourcing.

In order to manage an on-premise laundry, there is a clear need for chemical dosing

systems that have the capacity to handle high load demand across multiple machines while maintaining precision and consistency over an extended period.

This is one of the reasons web-enabled pump systems are increasingly specified for commercial laundry machines within nursing homes and other care facilities, where infection control is paramount and IoT-ready dosing and control systems can help operators to consistently achieve this.

As well as the benefits for residents, a major draw of IoT is that features such as up-to-date downloadable manuals, intelligent auto-tuning sensors and online step-by-step technical support can accelerate installation, setup and commissioning and reduce associated time and costs.

During operation, data is harvested on multiple pump values, including wash cycle status, chemical consumption and equipment performance, which can then be accessed historically or in real time via a cloud-based platform thanks to the system's built-in web server.

With this vital information at their fingertips, users can programme and adjust wash formulas in order to optimize performance and minimize chemical consumption.

Common features include the option to view chemical consumption in financial terms, which allows projected detergent and fabric

softener savings to be precisely calculated and presented to key decision makers when considering dosing changes.

Reducing chemical and energy consumption this way means operators benefit from immediate efficiency improvements while being able to budget more accurately and streamline stored chemical volume — especially useful on smaller sites where space is at a premium.

Plus, wasted journeys by maintenance technicians to perform routine servicing — who may travel a considerable distance to assess a system's condition only to find it in perfect working order — can be eliminated, as they need only be deployed when required.

As the global healthcare sector looks towards a post-COVID future, the benefits of IoT provide operators today with the ability to take control of in-house laundry costs over both the short and long term, helping to deliver reliability and confidence at a time of great uncertainty.

SEKO is a worldwide manufacturer of chemical dosing systems for multiple sectors, and has supplied its leading on-premise laundry equipment — including the highly-regarded Wash Series IoT-enabled units — to hospitals, care homes and other healthcare sites over many years. The complete range can be viewed at www.seko.com, where you'll also find contact details for your local SEKO representative.

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Rural care

— where to now?

Amy Sarcevic



Aged care has received more than its fair share of bad press in recent years, owing largely to revelations from the Royal Commission (RC) into Aged Care Quality and Safety. In rural Australia, many of the issues exposed within the RC were pronounced, with the final report calling for greater funding and equitability of access in rural, regional and remote areas. Almost one year since the report was published, what is the current state of play within rural aged care?

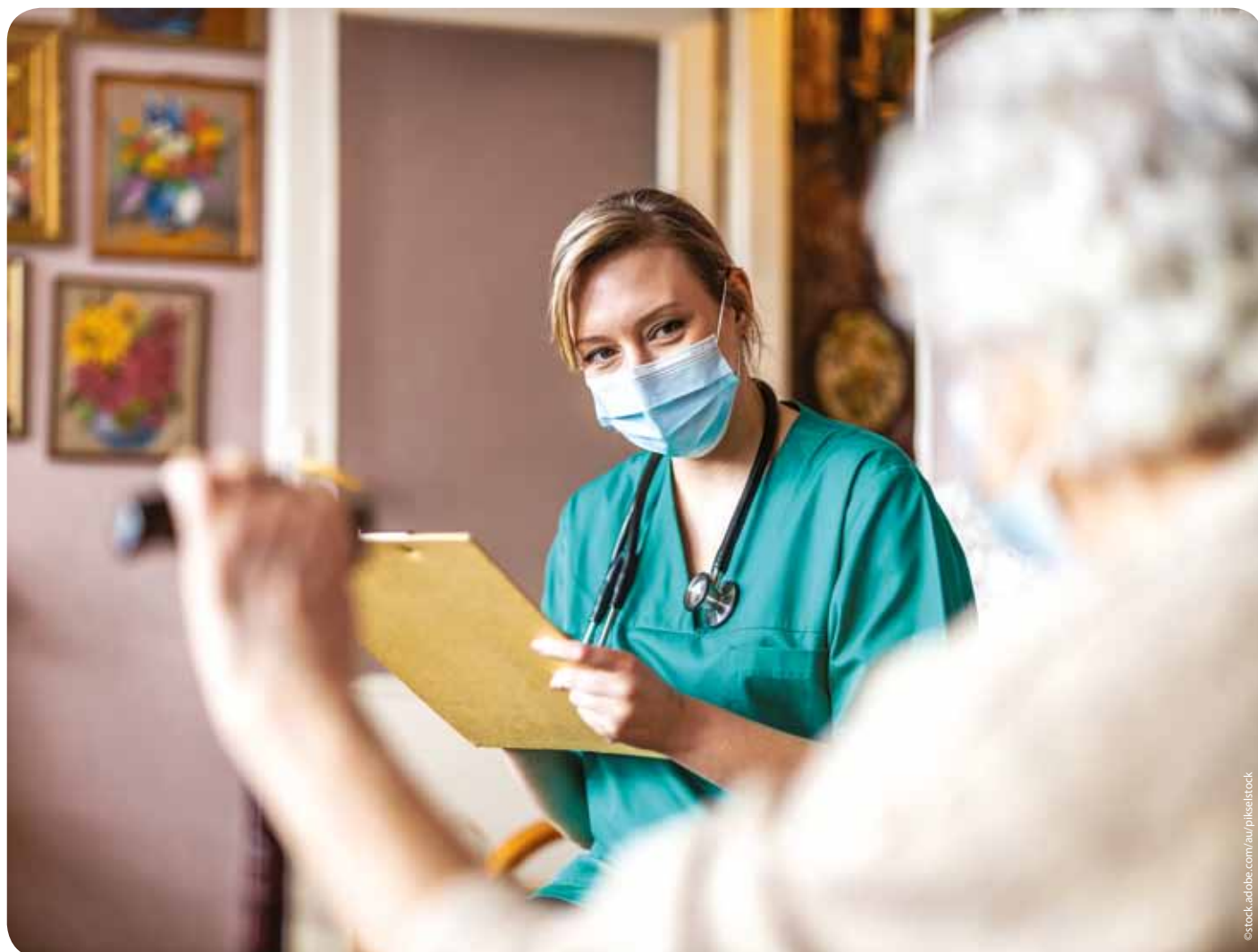
Dr Rachel Winterton, Senior Research Fellow at the John Richards Centre for Rural Ageing Research, said that despite some positive reform, many of the challenges exposed within the RC remain since its completion. “There are still issues in terms of equity of

access and service availability in rural Australia. At this point, we have only seen marginal improvements in that respect,” she said.

Meanwhile, the government’s viability supplement has not been enough to cover the lagging occupancy rates within some venues, particularly throughout COVID where some homes were forced to place a ban on new resident intakes. This has left many grappling with an ongoing financial deficit and the secondary challenges that brings.

A survey of 1200 nursing homes across Australia revealed that 69% of rural and remote aged-care homes were losing money in March 2020, a figure that dropped — but remained high at 52% — by March 2021¹. The statistics were similar in inner regional centres, decreasing from 62% to 56% over the same period¹.

As a result, many facilities have struggled to meet the challenges inherent in delivering high-quality care within areas of geographical remoteness. Alongside the sector’s viability challenges, rural Australians have statistically poorer health than those that live in major cities, with 20% higher rates of chronic disease². This exacerbates the issue of weak nurse-to-resident ratios — one of the key sticking points exposed by the RC, with more than half of Australian aged-care facilities (57.6%) classed as inadequately staffed³.



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“In rural areas especially, where there are fewer opportunities, people want jobs they can comfortably stay in.”

“The current funding and supplements rarely stretch far enough to cover recruitment and retention, so it is still difficult for rural providers to access the workforce they need,” Dr Winterton said.

Leading the way

Despite the challenges, Winterton highlighted that the sector is pushing new boundaries in its quest to improve standards.

St. Catherine’s aged-care home in Bathurst, New South Wales, provides one high-definition example, having taken matters into its own hands to drive positive resident outcomes throughout the pandemic.

Like many homes, St. Catherine’s grappled with staff shortages during the crisis — given the restrictions on aged-care personnel working across multiple facilities — but upheld positive resident and worker reviews throughout. It even saw former employees returning to their roles, having previously departed to work in other higher paying sectors, including disability support. Manager Angela Stocks attributed this to the centre’s strong workplace culture.

“Our team members have been the unsung heroes during this crisis. They have worked incredibly hard under challenging circumstances: long hours, wearing full PPE, amid high levels of risk,” she said.

“They have also made tremendous personal sacrifices. When there was a COVID outbreak in the local jail — where some of our employees’ partners worked — they moved out of their own homes and had no contact with their families, so as not to pose a risk to residents.”

Despite the long overtime hours and personal sacrifices, St. Catherine’s staff evaluated their workloads as ‘fair’ in annual appraisals conducted during the pandemic. “I really believe the onsite camaraderie and team environment is a key reason behind this outcome,” Stocks said.

Feedback from ‘boomerang employees’ who sacrificed higher salaries in other sectors to return to their aged-care roles at St. Catherine’s also supported this theory. “Returning staff have told us they love the environment here and get more satisfaction

from their day-to-day work than they do in other support roles,” she said.

Looking ahead

While additional funding for recruitment is on its way to rural centres — via the Rural Health Outreach Fund (RHOF) — the St. Catherine’s story points to an alternative approach for the sector: increasing the ‘sum of its parts’, not just its staff numbers.

“Additional geriatricians and medical specialist services [as per the RHOF] will always be welcome within aged care, but I really believe the best way to get results is to create a supported environment where people are willing to come into work and go the extra mile when they get there,” Stocks said.

Dr Winterton agreed noting, “In rural areas especially, where there are fewer opportunities, people want jobs they can comfortably stay in.”

It may be a way to go until the sector is ‘deficit free’, but with homes like St. Catherine’s paving the way, there is increasing hope.

1. https://www.stewartbrown.com.au/images/documents/StewartBrown_-_ACFPS_Financial_Performance_Sector_Report_March_2021.pdf
2. <https://www.acn.edu.au/wp-content/uploads/position-statement-discussion-paper-improving-health-outcomes-rural-remote-australia.pdf>
3. <https://agedcare.royalcommission.gov.au/system/files/2020-06/AHS.0001.0001.0001.pdf>



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Enhancing aged-care delivery

A new \$34 million research centre to open at Flinders University in Adelaide hopes to strengthen the future of aged-care delivery in Australia.

The Aged Care Centre for Growth and Translational Research will initially focus on four priority areas — dementia care, restorative care and rehabilitation, mental health and wellbeing, and social isolation.

The Minister for Senior Australians and Aged Care Services, Senator Richard Colbeck, said the centre was an important investment in improving the quality of aged-care services.

The centre will provide a platform for strengthened care for senior and vulnerable Australians and is part of the overall \$17.7 billion the Morrison government is providing in response to the Royal Commission into aged-care quality and safety.

The first step in establishing the centre will be developing a new knowledge and implementation hub.

"This web-based hub will give the aged-care sector access to information and products that set out practically how aged care can be delivered in the best possible way, based on comprehensive, evidence-based research," Minister Colbeck said.

The first round of applications at the centre open in February 2022. This will include support for aged-care workers to trial new ways of delivering care.

"Workers in aged care will have the opportunity to share their learnings with other services through communities of practice and open forums on the knowledge hub," Minister Colbeck said.

The focus of the research will be on how care and clinical activities are organised, delivered by different workers, and deployed in different care settings.

The centre will also support sector-wide improvements in care quality by increasing and expanding the capacity of the aged-care workforce to access, understand and use research outcomes in their day-to-day work.

Flinders University Vice-Chancellor Professor Colin Stirling said the national centre will enable collaboration between university researchers, industry partners and the aged-care workforce to effectively address real and meaningful systemic changes for ageing Australians.

"The Aged Care Centre for Growth and Translational Research will bring together aged-care staff and our researchers to carry out projects in collaboration with our industry partners, directly facilitating improvements in the sector," Professor Stirling said.

"We'll apply the research through education and training programs to introduce innovations and improve caring practices — because we can't afford to leave behind Australians who got us to where we are today."

The research centre is part of the government's aged-care workforce strategy to deliver vital services and improve quality, care and viability for senior Australians, under its \$17.7 billion aged-care reform package.

The centre would evolve into an industry-led independent body. "The Australian Government has provided funding over three years, and a key goal is for the centre to work towards self-sufficiency from 1 July 2024," Minister Colbeck said.



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Medication reviews

A recent project³ — SPPIRE (Supporting prescribing in older people with multimorbidity and significant polypharmacy in primary care) — by researchers from the RCSI University of Medicine and Health Sciences led to an overall reduction in the number of medicines prescribed for older people.

The SPPIRE study consisted of a randomised controlled trial involving 51 GP practices and 404 patients throughout the Republic of Ireland. Older patients with multimorbidity taking at least 15 regular medicines were invited to attend a medication review with their GP.

“The review included screening their prescription for potentially inappropriate combinations of medicines, considering opportunities for stopping medicines and assessing the patient’s priorities for treatment. It then assessed whether this once-off GP-delivered medication review reduced the number of medicines and improved the quality of prescribing,” according to the university.

There was a significant reduction in the number of medicines in the intervention group compared to the control group, with over 800 medicines being stopped in 208 intervention patients. Of the 800+ medicines ceased, 15 possible adverse events were reported, almost all of which were mild reactions that stopped once the medicine was reintroduced, indicating that stopping certain medicines in older people is generally safe.

Dr Page also emphasised the importance of regular review of all medicines both individually and as a whole medication regimen. These reviews give the opportunity to review if the medicines continue to be appropriate and if they continue to be aligned to the individual’s health care goals, she said.

Prescription management

Dr Caroline McCarthy, GP and Clinical Lecturer and Research Fellow in the Department of General Practice at RCSI, said, “It can be daunting for GPs with limited time and resources to actively manage these prescriptions and patients can also be wary about change, particularly if they have been on a medicine a long time.”

It’s possible that the identification of this at-risk group who are prescribed at least 15 medicines may have led to improvements in prescribing, Dr McCarthy said.

Professor Susan Smith, Associate Director of the HRB Primary Care Clinical Trials Network, said, “The intervention approach to managing this challenging problem is promising and demonstrates that, even in this very complex group, stopping medicines that may no longer be needed or appropriate is both possible and generally safe.”

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Polypharmacy management

Mansi Gandhi

Polypharmacy affects about one million (36.1%) older people, aged over 70 years, in Australia and as the population ages and the number of people living with multiple health conditions rises, the number is expected to increase.

In Australia, the prevalence of polypharmacy increased by 9% between 2006 and 2017, according to Dr Amy Page, research fellow and NHMRC Early Career Fellow and Teaching Associate at Monash University and Adjunct Associate Professor and Research Assistant at The University of Western Australia. She is also a Research Pharmacist at Alfred Health and a Practice Pharmacist at Emerald Medical Centre.

Gender and age

“Rates of polypharmacy were higher among women than men (36.6% v 35.4%) and were highest among those aged 80–84 years (43.9%) or 85–89 years (46.0%). The prevalence of polypharmacy among PBS concessional beneficiaries aged 70 or more increased by 9% during 2006–2017 (from 33.2% to 36.2%), but the number of people affected increased by 52% (from 543,950 to 828,950),” according to a research report, by Dr Page and fellow researchers, published in the *Medical Journal of Australia (MJA)*¹.

“Overseas countries like the United States and the United Kingdom had much greater increases over these time periods, though our rates remain slightly higher. This finding indicates that the rate in Australia has been relatively high over a sustained period of time,” said Dr Page, lead author of the study.

“Conventionally polypharmacy has been perceived as an overuse of medicines, whereas it may be more useful to perceive in terms of appropriateness, as there are many cases where the concurrent use of multiple medicines may be deemed necessary and beneficial,” noted the World Health Organization in its Medication Safety in Polypharmacy report².

“Countries should therefore prioritise raising awareness of the problems associated with inappropriate polypharmacy and the need to address this issue.”

Risks

Polypharmacy can increase the risk of experiencing falls, fractures and increased frailty, Dr Page said. “People who use polypharmacy additionally experience an increased rate of other medication-related harm including an increased risk of side effects and drug interactions.

“Sometimes side effects are identified as new conditions that are then treated with other medicines causing a further escalation in polypharmacy. Additionally, polypharmacy is associated with an increased risk of under-prescribing, which means that it becomes more likely that one or more indicated medicines will not be used as the number of medicines a person takes increases.”

It is currently unknown if the prevalence of polypharmacy has changed over the last few years with COVID-19, Dr Page said. “There have been substantial changes to healthcare delivery with COVID-19 with electronic scripts and telehealth. It is unknown if this has affected polypharmacy.”

3 benefits of adopting industry-specific software

With the right software, NDIS and HCP providers can simplify their care management, empower their staff and give care recipients the support they need to live the life they choose.

A digital solution built specifically for the NDIS and HCP can equip providers with the right tools to navigate the complexities of the disability and aged care industries. Providers can automate admin tasks, streamline scheduling and workforce management, simplify billing and claiming, and manage client information more efficiently to enable better care.

While traditional care management systems may perform some of these functions at a basic level, the complex framework of the NDIS and HCP requires an adaptable, purpose-built solution. According to Lumary, a healthcare platform provider and technology service partner for Australia's disability and aged care industries, the solution providers choose is critical to the success and sustainability of their organisation. They need an integrated, cloud-based platform to maintain compliance and facilitate greater choice and control for their clients.

3 key benefits of industry-specific software

1. Improved employee experience

NDIS and HCP providers are increasingly looking to technology to support their workforce to deliver personalised care and create a better employee experience.

Employee churn is one of the biggest challenges providers face, and supporting

staff with the right software can make all the difference. Providers should empower their workforce with a single digital solution that improves efficiency and streamlines admin so staff can focus on providing quality care.

Organisations that use Lumary's software report happier, committed and more engaged staff. These providers support their teams with Lumary's easy-to-use web and mobile application, enabling their workers to access information from anywhere in real-time. Staff can schedule appointments, record case notes accurately, and document services as they are delivered, eliminating the need to double up on data entry and unnecessarily spend time on admin. Lumary also integrates with workforce management tools like Skedulo and easyemployer. With one solution, providers can create a seamless end-to-end experience for providers, staff, and clients.

2. Easily maintain compliance

With the hyper-regulated environment of the NDIS and HCP, meeting quality and safeguard standards and complying with legislative requirements is a significant consideration for providers.

Manually entering data is time-consuming and often leads to errors. The best NDIS and HCP software should preload and update government fees to streamline the process and lessen the burden of manual updates.

Industry experts work in-house at Lumary to ensure its software is automatically updated for providers to meet the mandated requirements. These knowledgeable members of the Lumary team stay on top of industry changes and price updates, allowing

organisations to simplify their compliance and accurately forecast and monitor funding.

3. Provide better care

Care delivery should be responsive to individual needs and goals, and the inability to access client information and gaps in communication can inhibit personalised care. With the right software, providers can support person-centred care and create better outcomes by giving their clients more choice and control through increased data transparency and collaboration.

Lumary understands how important this is. That's why its software allows support workers to manage service agreements, care plans and budgets, and record notes, assessments and alerts so workers can build personal profiles for each of their clients. The software also enables clients to request services, adjust appointment times, and view budget balances, invoice history and statements.

With this level of reporting in one place, providers can analyse metrics and build meaningful data insights to enable personalised, informed care and improved relationships between support workers and clients.

Navigating the NDIS and HCP can seem complicated and overwhelming at times, but providers can cut through the complexities and inefficiencies with the right industry-specific software.

To learn more about how the right software solution can transform the way your disability or aged care organisation operates, head to www.lumary.com or reach out directly via enquiries@lumary.com.au.

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O₂matic PRO: automated closed-loop oxygen therapy

The O₂matic PRO is a novel medical device that brings oxygen treatment to a new level. The technology was developed in close cooperation with four hospitals in Denmark and is demonstrated to quickly stabilise arterial oxygen saturation in patients suffering from conditions that can lead to respiratory distress^(1,2).

The O₂matic PRO solves the issue of the labour-intensive titration of oxygen flow rates associated with the current manual apparatus. Oxygen flow is automatically titrated responding to real-time arterial oxygen saturation (SpO₂) as measured by pulse oximetry. The O₂matic PRO controls the dose of oxygen administered to the patient to maintain the SpO₂ within a prescribed target range; hence reducing patient-nurse exposure times.

Supplemental oxygen therapy is central to the treatment of respiratory insufficiency caused by a variety of acute and chronic diseases. A clinical study conducted with the use of the O₂matic PRO on patients suffering chronic pulmonary diseases demonstrated its ability to keep oxygen saturation within a prescribed bracket with the use of its unique algorithm⁽¹⁾. It shows that the O₂matic PRO maintains the oxygen saturation within the specified range 85% of the time, in contrast to 47% achieved by the conventional practice, while decreasing episodes of hypoxemia⁽¹⁾. Another study conducted on admitted patients of the 2020 global pandemic demonstrated similar results. Using the O₂matic PRO, medical staff were able to maintain patient oxygen saturation within the prescribed bracket 83% of the time⁽²⁾.

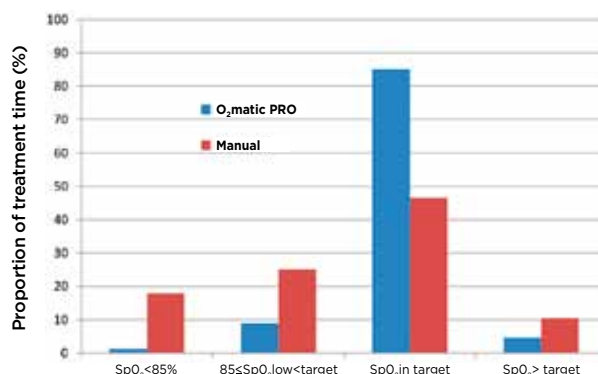
Key benefits of closed-loop oxygen therapy:

- Improving patients' time within the target SpO₂ levels^(1,2) hence reducing mortality rates⁽³⁾.
- Reducing oxygen consumption by up to 50%⁽⁴⁾.
- Faster weaning from oxygen and reducing length of stay⁽⁵⁾.
- Reduction in costs of care⁽⁶⁾ and patient-nurse exposure times.

Automatic closed-loop oxygen therapy has been the subject of many more clinical studies with promising outcomes. To request a summary of clinical studies and technical features, please visit our website www.boc.com.au/o2matic.



Patient arterial oxygen saturation levels during oxygen treatment



The O₂matic PRO maintains the oxygen saturation within the specified range 85% of the time in contrast to 47% achieved by the conventional practice in patients with chronic respiratory disease⁽¹⁾.

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The O₂matic PRO device easily connects to existing oxygen wall outlets or oxygen cylinders.

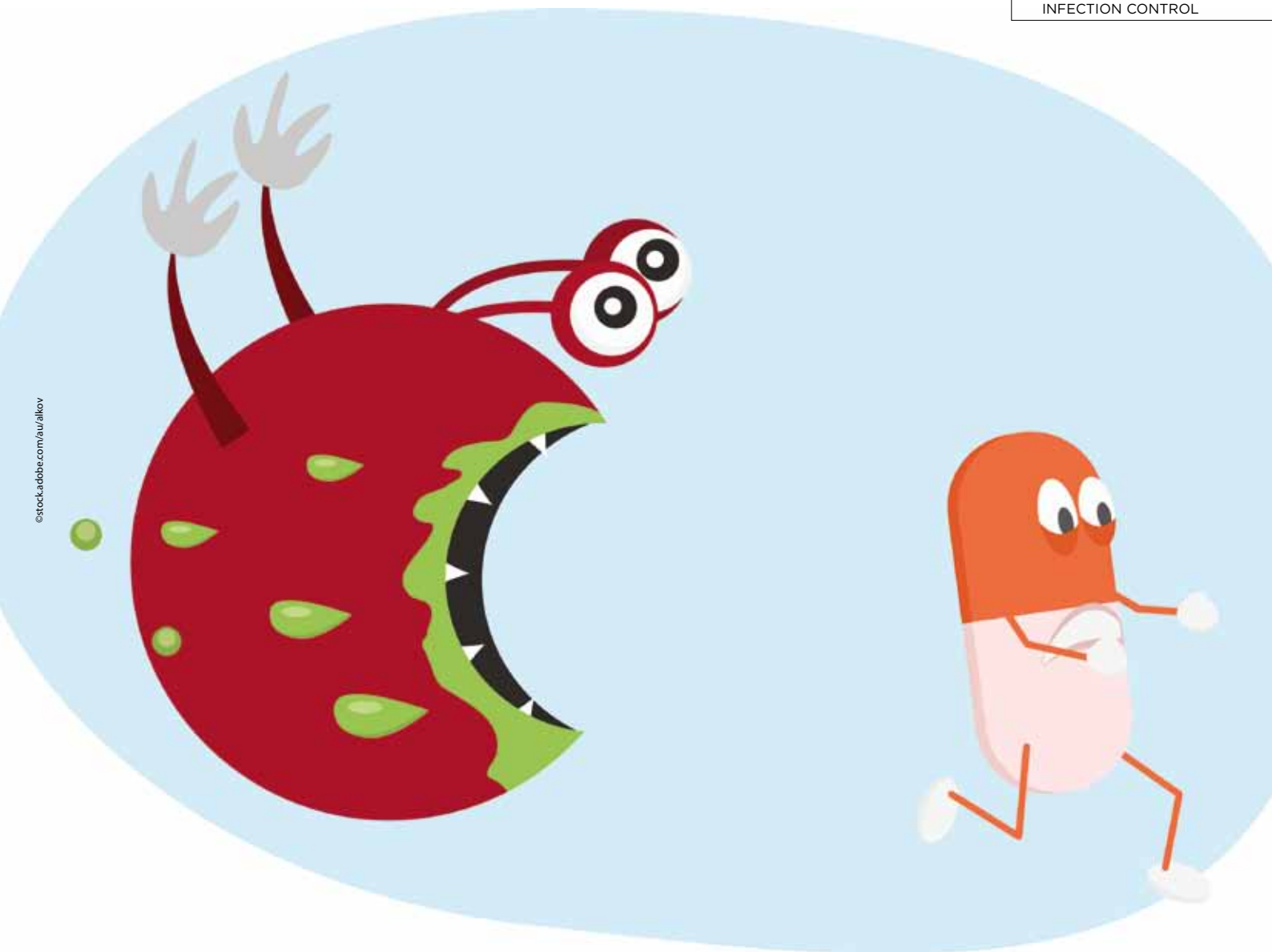
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Antimicrobial therapeutics

to fight multidrug resistance

Researchers from Monash University have discovered that the use of nanoparticles, in combination with other antibiotics, could help prevent antibiotic resistance and reduce antibiotic intake.

Antimicrobial resistance has already been declared as one of the top 10 global public health threats by The World Health Organization (WHO). The WHO has also confirmed that no new antibiotic has been discovered in the past 30 years, but globally there's a crisis of antibiotic resistance which means that in the coming years, more people will die from basic infections because they have developed antimicrobial resistance.

The cost of antimicrobial resistance to the economy is significant. Without

effective antimicrobials, the success of modern medicine in treating infections, including during major surgery and cancer chemotherapy, would be at increased risk, according to the WHO.

Dr Hsin-Hui Shen of the Monash University Department of Materials Science and Engineering, along with Professor Jian Li of the Monash Biomedicine Discovery Institute and the Department of Microbiology, has demonstrated that nanoparticle-based polytherapy treatments disrupt the outer membrane of superbug bacteria and offer an improved alternative to the conventional use of loading the antibiotic within lipid nanoparticles. Their findings have been published in *Nature Communications*.

"For a long time nanoparticles have been used specifically as antimicrobial carriers, but the use of nanoparticles in polytherapy treatments with antibiotics in order to overcome antimicrobial resistance has been overlooked," said lead researcher Dr Shen.

"When bacteria becomes resistant, the original antibiotics can no longer kill them. Instead of looking for new antibiotics to counteract superbugs, we can use the nanotechnology approach to reduce the dose of antibiotic intake, effectively killing multidrug-resistant organisms.

"The use of nanoparticles-antibiotics combination therapy could reduce the dose intake in the human body and overcome the multidrug resistance," said Dr Shen.

Killing superbugs with enhanced copper

Researchers from CSIRO and RMIT University have developed a new copper surface that is said to kill the bacteria over 100 times faster than standard copper and could help combat antibiotic-resistant superbugs.

University's Distinguished Professor Ma Qian said a standard copper surface will kill about 97% of golden staph within four hours. When the researchers placed golden staph bacteria on the specially designed copper surface, it destroyed more than 99.99% of the cells in just two minutes, according to Qian.

Not only is it more effective, it's 120 times faster, Qian said, noting that the results were achieved without the assistance of any drug. "Our copper structure has shown itself to be remarkably potent for such a common material," he said.

The team believes there could be a huge range of applications for the new material once further developed, including antimicrobial doorhandles and other touch surfaces in

schools, hospitals, homes and public transport, as well as filters in antimicrobial respirators or air ventilation systems, and in face masks.

The researchers are now looking to investigate the enhanced copper's effectiveness against SARS-COV-2, the virus that causes COVID-19, including assessing 3D-printed samples. Other studies suggest copper may be highly effective against the virus, leading the US Environmental Protection Agency to officially approve copper surfaces for antiviral uses earlier this year.

Study lead author Dr Jackson Leigh Smith said the copper's unique porous structure was key to its effectiveness as a rapid bacteria killer. A special copper mould casting process was used to make the alloy, arranging copper and manganese atoms into specific formations.

The manganese atoms were then removed from the alloy using a cheap and scalable chemical process called 'dealloying', leaving pure copper full of tiny microscale and nanoscale cavities in its surface.

"Our copper is composed of comb-like microscale cavities and within each tooth of that comb structure are much smaller nanoscale cavities; it has a massive active surface area," Smith said.

"The pattern also makes the surface super hydrophilic, or water-loving, so that water lies on it as a flat film rather than as droplets.

"The hydrophilic effect means bacterial cells struggle to hold their form as they are stretched by the surface nanostructure, while the porous pattern allows copper ions to release faster.

"These combined effects not only cause structural degradation of bacterial cells, making them more vulnerable to the poisonous copper ions, but also facilitates uptake of copper ions into the bacterial cells," Smith said.

"It's that combination of effects that results in greatly accelerated elimination of bacteria."

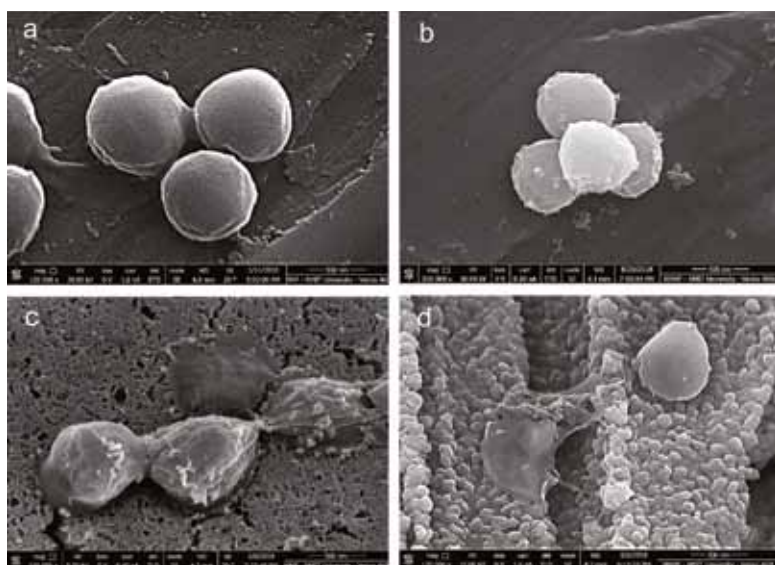
Dr Daniel Liang of CSIRO said researchers across the world were looking to develop new medical materials and devices that could help reduce the rise of antibiotic-resistant superbugs by reducing the need for antibiotics.

"Drug-resistant infections are on the rise, and with limited new antibiotics coming onto the market, the development of materials resistant to bacteria will likely play an important role in helping address the problem," Liang said.

"This new copper product offers a promising and affordable option to fighting superbugs, and is just one example of CSIRO's work in helping to address the growing risk of antibiotic resistance."

This study was initiated through an RMIT-CSIRO PhD program and was subsequently co-funded by the CASS Foundation in Melbourne, Australia. The innovative process now has patents pending in the USA, China and Australia.

Copper has long been used to fight different strains of bacteria, including the commonly found golden staph, because the ions released from the metal's surface are toxic to bacterial cells.



Images magnified 120,000 times under a scanning electron microscope show golden staph bacteria cells after two minutes on a) polished stainless steel, b) polished copper, and in c) and d), the team's micro-nano copper surface.

Demystifying Portable Air Purifiers in Healthcare



Kate Smith, Head of Clinical Solutions, Training and Support — GAMA Healthcare (RN/RM, CRNI, GCertNurs, Cert IV TAE)

Air purifiers (air scrubbers or portable HEPA filters) have attracted significant attention with hospitals, aged care facilities, office-based practices such as GPs and schools — all purchasing units to reduce transmission of harmful pathogens such as SARS-CoV-2.

But do they work? Will they protect our patients and healthcare workers from airborne viruses, and what are the considerations when choosing an air purifier for the healthcare setting?

An observational study published in *Infection Control & Hospital Epidemiology*¹, provides some insights into these questions. Set in a large Melbourne tertiary hospital, this study traced the airflow, transmission, and clearance of aerosolised particles within the clinical spaces to examine the impact of portable air purifiers.

Employing glycerin-based aerosol smoke as a surrogate for respiratory aerosols, researchers measured the movement from a single patient room into the corridor and nurses station within one ward. Rates of clearance were calculated without and then with the addition of portable HEPA filters.

Their baseline measurement demonstrated the **rapid travel of aerosols** from the patient room into both the corridor and nurse's station. The addition of two portable HEPA air purifiers to a single patient room, with the door closed, resulted in 99% of aerosols being cleared within 5.5 minutes, equivalent to **a 67% reduction compared with no air cleaners**. The researchers concluded, "Air cleaners may be useful in clinical spaces to help reduce the risk of acquisition of respiratory viruses that are transmitted via aerosols. They are easy to deploy and are likely to be cost-effective in a variety of healthcare settings."

Considerations for choosing an air purifier

Features and functions to consider when choosing an appropriate air filter can be confusing, as procurement and infection prevention teams come to terms with the language and norms associated with air purification systems. Ultimately, the filtering efficiency will depend on the air purifier's power, filtering capacity, and the space volume in the room. However, many other aspects warrant consideration.

Filters

Ensure the unit contains genuine HEPA filters and not HEPA-like filters. HEPA stands for High Efficiency Particulate Air. HEPA H13 – H14 are considered medical-grade quality, filtering a minimum of 99.97% particles down to 0.3 microns in diameter.

The addition of **pre-filters** protect and prolong the life of the HEPA filters, and **carbon or charcoal** filters reduce unwanted odours and Volatile Organic Compounds (VOCs). Filters must be changed according to facility infection prevention policies, but an air purifier unit with a **Change of Filter** notification system will aid timely removal and replacement.

Clean Air Delivery Rate (CADR)

Expressed in cubic metres per hour (m³/hr), CADR is an industry-standard measure of the air volume that the air purifier can clean. The higher the number, the more effective. An air purifier with high and variable flow rate options will ensure adequate air changes/hour.

Particle sensor

Built-in particle or air quality sensors analyse air quality within the room. The amount of PM2.5 in the air is a key indicator of air quality. PM stands for particulate matter, and 2.5 refers to size (2.5 micrometres). As the unit cleans the air, the level of improvement can be observed using a numerical or colour-coded monitor function. Units with an auto-mode will adjust the speed of the motor automatically according to air quality.

PM2.5 Value	Less than 100	101-200	201-300	>300
Air Quality	Very good	Good	Not good	Bad

Airflow

Multiple and larger intake vents provide efficient air entry to the filtering system. Ensure inlets and outlet vents are unobstructed when placing the unit within a room.

Patient comfort

Noise levels, measured in decibels (dB), is a significant consideration when used in a patient room. Look for a product that provides both minimum and maximum noise levels, reflective of low or high fan settings. A **night mode** function cuts the lights and the noise to give patients a chance to rest and recover.

Ease of use, easy to clean

Are the pre-filters easy to remove and clean? Are the HEPA filters easy to replace? Look for a unit that can be **easily moved** around the room and placed in the most appropriate position. Outer surfaces should be easy to clean, and the device should come with **cleaning instructions**, including compatible disinfectants.

Additional questions to ask

This includes the availability of replacement filters, level of after-sales support, service packages and warranty. Does the manufacturer have experience and knowledge of the policy and procedural guidelines unique to infection prevention and healthcare organisations?

Cost, of course, is a consideration with any purchase. When reviewing over-all expenditure, include not only the critical functions mentioned above, but also the price of replacement filters, additional cost-saving measures such as pre-filters, auto-mode, etc. and the expected life span of the unit.

Reference

1. Buisson KL, et al. (2021). Use of portable air cleaners to reduce aerosol transmission on a hospital coronavirus disease 2019 (COVID-19) ward. *Infection Control & Hospital Epidemiology*, <https://doi.org/10.1017/ice.202284>.



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Combating the growing antimicrobial resistance threat

Amy Sarcevic

For almost two years, the gaze of the public, healthcare system and media has been fixated on a very blatant public health threat; all the while, a 'silent pandemic' has been quietly gripping the world for decades.

Antimicrobial resistance (AMR) — where bacteria, viruses, fungi and parasites learn to outsmart the drugs designed to kill them — is one of the top ten public health threats facing humanity, according to the World Health Organisation¹. Currently claiming 700,000 lives each year², AMR is set to incur a death toll of 10 million people by 2050², dealing a US\$100 trillion blow to the global economy.

While analogies with COVID-19 have been drawn, Distinguished Professor Antoine van Oijen and Associate Professor Spiros Miyakis from the Molecular Horizons Research Institute at the University of Wollongong believe AMR is in many ways more comparable to the current climate crisis — for three important reasons. They claim these reasons give clues on how we can best combat the AMR problem.

Agricultural contribution

Much like the climate crisis, in which emissions come from cattle and sheep,

agriculture plays a big role in AMR, with a large portion of antibiotic-resistant bacteria originating from livestock.

"Around the world, farmers are feeding antibiotics to livestock in large quantities, often for therapeutic reasons, but also as a growth promoter, since antibiotics are linked to weight gain. As a result, bacteria within these animals are learning how to fight back and become resistant to the medication. These bacteria can migrate into humans and bring their resistance with them, even if their human host has never before received a prescription," van Oijen said.

While health professionals may be powerless to effect change within agriculture, it is important to recognise this key mechanism by which AMR can take place, researchers say.

"Every time you write a prescription for antibiotics, you are threatening not just that individual's chances of responding well

“Halting greenhouse emissions requires commitment from everyone, so too will AMR.”

to medication in the future, but also the community's chances. Exercising extreme caution in ensuring that prescriptions are appropriate is crucial,” van Oijen said.

Tragedy of the commons

In this respect, AMR shares further similarities with the climate crisis, in which the pursuit of personal outcomes can negatively impact society.

“AMR is where climate change was 20 years ago. Many people had an abstract sense of it being a problem, but weren't ready to make changes in their personal behaviour, for the benefit of society,” van Oijen said.

While prescribing doctors are now more careful about writing scripts, thanks largely to the introduction of antimicrobial stewardship guidelines, personal pursuits often prevail over the bigger picture.

“In some parts of the world, doctors who send patients away with a script are perceived to be better doctors than those who don't, regardless of whether that script is beneficial in the grand scheme of things. This has grown rates of precautionary

antibiotic prescribing, adding to the AMR problem,” Miyakis said.

Compounding this, patients are rarely educated about the risks and benefits of precautionary medication scripts in the same way they would be for other medical procedures.

“If you have fluid in the lung, a doctor will outline the risks and benefits of inserting a tube to relieve that fluid. Rarely, if ever, are patients sat down and talked through the risks and benefits of an antibiotic script,” Miyakis said. “The question ‘Why are antibiotics necessary here?’ should be addressed by the patients and their doctors each time a script is given. Most respiratory infections, for example, are caused by viruses and do not require antibiotics.”

While most GPs are constrained by time, the researchers recommend at least some effort on this front. Doing so may curb the rate of redundant antibiotic consumption, they suggest.

Too little publicity, too late

In a similar vein, AMR, much like the climate crisis, has been chronically under-reported

in public spheres. Historically, the topic has lacked air time in both media and education outlets, meaning GPs and the wider public may not recognise its importance.

“AMR has increasingly been reported on in the media, but not to the degree that it should. It hasn't made people sit up and listen in the way COVID-19 reporting has,” Miyakis said.

“Meanwhile, the topic of AMR is only beginning to surface in higher education programs. A lot of clinicians practising today may not have studied it at all. That's a problem because clinicians play such a fundamental role in curbing AMR.”

Community effort

Halting greenhouse emissions requires commitment from everyone, so too will AMR, according to the researchers.

“As clinicians, we must exercise extreme caution in terms of hygiene, prescribing and dispensing practices, and medical advice. Alongside patient outcomes, we must always think of the bigger picture, and ensure we are doing our part to combat this significant global threat,” Miyakis concluded.

1. <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>
2. <https://www.worldbank.org/en/topic/health/publication/drug-resistant-infections-a-threat-to-our-economic-future>



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The silver lining

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Health care's digital transformation was well underway when the pandemic first hit, but the crisis led to a massive increase in adoption and acceptance of technology by healthcare professionals as well as consumers, patients and carers.

The pandemic has also exacerbated health care's myriad challenges including staffing issues, surgery backlogs, burnout and poor mental health. "One very small silver lining has been the increasing focus on digital technologies," said Kartik Natarajan, Managing Director, ANZ at Getinge, a global medical technology company providing healthcare and life sciences equipment and services.

Natarajan sees huge potential for technological innovations, such as artificial intelligence (AI) and big data to transform healthcare delivery and help ease the burden on our already overloaded health system. As hospitals begin clearing the surgery backlog, maximising efficiency of operating theatres will be critical. "That is something that continues to be a challenge for both public as well as private hospitals in Australia and New Zealand," he said noting that the other problem that is still quite rampant is the ambulance ramping problem at hospitals. Technological innovations

"As hospitals begin clearing the surgery backlog, maximising efficiency of operating theatres will be critical."

could play a key role in addressing these challenges, improving patient outcomes as well as achieving operational, logistical and cost efficiencies, Natarajan said.

Some of the key focus areas for Getinge in Australia include assisting healthcare providers adhere to the AS/NZS 4187:2014 Reprocessing of reusable medical devices in health service organisations — but in a digital way; helping hospitals optimise workflows in the central sterile services departments (CSSDs) and improving operating theatre efficiencies; supporting

vaccine development; strengthening its digital health solutions portfolio; expanding its footprint in specialised areas — for example, ventilation to neonatal ventilation; and bringing new technologies from around the world to Australia.

The company, with a presence in over 125 countries, has a value creation partnership with Karolinska University Hospital in Sweden to improve performance in the CSSD. The project has to an increase in efficiency by 47%; cost reduction of 35%; improved quality of service from 90% on time and correct to 99%; improved working environment via reduction in staff turnover and overtime. We hope to replicate such partnerships in Australia and New Zealand, Natarajan said.

In an effort to fight climate change, Getinge has committed to go carbon neutral by 2025. The company has set up various activities to achieve this goal, including switching to renewable energy sources, updating its vehicle fleet and finding new sustainable logistics solutions, Natarajan said. The carbon neutral target will be reached by a stepwise approach across different areas and supports the company's objective to contribute to sustainable health care both environmentally and socially.



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Lippincott Procedures Australia has been mapped to the National Safety and Quality Health Service (NSQHS) Standards. The NSQHS Standards provide a nationally consistent statement of the level of care consumers can expect from health service organisations.

Anaphylaxis

demands prompt action

Associate Professor Amanda Walker, Clinical Director at the Australian Commission on Safety and Quality in Health Care, explains why clinicians and health services need to be consistent in managing this potentially fatal condition.

To observe someone experience anaphylaxis can be confronting. As clinicians know, it is a condition that demands immediate action and a prompt response could save someone's life. Recognising anaphylaxis as early as possible is crucial, as reactions can escalate quickly from the initial signs.

Each year more than 11,500 Australians present to public hospital emergency departments with anaphylaxis, and this figure is rising. It increased 51% in the five years to 2019–20.¹ It is a sobering fact that up to 20 Australians die from anaphylaxis every year, and we have one of the highest documented rates of hospital anaphylaxis admissions in the developed world.² While fatalities are not common, they are often preventable.

Given this context, it is no surprise the release of the first national standard of care for patients with anaphylaxis has been welcomed across the healthcare sector. The Australian Commission on Safety and Quality in Health Care (the Commission) released the Acute Anaphylaxis Clinical Care Standard in November following extensive public consultation.

Anaphylaxis occurs when the immune system overreacts to an allergy trigger, or allergen. Common triggers are foods such as nuts, milk, fish, shellfish and eggs, insect venoms such as wasp and bee stings, and some medicines. Up to 10% of infants and 2% of adults have food allergies.³

The burden of managing allergies to prevent anaphylaxis affects many in our community. Currently around one in five Australians, or four million people, live with allergies⁴,

including many allergies that could trigger an anaphylactic reaction. The condition can be indiscriminate and affect children and young people in the prime of their lives.

Anaphylaxis is a condition that requires management throughout the patient journey — from emergency care and acute settings to the community with general practice and specialist care. The standard describes the care that people can expect when they experience anaphylaxis and recommends priority areas for clinicians who are managing treatment across this spectrum.

Addressing gaps in patient care

Actions in the Acute Anaphylaxis Clinical Care Standard address particular gaps that

have been identified in patient care, to help ensure consistent, safe care for all patients presenting with anaphylaxis. These include ensuring timely treatment with adrenaline and strengthening the process for handover of care along the patient journey.

Based on guidelines from the Australasian Society of Clinical Immunology and Allergy (ASCIA), the standard comprises six evidence-based quality statements covering:

- Prompt recognition of anaphylaxis
- Immediate injection of intramuscular adrenaline
- Correct patient positioning
- Access to a personal adrenaline injector in all healthcare settings





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- Observation time following anaphylaxis
- Discharge management and documentation.

The standard supports healthcare workers to know how to manage patients who have signs and symptoms of anaphylaxis, which can be difficult to recognise in the early stages. If someone has a known allergy or has been exposed to a potential allergen and has signs or symptoms of a multisystem response, clinicians should consider the possibility of anaphylaxis and act appropriately.

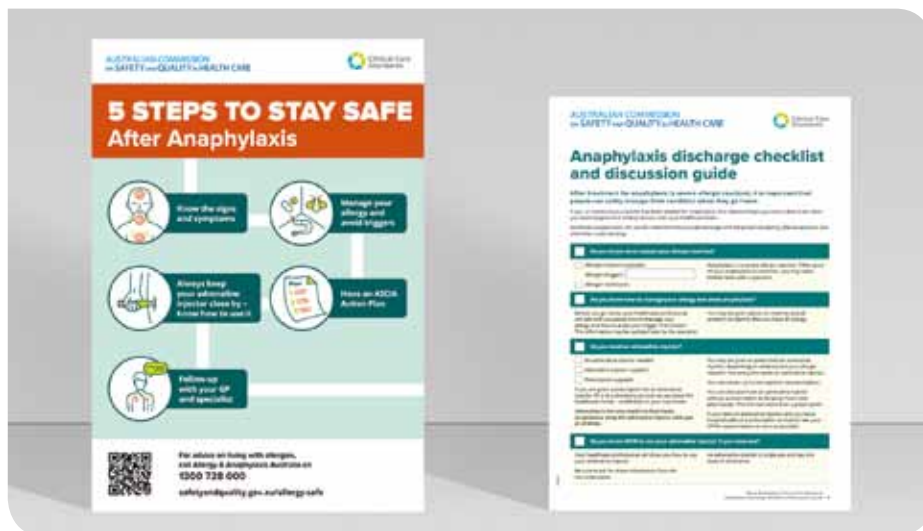
As the standard highlights, adrenaline is the first-line treatment for anaphylaxis. Intramuscular adrenaline into the outer mid-thigh carries very few risks and can quickly reduce the allergic response. Yet

“As the standard highlights, adrenaline is the first-line treatment for anaphylaxis.”

unfortunately, a study in eight Australian EDs found one quarter of reactions consistent with anaphylaxis were not given adrenaline.⁵

Noteworthy in the standard is the importance of safe practices, such as ensuring a person with anaphylaxis does not stand up or walk during their treatment and early recovery after adrenaline, in order to keep their blood pressure stable. This is a critical issue that is often overlooked when managing anaphylaxis.

There is a new recommendation in the national standard for patients at risk of anaphylaxis who have been prescribed an adrenaline injector to have access to it at all times. In most hospital and healthcare settings, patients do not usually have access



New anaphylaxis resources for health services and clinicians, including a poster and discharge checklist.



Adrenaline is the first-line treatment for anaphylaxis and can be given using an auto-injector.

after they leave the hospital's care.

The Anaphylaxis Discharge Checklist and Discussion Guide released with the new standard is a practical tool that will help to ensure patients receive the necessary education, medicines and referrals they need after being treated for anaphylaxis.

For people at risk of anaphylaxis, it is vital that they are educated about how to manage their allergy and have an ASCIA Action Plan. Education should include how best to avoid their allergen, how to recognise anaphylaxis symptoms and how to correctly use a personal adrenaline injector, if this is needed.

to their own medicines — largely for their own safety. This is now one important exception, with the Commission calling on healthcare providers to ensure the adrenaline injector can be kept with the patient wherever they are, so they can use it if they need to.

How anaphylaxis is managed throughout the patient experience is also a key focus — from when symptoms first appear, to treatment and discharge from hospital. Communication is vital to patient safety at these key transitions of care.

Safe discharge and handover of care

When someone has experienced anaphylaxis and is leaving hospital, we are sending a vulnerable person out into the community. There needs to be a safe discharge and clear handover of care to the patient's GP and immunologist. The clinical care standard sets out how to discharge patients safely, to ensure they are well prepared to manage future anaphylaxis events that may occur

If an adrenaline injector is required, the hospital should ensure the patient has one when they leave hospital, or can get one immediately afterwards.

As well as health professionals, family members and carers of those people at risk, their teachers and childcare workers need information so they can help treat someone experiencing a severe allergic reaction. Health services and clinicians are an essential conduit for sharing this information with the wider community. The Commission has also developed a consumer guide to the standard, which clinicians can use to have conversations with their patients.

Strong support for new standard

It is pleasing that the new clinical care standard has been endorsed by 16 medical and nursing colleges, including the Australasian Society of Clinical Immunology and Allergy, the Australasian College for Emergency Medicine, the Australian College

of Nursing, the Australian College of Rural and Remote Medicine, the Australian and New Zealand College of Anaesthetists and the Royal Australasian College of Physicians.

In the development of the standard, the Commission has worked closely with the National Allergy Strategy, a partnership between the Australasian Society of Clinical Immunology and Allergy (ASCIA) and consumer peak body Allergy & Anaphylaxis Australia (A&AA).

Learn more about the standard, download our resources or view our expert panel discussion at: safetyandquality.gov.au/anaphylaxis-ccs.

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Associate Professor Amanda Walker is Clinical Director at the Australian Commission on Safety and Quality in Health Care and led the development of the Acute Anaphylaxis Clinical Care Standard.

At the Commission, she is focused on the development of clinical care standards, resources to address Hospital Acquired Complications and support for clinicians to provide Comprehensive Care. She is a Specialist in Palliative Medicine in the Southern Highlands of NSW and has led state-wide work in end-of-life care at the Clinical Excellence Commission in NSW.

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Optimal cord clamping

An Australian-led study has found that aiming for 60-second delay in clamping the umbilical cord of very premature babies at birth reduces the child's risk of death or major disability.

The research, led by the University of Sydney, is a two-year follow-up of the Australian Placental Transfusion Study, the clinical trial of delayed cord clamping of babies born before 30 weeks. It was conducted in 25 hospitals across seven countries.

The latest study compared outcomes for over 1500 babies from the initial study, 767 with caregivers aiming for 60-second delay in clamping and 764 with caregivers aiming for cord clamping before 10 seconds after delivery.

The researchers found that delaying clamping reduces a child's relative risk of death or major disability in early childhood by 17%, which included 30% reduction in mortality before the age of two.

In addition, 15% fewer infants in the delayed-clamping group needed blood transfusions after birth.

It is coordinated by the University of Sydney's NHMRC Clinical Trials Centre in collaboration with the IMPACT Clinical Trials Network of the Perinatal Society of Australia and New Zealand and the Australian and New Zealand Neonatal Network.

Study lead Professor William Tarnow-Mordi, Head of Neonatal and Perinatal Trials at the Clinical Trials Centre and Professor of Neonatal Medicine in the Faculty of Medicine and Health, said the simple process of aiming to wait a minute before clamping will have significant impact worldwide.

"It's very rare to find an intervention with this sort of impact that is free and requires nothing more sophisticated than a clock. This could significantly contribute to the UN's Sustainable Development goal to end preventable deaths in newborns and children under five — a goal which has really suffered during the pandemic," he said.

"Applied consistently worldwide, aiming to wait a minute before cord clamping in very preterm babies who do not require immediate resuscitation could ensure that an extra 50,000 survive without major disability in the next decade," said biostatistician Dr Kristy Robledo from the University of Sydney who led the two-year follow-up analysis.

"In other words, for every 20 very preterm babies who get delayed instead of immediate clamping, one more will survive without major disability."

Why wait

Delayed umbilical cord clamping is routine in full-term babies to allow the newborn time to adapt to life outside the womb; however, until recently, clinicians generally cut the cord of preterm babies immediately so urgent medical care could be given.

"Ten years ago, umbilical cords were routinely clamped quickly after a very preterm birth and the baby was passed to a paediatrician in case the child needed urgent help with breathing," Professor Tarnow-Mordi said.

"But we now know that almost all very preterm babies will start breathing by themselves in the first minute, if they are given that time.

"We think that, after delaying cord clamping, babies get extra red and white blood cells and stem cells from the placenta, helping to achieve healthy oxygen levels, control infection and repair injured tissue."



Dr Kristy Robledo, Biostatistician, the University of Sydney, who led the two-year follow-up analysis.

What does this mean for babies born today?

The childhood follow-up to the Australian Placental Transfusion Study is the largest worldwide two-year follow-up of preterm cord clamping providing the best evidence to date on positive outcomes at two years of age.

Co-author and founder of Miracle Babies Foundation Melinda Cruz, herself a parent of three preterm babies, said she hoped the results would give parents confidence to discuss their options with their birthing professionals.

"I hope that prospective parents around the world will read about this trial for themselves and discuss it with their midwives and obstetricians," she said.

From research to practice

The first evidence, published in the *American Journal of Obstetrics and Gynecology*, indicating that delayed umbilical cord clamping might have benefits for preterm infants and their mothers came in 2017 from a systematic review of randomised trials in nearly 3000 preterm babies.

The Australian Placental Transfusion Study led by Professor Tarnow-Mordi was the largest of these trials and went on to be named winner of the 'Trial of the Year' by Federal Health Minister Greg Hunt MP and the Australian Clinical Trials Alliance in 2018.

While the World Health Organization recommends that newborns, including preterm babies who do not require positive pressure ventilation, should not have their cord clamped earlier than one minute after birth, this has not always been consistently applied.

Next steps

"Midwives welcome this research — delaying cord clamping ensures that the physiological changes happening at the time of birth can happen and there are clearly very good outcomes especially for premature babies. We can all do this and now we know we should," said Professor Caroline Homer, President of the Perinatal Society of Australia and New Zealand and past President of the Australian College of Midwives.

"Intensive staff training in the new protocols will also be vital as it can be daunting to delay treatment in very early and sick babies, but the evidence suggests this results in the best outcomes for these children."

"Moving forward it's vital that perinatal professionals record the time of first breath and cord clamping to the second during births to allow for robust, large-scale data to further our work in this area," said co-author Professor Jonathan Morris, Professor of Obstetrics and Gynaecology at the University of Sydney and Director of Women and Babies Research at The Kolling Institute.

"Intensive staff training in the new protocols will also be vital as it can be daunting to delay treatment in very early and sick babies, but the evidence suggests this results in the best outcomes for these children."

The ALPHA Collaboration (Advancing Large collectively Prioritised trials for Health outcomes Assessment) will be vital to taking this research forward. They are an international collaboration of perinatal researchers, professionals, parents and policymakers who work with organisations and individuals worldwide to ensure that trials like this can, in the future, run at least 10 times larger and faster, in a new era of increased international collaboration.

The study is published in *The Lancet Child and Adolescent Health*.



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Eliminate the silos that inhibit evidence-based practice improvements

Look for a cohesive solution offering history, collaboration, and the right evidence.

With the ever-stronger focus on quality patient care and how hospitals or health systems administer it, professional staff must use a combination of its clinical expertise, patient values, and the best research evidence to drive improvement.

They're all on the same page when it comes to wanting the facility to be the best place to receive and administer care. But despite that common goal, how often does the left hand know what the right hand is doing? When each department or quality improvement team functions in a vacuum, it's much more difficult for the entire organization to learn and improve. They need a single location where everyone can see the right evidence and apply it appropriately without starting from scratch.

Information silos are the norm — but shouldn't be

Generally, employees involved in evidence-based practice are well aware that they're functioning in an insulated environment. They may be working in a single department on one floor in one building of a large complex, on a project relevant only to that environment. They also recognize that they have little or no awareness of the hospital's other EBP efforts.

Why don't they know the history? Because it takes time and more than a bit of detective work to track down the last person knowledgeable about a related project and its results in the hospital. Teams often find it

easier and less cumbersome to just start over between personnel turnover and information scattered in multiple locations.

Many quality improvement chiefs and C-suite executives are also aware of the information silos. They recognize that it actually requires all disciplines and departments to work together to implement and sustain most improvements.

Efforts to break down silos limited so far

Hospitals don't purposely choose siloed EBP; many do make efforts to share information. Spreadsheets, a channel in Microsoft Teams, and group meetings are just some methods for reducing or eliminating the lack of communication. But these tactics often lead to delays, and the shared information is not always evidence-based, detailed, or current enough to successfully implement EBP.

Implementation of evidence-based practice made easier

So how do you improve the quality of evidence-based practice? First, the CEO and executive team must promote a culture of change and value continuous quality improvement (CQI). It's the best way to increase influencer and stakeholder buy-in and drive advancements. Change management also takes communication, education, monitoring, and continued follow-up. If those in the C-suite aren't champions of

change, the hospital's values will reflect that, and the silos will remain.

Next, find a single platform that establishes and coordinates EBP workflows — allowing everyone to see and learn from what has happened in the past, what's being done now, and what is planned for the future. With templates that all participants can easily access and use, it will drive a cohesive process previously unavailable to hospitals and health systems.

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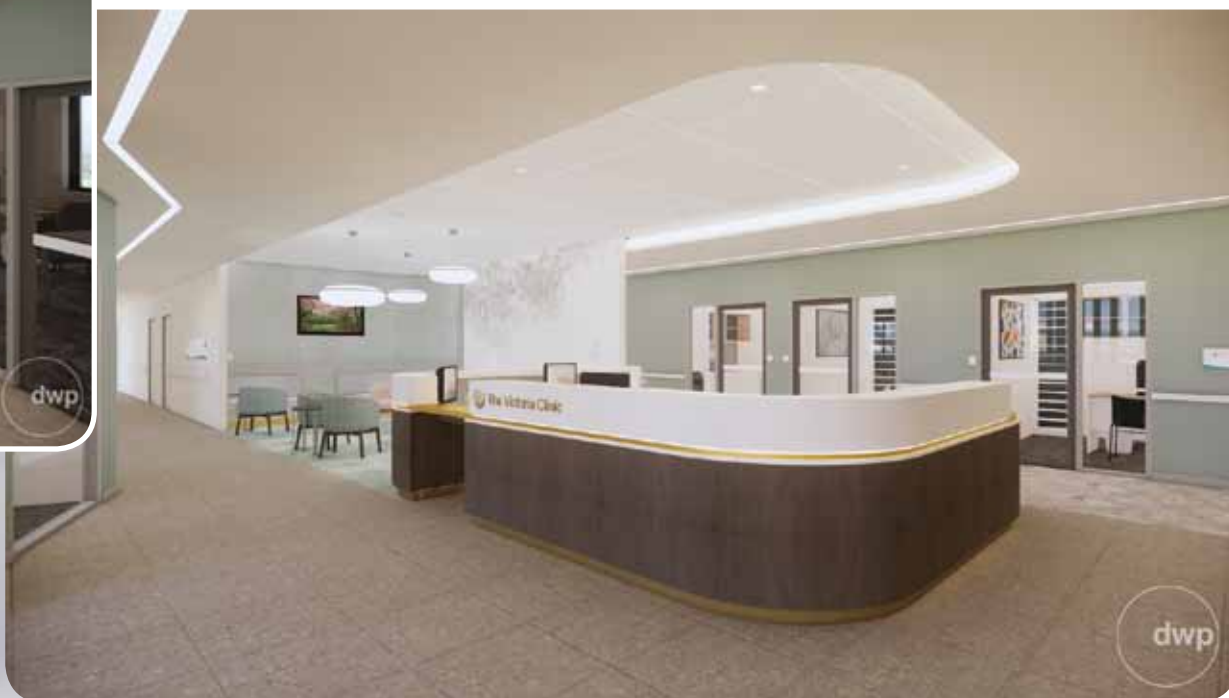
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“The new-look clinic will also offer an expanded range of mental health services, including additional trauma-based services and an elderly care unit, as well as a rooftop gymnasium and outdoor garden area.”





Meeting growing **mental health needs**

Melbourne mental health facility The Victoria Clinic is in the process of a \$50 million upgrade that will vastly expand its service offering. The upgrade comes as the Healthscope-operated clinic celebrates 20 years of serving the local community, and also follows a substantial increase in demand for mental health services brought on by COVID-19.

The Victoria Clinic will expand its number of beds and add 20 new consulting suites, as well as 15 additional psychiatrists. Staffing levels will also increase from the current 120 employed at the clinic, with an additional 200 staff. The new-look clinic will also offer an expanded range of mental health services, including additional trauma-based services and an elderly care unit, as well as a rooftop gymnasium and outdoor garden area.

On completion, the clinic will go from its current single level to a six-storey structure, with a multi-level carpark for patients, staff, doctors and visitors. Patient admissions and treatment programs will continue as normal throughout the redevelopment.

The Victoria Clinic's General Manager, Allison Carr, said that when planning the development, the clinic worked closely with staff, patients and treating clinicians to ensure their feedback was incorporated into the design process.

Carr said that the expansion will also provide opportunities for new psychiatrists to take up private practice in their local area, with new specialist consulting rooms, increased car parking, a new main reception and patient admission facilities among other important additions.



“With one in five Australians aged 16–85 now experiencing a mental illness in any year, it was crucial for The Victoria Clinic to continue evolving and expanding its services and staff to keep up with growing demand for local mental health services.”



“The expansion is timely in allowing us to increase capacity at The Victoria Clinic to better meet the growing need for mental health treatment. As we have done throughout the pandemic, we continue to scale our services to better support patients and their families, primary care providers and our healthcare partners,” Carr said.

“We will offer a wider breadth of inpatient treatments to the local community such as ECT services, SCHEMA therapy, EMDR therapy and TMS. The upgrades will also allow patients to access a modernised and purpose-built facility with 115 beds available once the changes are completed.”

Work on the site expansion began just over a year ago in September of 2020, and is due for completion in early 2023.

Carr added that COVID-19 has resulted in a substantial increase in demand for services. “The current climate has led to increased first presentations, in addition to presentations where the severity of underlying mental illness has been exacerbated by the pandemic.”

With one in five Australians aged 16–85 now experiencing a mental illness in any year, Carr said it had been crucial for The Victoria Clinic to continue evolving and expanding its services and staff to keep up with growing demand for local mental health services.

“Almost half (45%) of Australians will experience a mental illness in their lifetime (ABS, 2009). The most common mental illnesses are depression, anxiety and substance use disorder. These three types of mental illnesses often occur in combination. Mental health is a growing area of need in both our community and across Australia, and the demand for local services is outstripping our current capacity.”

Carr said that increased recognition of the need to support mental health services by the government has assisted patients seeking help in recent times.

“The government focus in this area has seen important changes to support people with mental health needs. Patients can now upgrade their private health insurance to cover mental health services with no waiting periods.”





How technology can protect lone healthcare workers

Lone workers are employees that cannot be seen or heard by a colleague for either all or part of their working day. Think of in-home carers that visit vulnerable people. Or anyone that visits a site on their own. But that definition has broadened significantly through the pandemic. Workers that were traditionally in a centralised location or working closely with others are now operating independently, making them more vulnerable to risks that they previously weren't exposed to.

Healthcare employers have a growing number of lone workers to whom they owe a duty of care. While much of the initial focus of the rapid shift to remote working targeted productivity, worker safety is equally, if not more, important.

There are a number of key issues for employers to consider as the number of lone workers has increased. The most obvious changes are that the time and place of work has shifted. Instead of working in centralised spaces, people are working from more places than ever. And their work hours are more flexible. Many workplaces, especially more progressive ones, have shifted their thinking from people working fixed hours to focusing on outcomes.

Communications have always been important but need to be adapted to increasingly remote work. For workers exposed to potentially hazardous situations, having the ability to easily respond to a message with a single tap or click, or having a duress alarm that can be easily activated can ensure that workers are safe. And that can include automatic escalation of an issue if a worker doesn't respond to an alarm in a timely way.

When it comes to ensuring people's safety, understanding where people are during an incident is vital. During an emergency, knowing where people are can make a marked difference in the nature and speed of the response. Instead of spending time looking for people, location-aware apps and services can tell you whether someone is in the danger zone so they can be notified. It also ensures people not directly impacted aren't flooded with unnecessary messages.

The focus on location can be extended through the concept of a 'safe corridor'. A safe corridor is a way that a worker can transit with enhanced duty of care. As they are moving between two locations, if they don't check-in with a defined time, a distress message is automatically triggered. In addition, it can trigger the automatic capture of audio

and video so a quick reconnaissance can be carried out to assess the situation to ensure anyone coming to help the worker is not exposed to a dangerous situation without being properly prepared.

This type of geofencing can also be used to alert people when they enter a potentially hazardous or unsafe environment, they can receive an automatic alert as they enter the area. While there may be concerns about privacy, these can be allayed by only enabling these fences when they are required and by ensuring the employee proactively shares their location.

With more and more people working independently and remotely, Employers need to ensure they maintain their duty of care obligations. They can no longer rely on most team members being in the same place or that traditional communications methods will reach people in a timely way. Services, such as those offered by Everbridge can be used to provide panic button capability on smartphones, tablets and wearables and automated check in using geo-location and safe corridors.

The right technology can help organisations mitigate the risks of a growing number of lone workers.

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Bringing the **outside in**





Victorian aged-care provider Luson recently opened its state-of-the-art aged-care residence, Bloom, in Clyde North.

As a result of The Royal Commission, effects of COVID and the changing demands from families and residents, Bloom was designed to cater to the growing need for more holistic and better designed aged-care homes that support the full spectrum of personal, social and practical needs of residents and their families.

Offering the full range of care services including palliative, respite and dementia care, the facility is designed by Melbourne architecture firm CHT Architects along with SORA Interiors. The contemporary design de-institutionalises the space to create a homely and welcoming environment.

The facility incorporates a community feel much like a little shopping strip while also using feature joinery screens throughout the home to provide pockets of private and peaceful settings.

COVID-safe practices have also been considered throughout the design, including integrated sanitation stations and the ability to close off separate wings of the building if required.

Set amongst the residential development by the same name, Bloom's architecture complements the surrounding homes. The design features pitched roofs, double-storey glass front and standing seam cladding, a gentle nod to the rural context of the site.

The variety of modern living and lifestyle facilities more commonly relate to those at a boutique luxury hotel. The spacious private rooms with ensuites have an abundance of natural light with individually controlled hydronic heating and cooling.

Dedicated areas feature throughout the home including private dining serveries, library, in-house hair salon, gold-class cinema, gym, outdoor entertainment areas, manicured gardens and interactive raised veggie pods. The space has been designed to facilitate social engagement and interaction, while also having the ability for individual privacy or time with family.

The facility is backed by industry-leading standards and offers quality in-care services from clinical and health care to daily living and social wellbeing in a generous and homely environment.

The General Manager of Luson's Bloom, Chipo Nyemba, said, "We have created an environment that fosters a sense of community, while supporting independent living with professional care.

"Bloom represents the growing desire for more integrated and better designed aged-care homes that support the full spectrum of personal, social and practical needs of our residents and their families.

"The vision for Bloom is apparent in its culture that prioritises the needs of residents, their families and the team to provide the highest standards and care for the greatest quality of life."



Improving NDIS support in rural, remote Australia

Dr Annie Banbury, Clinical Research Lead at CoviU

NDIS participants living in rural and remote Australia are facing significant issues accessing support to achieve their goals. This is resulting in a mammoth amount of unused funds and many left needing help.

In fact, the latest research has shown that 27% of NDIS funding goes unused for those on their fifth plan, equating to \$30,252 per participant. The enormous loss of unused funding was reflected in the final budget figures for 2018/19, in which the NDIS was underspent by about \$4.6 billion.

With this in mind, how can we combat this challenge and work to ensure NDIS participants in rural and remote Australia are getting the support they're recommended and need? Some simple solutions lay in increasing access to NDIS providers and reducing the funding that is used for travel. Here, I suggest some issues to be explored.

Increasing rural and remote access to NDIS providers

There's a multitude of reasons why participant funding often remains unused. One key reason is that there's a lack of relevant allied health professionals in rural and remote areas who are necessary to support participants in achieving their goals — from building skills and independence, to preparing to work or study in the future.

When looking at rural and remote Australia, there are insufficient allied health providers. Remote areas have less than half the number of psychologists (65% less), 50% fewer physiotherapists and 65% fewer occupational therapists for comparable population sizes. This disparity means participants have a lack of access, which can hinder their ability to achieve

“Some simple solutions lay in increasing access to NDIS providers and reducing the funding that is used for travel.”

their goals, making the NDIS program less effective for them.

By tapping into technology tools, and specifically video telehealth services, NDIS participants in rural and remote areas can have ongoing and more frequent support from providers to help them set and achieve their goals. It also provides access to a broader pool of allied health professionals with specific expertise, making the NDIS program and support more effective.

Already rural and remote Australians have expressed interest in the increased telehealth offerings in line with the COVID-19 lockdowns. The 70% increase in access to telehealth amid lockdowns was described as a lifeline to rural and remote participants. This positive response to telehealth shows the appetite that patients have for this technology and, ultimately, identifies telehealth as part of a solution to overcoming the lack of access.

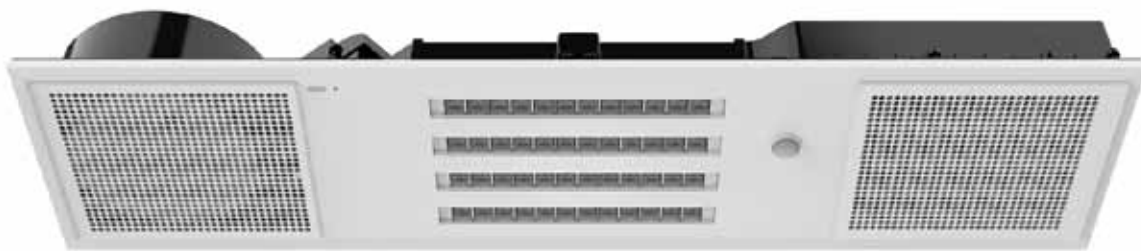
Reducing funding being used for travel

Another key challenge is the use of funding to cover the travel costs of health practitioners

and non-clinical staff such as support coordinators. In metropolitan areas, a provider may travel over 30 to 40 minutes each way to visit a participant. However, the travel time is a cost incurred by the NDIS participant and deducted from their budget. In a rural area, travel times increase significantly, incurring considerable cost for the participant. This money would be better spent on services that directly benefit the individual in helping them achieve their goals.

The issue with the cost of travel is the inequality of fund use between rural, remote and metropolitan participants. Increased access through telehealth, for appropriate appointments, can play a key role in overcoming this problem. Connecting participants and allied health professionals digitally means less of the funding will be allocated to covering travel costs and, instead, more time on actual support or therapy — whether that's with a physiotherapist, speech pathologist or other provider.

There's a lack of health services available to rural and remote Australians, which places a burden on rural and remote NDIS participants, resulting in reduced support and misused or wasted resources. For suitable consultations, telehealth increases accessibility to a wider range of NDIS providers, allowing rural and remote Australians to receive regular and ongoing support from health professionals. It also removes the costly necessity of funding being spent and, ultimately, wasted on travel. In order to better support the NDIS community, we must adopt solutions to accessibility restraints to maximise the benefit participants can achieve.



Meet Aether: The air purifying light fitting that eliminates 99.995% of airborne viruses

In the battle against the pandemic, Australian company Pierlite shows how air purifying lighting solutions can keep more healthcare environments safe.

As Omicron cases surge across Australia, healthcare providers now have a very different set of safety challenges on their hands. The high transmissibility of Omicron means providers must not only treat more infected patients, but also avoid workforce shortages by better protecting clinical staff.

Reducing airborne transmission is critical to the solution. More than ever, healthcare providers must provide occupants with air that is safe and free of pathogens.

In hospital wards and emergency departments, air safety has long been a focus, with strict airflow and disinfection protocols already in-place. Despite this, spaces such as waiting rooms, consultation rooms, bathrooms and corridors are often left unprotected. With Omicron, we can no longer take chances.

This year must see healthcare providers increase air safety coverage to all rooms, no matter the size, using localised medical grade UV-C light and HEPA air purification solutions.

At the forefront of these air quality solutions is the Aether LED Troffer, a state-of-the-art air purifying luminaire that is easily installed in regular hospital or healthcare ceiling grids. Aether is developed by Pierlite, an Australian provider of lighting and technology solutions to healthcare organisations for over 70-years.

Pierlite believes the presence of ceiling lights in all healthcare environments today makes lighting the perfect vehicle to deliver safer, pathogen-free air.

"It's true that Australian healthcare facilities have always had protocols to minimise virus transmission indoors, but this is not the case in all rooms. Outside infectious disease wards, bathrooms, corridors, consulting rooms and

even waiting rooms are exposing occupants to risk," said Lydell Stokes, Pierlite's National Manager – Future Markets.

"Most healthcare environments already have modular ceiling lighting. With Aether, hospitals can leverage this infrastructure to deploy a best-in-class, medical-grade solution that has been proven to inactivate and remove 99.995 per cent of airborne pathogens. This means better patient outcomes, healthier staff and less risk."

Features of Aether LED Troffer

Pierlite's Aether LED Troffer is a medical grade smart fitting that functions as a traditional luminaire. It utilises LED modules to beautifully illuminate indoor spaces. It is, however, Aether's air purification capabilities that make it a truly groundbreaking technology.

The Aether luminaire contains an active air flow system with a separate air inlet and outlet on either side of the fitting and an air chamber in its centre. Using a quiet, long-lasting motor, air is actively drawn from the room into the air chamber, where it is exposed to ultraviolet (UV-C) radiation that instantly kills bacteria cells and inactivates viruses by damaging their DNA.

The air then passes through a medical grade H13 HEPA filter, which traps and removes harmful pathogens. Clean air then safely returns back to the room.



Last year, an independent study by Germany's Biotech GmbH Lab verified that with just a single pass-through, Aether successfully inactivated and removed 99.995 per cent of harmful pathogens from the air. In a second trial using the TGA-recommended human coronavirus HCoV-229E, Aether reduced the viral load during a single passage with an inactivation rate of over 99.9 per cent.

Benefits of Aether LED Troffer

- Purpose-built for Australian hospitals and healthcare providers
- Clinically proven to inactivate and remove 99.995% of pathogens from the air
- Easily installed in ceiling grids present in Australian hospitals
- Dual UV-C and HEPA filter purification system
- Designed to operate continuously and safely in occupied rooms
- Easy maintenance with replaceable UV-C LED module and HEPA filter
- Provides smart air quality and energy usage analytics in real-time

As healthcare providers prepare to tackle a new wave of safety challenges, best-in-class technologies like Aether can be relied upon to make indoor environments safe.

Learn more about Aether at <https://www.pierlite.com.au/supporting-safer-environments>.



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For more information
Pierlite Australia Pty Ltd
www.pierlite.com.au

Clinical trials:

from clinics to couch

Edwin Ng, Senior Vice-President, Asia-Pacific,
for Medidata, a Dassault Systèmes company



COVID-19 has shed a spotlight on the role of clinical trials in drug and vaccine development, and has also forced Australia's pharmaceutical and healthcare companies to redesign how these trials are run.

In an era of lockdowns and restricted movement where it may not be desirable for many participants to get to physical sites, the clinical trial industry has had to follow in the footsteps of other healthcare services in the past 18 months, in moving from clinics to the couch so that important research can continue remotely.

This promises many benefits, not least the possibility of shortening timelines for important drug and vaccine development. However, issues of interoperability and data privacy will need to be urgently addressed for it to achieve its full potential in Australia.

In fact, interoperability and quality assured technology has been flagged as an area requiring attention for effective and sustainable adoption of virtual health by The Australian Healthcare & Hospitals Association¹.

Moving clinical trials into a home setting is the next frontier, following on from the shift of other healthcare services out of hospital and clinical settings since the start of the pandemic.

From online consultations with doctors to remote monitoring of patients' vital signs, COVID-19's acceleration of telehealth in Australia has already been well documented. Deloitte predicts Australia will exceed the global average for telehealth adoption with more than 10%² of Australians regularly using telehealth services in 2021.

The development of eConsent systems and patient portals — whereby patients can access all information relating to the trial in one place and consent via an eSignature — also makes the enrolment process much easier, without patients even having to leave the comfort of their sofas.

For clinical trials, the additional opportunities centre around using apps, sensors and wearables in the home to track important health indicators — like respiratory rate, sleeping patterns, blood pressure and heart rate — that were previously measured at specific points in time during onsite visits and check-ins.

For the first time, this opens the possibility of continuous patient monitoring through passive devices working in the background to collect data 24/7, rather than just gathering data at specific points in the year when patients have physical appointments.

A paradigm shift

For an industry that has relied on paper-based documentation and patients being monitored at fixed sites for decades, this is a breakthrough with huge potential benefits.

Especially in Australia with patients based remotely, commuting to trial sites can be a burden, including lost days from work, travel costs and time. Removing the barriers to taking part is a major boon for an industry that regularly cites patient recruitment and retention as its biggest obstacle.

Collecting and analysing patient data in real time also allows for early detection of both trends and issues, so that important adjustments can be made while trials are ongoing.

As in other industries, digitisation of clinical trials also promises to free up staff from cumbersome administrative tasks so that they can focus more attention on value-add roles, and continuous monitoring will provide much richer data sets.

Australia's combination of high device penetration, 5G rollout and Smart Cities Plan makes it an ideal testbed for facilitating this shift to the home. However, some issues to its wider adoption remain.

Patient first

Patient willingness to take part in trials from home will be the main deciding factor in how quickly and successfully this new model can be adopted in Australia.

Allowing patients to use their own smartphones and devices, rather than having to incorporate separate, provisioned devices into their daily routine, is one way to get patients onboard. This will require a complete rethink of the way trials are designed. However, the even bigger issue

“For remote clinical trials to be effective, all of the different devices and systems in the patients’ homes and the lab need to connect seamlessly.”

to be addressed is reassuring patients of their privacy. Privacy is a major concern for 70%³ of Australians, and almost 9 in 10 want more choice and control over their personal information. The way we address this concern is through transparency.

Transparency is key to building trust, and Australia's government and industry will need to work together in prioritising patient safety. This needs to be built into every stage of trial design and the industry needs to consider not only the minimum privacy protection requirements by law, but to benchmark against the most stringent standards in the market.

Interoperability is the other major challenge. For remote clinical trials to be effective, all of the different devices and systems in the patients' homes and the lab need to connect seamlessly. This includes the patients' own smartphones and devices.

While COVID-19 was the trigger, it's unlikely that the industry will ever go back to its old operating model. Ten years from now, there probably won't be a clinical trial that isn't measuring potential biomarkers continuously rather than at discrete points in time, whenever they can. Australia has the set-up and infrastructure to be a pioneer in this field, provided government and industry work together to put patients first.

1. The effective and sustainable adoption of virtual health care — https://ahha.asn.au/sites/default/files/docs/policy-issue/ahha_blueprint_supplement_-_adoption_of_virtual_health_care_-_july_2020_0.pdf
2. Telehealth to boom, Australia leads the way in commercialising women's sports, 5G health risk perception to wane — <https://www2.deloitte.com/au/en/pages/media-releases/articles/telehealth-boom-australia-leads-way-commercialising-womens-sports-5g-health-risk-perception-wane-160321.html>
3. 2020 Australian Community Attitudes to Privacy Survey — <https://www.oaic.gov.au/engage-with-us/research/australian-community-attitudes-to-privacy-survey-2020-landing-page/2020-australian-community-attitudes-to-privacy-survey/>



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Smart Hospital, Resilient Organisation

Benjamin Kanter, MD, FCCP Chief Medical Information Officer, Vocera



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Health Information Technology Can Enable Organisational Resilience

Clinical and operational systems push out notifications about patient care events: a patient is deteriorating, is about to fall, or has pressed the nurse call button.

For care teams to respond effectively to notifications from multiple different systems, the hospital's digital infrastructure must be able to rapidly convert this data into actionable information.

The ability to respond rapidly characterises hospitals that successfully navigate crises and is a major factor in what makes an organisation resilient.

A smart hospital leverages its digital infrastructure to continuously derive insight from its systems and rapidly address operational and clinical challenges.

Information Must Be Communicated to Be Acted Upon

But deriving insight is not enough. Information must be communicated if it is to be acted upon. This is why a modern clinical communication and collaboration (CC&C) platform is foundational infrastructure for a smart hospital.

Rapid sharing of organisational knowledge is critical because most problems that arise during patient care are event-driven and time-dependent. Without a modern CC&C platform, connections in the information chain depend upon fallible staff members, and this fallibility can introduce

opportunities for communication delay or failure. If knowledge sharing is delayed, the consequences can be profound for both the patient and the organisation. For example, the length of time taken to rescue patients with unexpected clinical deterioration has been correlated with poorer outcomes, including excess days in the ICU and increased mortality rates.

To Shorten Time to Act and Intervene, Communication Is Essential

Smart hospitals enable caregivers to shorten their time to act and intervene by integrating systems with a comprehensive communication platform.

Most health information technology systems implemented in hospitals can send notifications about the status of a patient or the monitoring system itself. Unfortunately, these systems are often siloed, resulting in an excessive number of uncoordinated notifications while contributing to cognitive overload and burnout.

The Solution: Break Down Silos Through CC&C Interoperability

The solution is a CC&C platform that can receive and analyze data from multiple systems and orchestrate the necessary actions. Smart hospitals require a solution that can make sense out of chaos, ensuring data is converted into information and distributed efficiently.

At the most basic level, a CC&C platform includes three elements: inputs, a processing layer, and outputs.

Inputs come from clinical and operational systems that send messages and alarm notifications. The Vocera CC&C platform has more than 150 integrations with health IT systems through the Vocera Engage intelligent workflow engine; those integrations serve as input to the main platform's processing layer.

The processing layer aggregates data streaming in from the various systems. It breaks down silos so data from independent sources can be merged and processed together using a system of rules. If a rule determines that information needs to be transmitted, the system routes it to the right person or team based upon role, responsibility, and availability. The same platform constructs an audit trail and provides analytics and reporting.

Given data feeds from staff assignment systems, EHRs, and digital on-call schedules, the Vocera system creates and maintains a real-time care team directory for each patient. It tracks who's currently working, their role, which patients they're caring for, and their availability. Maintenance of this up-to-the-moment care team is crucial to the outputs — delivering the right information to the right people and helping to reduce interruption fatigue.

An optimal CC&C platform integrates with multiple different systems, processes data, and intelligently distributes information to those responsible for acting. As a direct result, hospitals become more efficient and patient outcomes are improved, while communication burdens for physicians and nurses are reduced.

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Advancing digitally enabled hospital-at-home services

Dr Sharon Hakkennes*

Virtual care adoption accelerated dramatically in Australia in the wake of COVID-19. This was driven by the need to minimise the risk of the virus spreading, free up bed capacity for acutely unwell patients, and preserve personal protective equipment (PPE).

One area that has seen substantial growth is hospital-at-home models of care. While Australia has had well-established hospital-at-home services for many years, the pandemic has fuelled further interest in this model and is accelerating the development of new models of hospital-at-home care. Many of the traditional barriers, such as clinician understanding of the relevance of the model and patient concerns about being cared for at home, no longer exist.

Gartner predicts that 40% of healthcare providers will shift 20% of hospital beds to the patient's home by 2025, by offering digitally enabled hospital-at-home services, improving patient experience and outcomes, and reducing costs.

Advances in hospital-at-home technologies

Hospital-at-home services consist of acute-level health care that is enabled by multidisciplinary teams, digital technologies and ancillary services. It is delivered in the homes of patients who would otherwise require admission to an inpatient facility. Advances in virtual care technology are enabling higher acuity patients to be cared for at home and delivery of hospital-at-home models of care at scale.

For healthcare providers, establishing hospital-at-home services requires the development of new capabilities across clinical (such as home infusions and diagnostic testing) and logistics (such as delivery of medical supplies) domains.

Healthcare providers must decide whether to build these capabilities internally or to partner with a third party to supplement their existing capabilities. Calvary Health's partnership

with Medibank Private is one such example, delivering the new My Home Hospital program across metropolitan and outer suburbs of Adelaide in South Australia.

Irrespective of how services are organised, the flow of clinical information across service lines is a must for minimising clinical risk associated with transitions in care, as is the ability to access this information on any device for this highly mobile clinical workforce. Therefore, the underlying technology platform supporting the program must enable seamless integration of information across the entire value chain.

Technology advances, particularly in the area of remote patient monitoring, are dramatically changing the capacity to care for patients in their homes. Medical-grade wearable biosensors are enabling the continuous collection and monitoring of a patient's physiological parameters.

Applying analytics, artificial intelligence and machine learning to this data, combined with subjective information collected from the patient and data contained within the electronic health record (EHR), drives scale through clinical decision support, eg, through the alerting of clinicians to patients with early warning signs of deterioration and those who require urgent attention.

How to advance hospital-at-home

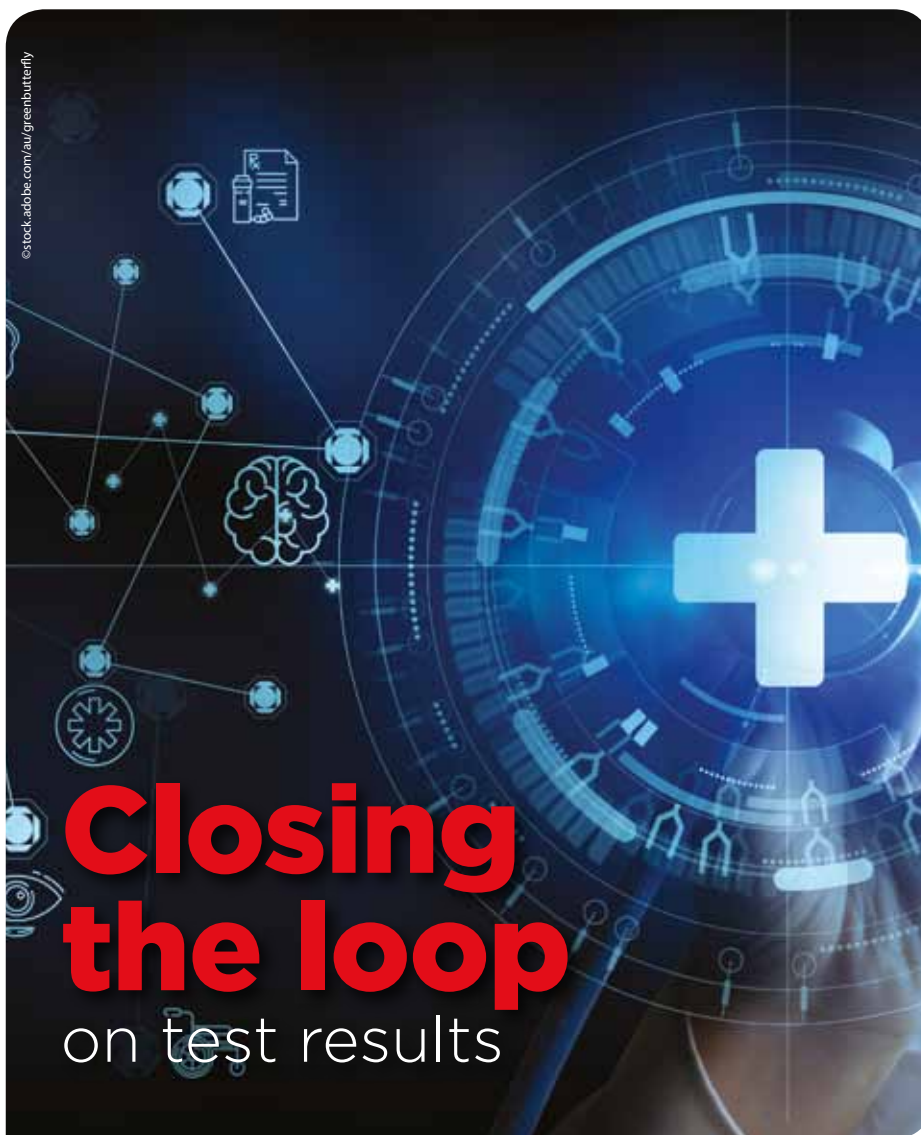
In establishing or scaling hospital-at-home services it is incumbent upon healthcare providers to ensure virtual care technologies meet the clinical needs of hospital-at-home patients. Do this by working with clinical leaders to understand the digital capabilities required to support the acuity level for target patient cohorts.

Healthcare providers must also focus on building an underlying digital architecture that delivers a seamless clinician user experience by partnering with clinical informatics colleagues and third-party partners to map core clinical workflows and identify key information and integration requirements.

In addition, include evaluation of the digital solution architecture in terms of connectivity, data requirements and interoperability, and the ease of which target patient populations can engage with and use the technology across procurement processes.

To facilitate communication across the distributed multidisciplinary care team and operational support staff, deploy care team collaboration technologies that enable communication and collaboration on patient care in real time. Ensure these technologies also include capabilities to include the patient, their caregivers and family in their treatment and care.

*Dr Sharon Hakkennes is a senior director analyst at Gartner, focused on health care. In particular, she advises clients on virtual care, EHR implementation and optimisation, clinical engagement and change management, and strategy development with a focus on the intersection between IT and business strategies in the healthcare environment.



Closing the loop on test results

Severe staff shortages, a surge in Omicron cases and an ageing population have put our already-stretched emergency departments and health system under enormous pressure.

Due to the short lengths of stays, emergency department patients face particular risk of having test results pending at the time of discharge, with many hospitals acknowledging that they do not have reliable systems for managing such results.

Researchers led by Macquarie University conducted a before and after study in the emergency department of a 450-bed metropolitan teaching hospital in Australia to understand whether timely test results review with health information technology could help improve health outcomes for the patients.

Abnormal test results uncovered

The study demonstrated an alternative look at coordinating and driving test results review through leveraging technology. The aim was to improve the safety and effectiveness of the diagnostic process by increasing the rate of follow-up of results pending at hospital discharge.

As a part of the project, all radiology reports for discharged patients were reviewed for a one-month period before and after the

implementation of the electronic result acknowledgement system to determine those that reported abnormal results and evidence of test result acknowledgement. All unacknowledged radiology results with an abnormal finding were assessed by an independent panel of two senior emergency physicians for clinical significance.

In the pre-implementation period, 1167 (70.6%) out of 1654 radiology reports were acknowledged by a clinician. For reports with abnormal results, 396 (71.6%) were acknowledged. Of 157 unacknowledged abnormal reports, 54 (34.4%) were identified as clinically significant and 27 (50%) were said to carry a moderate likelihood of patient morbidity if not followed up. In the 'post' period, all radiology reports were acknowledged, representing a 30.4% increase in acknowledgement rate, and a 28.4% increase for abnormal radiology results.

Active management of test results review

Australia has a reasonably well resourced and accessible healthcare system with a focus not just on throughput but also on quality of care but there are still parts of the system (particularly rural and regional areas) where there are significant delays for result reporting, such as radiology, and there are inadequate

staff resources to follow up on all results, said A/Prof Richard Paoloni, Emergency Physician & Chief Medical Advisor, My Emergency Doctor and co-author of the abovementioned research paper titled *Does health information technology improve acknowledgement of radiology results for discharged Emergency Department patients? A before and after study*.

My Emergency Doctor is an emergency telemedicine provider led by Fellows of the Australasian College for Emergency Medicine. Founded by Sydney-based emergency physician, Dr Justin Bowra (MBBS FACEM CCPU) the organisation works alongside healthcare facilities and clinical staffs in metropolitan and regional hospitals, urgent care centres, multipurpose service centres, ambulance services, aged-care facilities and Primary Health Networks to provide a range of innovative healthcare solutions that can rapidly expand an emergency department's capacity including virtual board rounds, access to real-time emergency physician consultations, as well as cost-effective and more timely review of a facility's diagnostic test results.

A/Prof Paoloni said that the sooner the information is available, the sooner an accurate diagnosis and/or a specific treatment can be commenced. "In general, the sooner optimal treatment is commenced (at a less advanced stage of the illness) the lower the impact (morbidity) on the patient, and potentially lower mortality depending on the disease."

Connected care

Technology can help improve accuracy as well as timeliness of result reporting and follow-up. Many tests that used to require manual processes are now performed by machines, with results available more quickly, said A/Prof Paoloni.

"Digitisation of result information allows rapid communication of information back to clinicians and, in some instances, to patients directly. Internet connectivity allows remote reporting of test results, particularly complex imaging, from anywhere in the world in real time.

"Medical devices, both implanted and non-invasive, can interact with mobile phones or other home base stations connected to the internet to provide real-time data to patients and their treating clinicians. This can include anything from blood glucose levels in diabetic patients to heart rhythm analyses in patients with defibrillators. Devices can be programmed to call an emergency ambulance if critical life threatening situations occur, including relaying the location of the patient based on GPS readings.

"Increasingly artificial intelligence will be used to augment, rather than replace, diagnostic accuracy. Many diagnostic interpretations in medical testing rely on pattern recognition, which is well within the scope of AI. Already there are programs undergoing real world clinical trials that provide AI interpretations of chest X-rays at the point of care, such as the emergency department, to identify potential abnormalities and alert the clinician to review that part of the X-ray more closely."

How 5G will transform health care

Louise Hyland, CEO, Australian Mobile Telecommunications Association (AMTA)

During COVID-19 lockdowns across the world we saw many new examples of mobile technology used within the health sector, including numerous people using telehealth for the first time.

With 5G networks being switched on across the country, the connectivity of 5G is set to continue to transform the healthcare system and how we manage our own health in the wake of the pandemic. 5G, which is the fifth generation of mobile technology, offers safe, high-speed connections with low lag and increased capacity, which will make health technology more efficient and reliable, helping to save lives and improve the wellbeing of Australians.

5G networks will support the Internet of Medical Things (IoMT), critical medical innovations and artificial intelligence (AI) through remote access, real-time monitoring, fast data transfer and high-capacity data processing. These technological advancements will in turn help support our aging population, close the divide between rural and metropolitan healthcare services, provide remote access to world-class doctors and surgeons, and help more Australians maintain and improve their health.

Looking to the post-COVID future, the Australian Mobile Telecommunications Association (AMTA) has identified five ways that 5G will drive this digital transformation in health.

1. Remote patient monitoring

5G's low latency and reliability will allow healthcare providers to offer real-time remote

patient monitoring, revolutionising patient-centred health care.

Through 5G-enabled medical devices and wearables, data can be gathered from patients to assess treatments to improve care and alert doctors of early warning signs to allow for prompt proactive intervention. This new connectivity could drastically improve the quality of life for Australians, especially for those in high-risk categories, like the elderly and people living with ongoing medical conditions, as it will give doctors and nurses the option to monitor a patient in the comfort of their home.

One organisation that has taken strides in remote monitoring to help individuals live more independently at home is the CSIRO, which is currently trialling a Smarter Safer Homes system: a sensor-based in-home monitoring system to service the aged-care and supported living sectors. The system

“The Ingham Institute for Applied Medical Research in Liverpool, New South Wales, is currently assessing a remote-controlled robot that can remove blood clots in stroke patients”

builds a picture of a person's daily routine and detects deviations that may indicate illness or injury through sensors and wireless biomedical devices, sending real-time data to healthcare providers. With 5G, systems like this will start to become more readily available, reliable and easier to set up through connection to wide area 5G mobile networks.

2. Robotic surgery

With 5G networks, remote robotic surgery will become an option for Australians, removing the obstacle of distance and giving patients access to specialist treatment, no matter where they are located.

Connected through IoT, 5G-powered robots and devices will deliver lifesaving surgery that wouldn't have been possible before through the 4G network. In fact, 5G is already facilitating trials of remote operations and procedures through robotic medical technology in major hospitals and research institutes around the world.

The Ingham Institute for Applied Medical Research in Liverpool, New South Wales, is currently assessing a remote-controlled robot that can remove blood clots in stroke patients using 5G connectivity, supported by Optus. For patients living in rural and regional areas, this technology could be critical to their survival as it's faster and more effective than current procedures. Another trial in the UK being conducted by King's College London, in partnership with Ericsson, is testing specialised haptic feedback gloves and virtual reality (VR) equipment that connects through 5G to a robotic counterpart, helping specialist surgeons operate on a patient thousands of miles away.

3. Personal health

Since the pandemic, there has been an increased interest in personal health monitoring. This will only grow with the 5G rollout, with wearables expected to reach one billion by 2022, boosted by the development of 5G technology.

Whilst wearable health devices and smart home health gadgets aren't new, through the fast, reliable, and high capacity 5G network you will be able to connect more devices to monitor and manage your physical and

mental wellbeing, providing a more holistic view of your health.

You could monitor your diet and various disease markers through connected toilets, like Toto's Wellness Toilet, track and improve your sleep through a smart bed, like Eight Sleep's Pod Pro, and even manage dispensing and refilling medication and nutritional supplements via smart medicine cabinets, like BLACK+DECKER's Pria.

With 5G's arrival, the possibilities for different types of smart health devices are exponential and with better interoperability they could even help build complete health profiles for individuals that can be regularly shared with healthcare professionals.

4. Emergency response

The ultra-fast speeds and ultra-low latency of 5G mobile connection will change how we respond to emergencies, especially how medical supplies and assistance will be provided.

Unmanned aerial vehicles (UAVs) or 'drones' have been integral for many countries in their response to the pandemic; through 5G, using them for medical deliveries will become more tangible in Australia. Swoop Aero, which received an Australian 5G Innovation Initiative grant in late September this year, will be trialling aeromedical deliveries in Australia including delivering pathology samples and medical supplies, such as COVID-19 vaccines, to hospitals while providing real-time monitoring and notifications using the 5G network. This could mark a change for emergency medical deliveries in Australia, with drones already being used overseas for lifesaving large-scale deliveries of blood, medicines, medical samples and even organs.

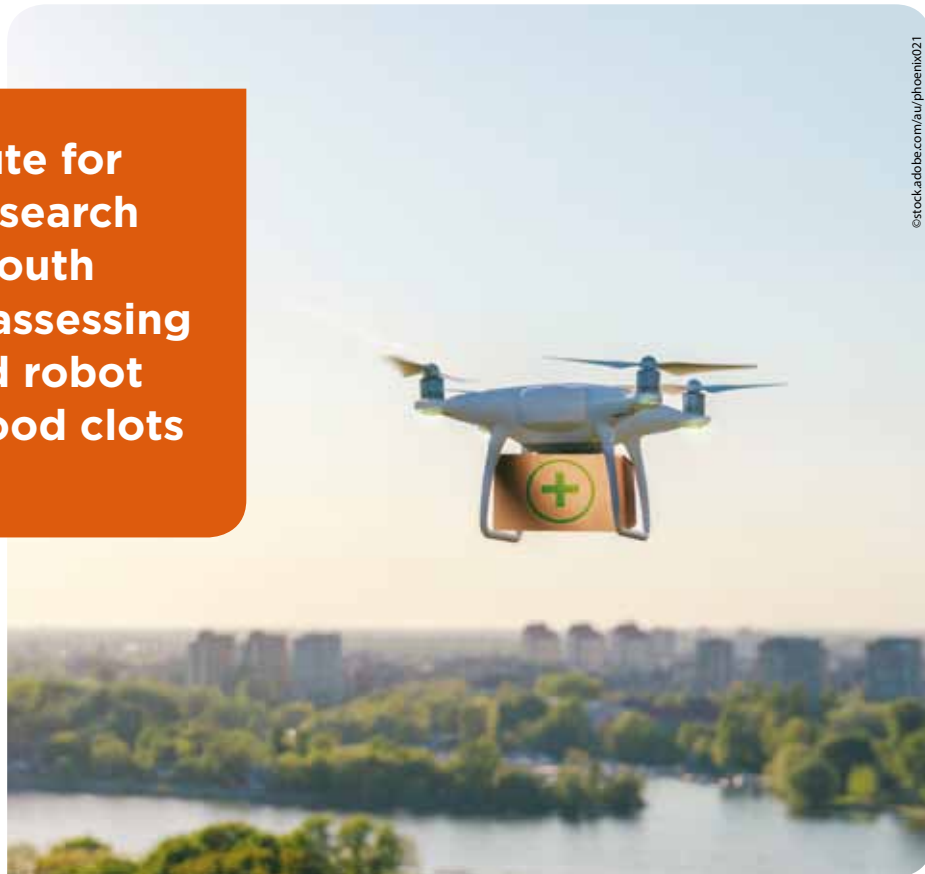
5G connected ambulances could also become a real possibility in Australia in the not-too-distant future. In collaboration between Ericsson, University Hospital Birmingham NHS Foundation Trust (UHB) and King's College London, 5G connected ambulances that enable clinicians to remotely guide paramedics through procedures and make diagnoses using a VR headset and cameras are already being trialled. It is hoped that this will increase efficiency, save lives and reduce the burden on hospital emergency departments.

5. Precision treatment

AI as a tool for health diagnosis and precision medical treatment is being substantially improved by 5G. AI, powered by high-bandwidth 5G, will help analyse medical imaging and data faster to make diagnoses or point clinicians where to look, and provide a course of treatment tailored to patients, optimising hospitals and patient care.

AI is also being heavily invested in in Australia, with the Australian Government announcing last year that it will provide \$19 million over three years for artificial intelligence-based medical research projects designed to prevent, diagnose and treat a range of health conditions, such as eye and cardiovascular diseases, and mental health, including stress, anxiety and depression. These projects have the potential to lead to significant health benefits for Australians and with ubiquitous 5G, their deployment will be more feasible.

Overall, 5G will offer better mobility and help the health sector become more productive and efficient, leading the country into the fourth industrial revolution and a new age of medicine and wellbeing.

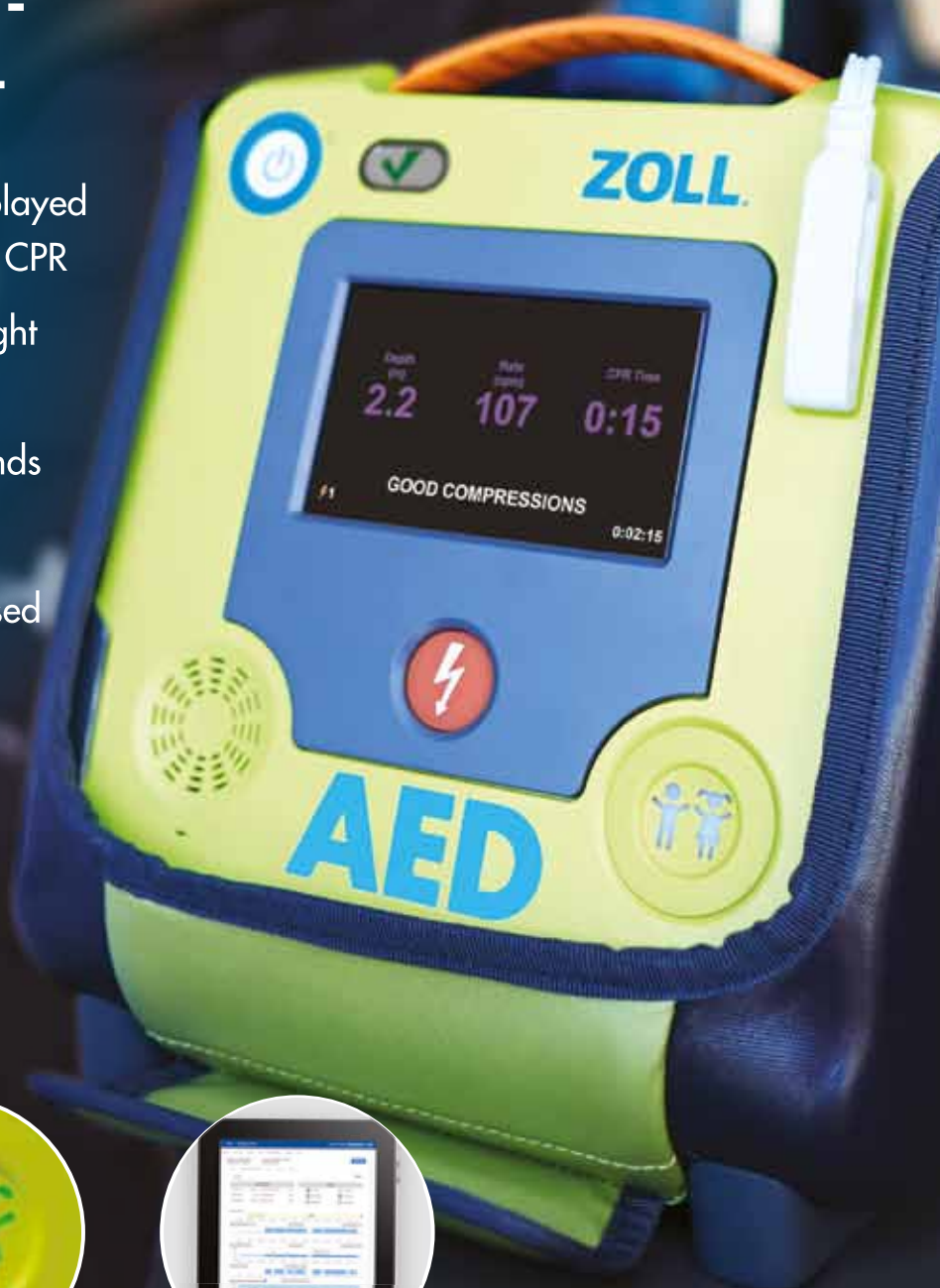


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Emerging stronger



From delivering over 500K vaccinations to disability and aged-care residents to achieving over five million completions for its online COVID-19 training platform for the federal Department of Health, global healthcare provider Aspen Medical has played a key role in Australia's pandemic response.

As a certified Emergency Medical Team (EMT) with the World Health Organization (WHO) for infectious disease outbreaks we were well-placed to support the national and international pandemic response, but we had to rapidly scale technology solutions, employ bigger teams and adopt new operational priorities, said Sanja Marais, General Manager, Technology and Innovation, Aspen Medical.

The company started delivering new services, including technology development, advisory services and PPE manufacturing — all in the middle of the pandemic. “We started a mask manufacturing facility in Queensland, Australia; developed an online COVID-19 training platform for the Department of Health with now over 5 million completions in training; supported multiple government

and sporting agencies with hotel quarantine including the Australian Open tennis championship; stood up a telehealth service line to support Healthdirect; and supported the set-up of over 150 general practitioner-led respiratory clinics and developed the clinical software they use to record tests and vaccinations,” Marais said.

Since many respiratory clinics are in regional, rural or remote areas, Aspen Medical chose technology provider Cradlepoint for mobility solutions that deliver the security and robustness of a fixed connection for sensitive patient data, telephony and printing services.

“We had to ensure we maintained quality and focus for our existing clients while expanding our offerings to cater to the growing market requirements. We used technology to digitise training, created remote networks

with Cradlepoint for instance. Rapid scaling of technology hardware where the demand was much bigger than the supply required us to leverage our relationships with providers including procurement of mobility solutions as we rolled them out across the country.

“The ability to set up a remote clinic that is fully connected to our network and getting clinicians up and running immediately without having an onsite IT team present was a big game changer for us.” These secure network hubs meant that Aspen Medical's teams had connectivity, phones, computers and printers while travelling. “Even when we sent out mobile vans, we had connectivity for staff.”

The company could deploy teams faster and get them working without delays. “We can now run online applications where it was previously not possible enabling real-time access to important information like sending vaccination data to our national immunisation register.

“Our key learning from the various projects we ran is that a strong project management capability and technology backbone is crucial in delivering with agility and confidence,” Marais concluded.



‘New Kid on the Block’ Makes Inroads into Medical Waste Management with Sights Set on Sustainability

Shred-X, a well-known brand in the secure destruction industry, celebrated 20 years of delivering certified, sensitive data disposal solutions to over 50,000 Australian businesses in 2021. A less familiar brand is sister-company, Med-X, an emerging clinical waste, sharps disposal, hygiene and washroom solutions company newly founded in 2017. However, in early 2020 amid rising cases of COVID-19, Med-X became recognised in the Australian healthcare sector as a reliable medical waste management provider for safe and compliant COVID-19 related waste disposal.

The pandemic brought forth a shift in focus for Med-X as the company's Hygiene and Washroom key service wound down due to business closures and working from home measures, while its clinical waste arm accelerated. Australia's healthcare system was facing an unprecedented demand for medical care and clinical waste management — the back end of the medical supply chain. The volume and rate of COVID-19 infected clinical waste generated by healthcare facilities surpassed the capacity of other medical waste vendors to manage, particularly those in New South Wales and Victoria.

Efficient medical waste management became a high priority challenge for many facilities within Australia's aged care sector, and an emergency for some in Victoria. During

the second wave of COVID-19 outbreaks, Med-X was called upon to assist in servicing a number of aged care facilities to meet the increased demand.

Med-X personnel were deployed to assist at three aged care facilities in Victoria and NSW, working tirelessly around the clock to remove the backlog of infectious material on site of our most vulnerable. Beyond Med-X strict compliance measures as a certified bio-waste handler, the company's service personnel implemented additional safety protocols to ensure COVID-19 waste was safely collected, transported, processed and treated before disposal.

Van Karas, GM of Shred-X and Med-X described the company's quick response and assistance in the infectious waste collection at the Victorian aged care facilities, "While they may not be frontline healthcare staff, our Med-X service personnel faced equally daunting situations, putting the health and safety of others before their own. Correct handling of highly infectious waste requires adherence to strict procedures and processing protocols. It's not glamorous work but it is essential, and we are extremely proud of our team who stepped up in a time of crisis."

The pressing issue of medical waste ending up in landfill was highlighted once again due to the pandemic with questions swirling around rethinking sustainable procedures within the industry and eco-friendly opportunities.

Med-X sister company, Shred-X was born of the paper recovery industry, and the

company's roots are firmly planted in sustainability and remain its guiding focus today. Staying true to its heritage, Med-X continues to ensure ethical disposal and wherever possible divert waste from landfill, finding new ways to transform waste into new products.

"We have applied the same foundational goals of sustainability and innovation to the medical waste industry through our Med-X Healthcare Solutions brand," said Mr Karas.

"Shred-X and Med-X have continued to invest in technology and innovation that support the reduction of landfill and promote recycling, even during the peak of the COVID-19 pandemic."

Spotlighting the company's goal to invest in robotic technology to encourage human contactless waste disposal and recovery, is one example of the company's mission to preserve tomorrow, today for a sustainable future.

"Traditionally clinical and sharps waste have been problematic with landfill; however, Med-X is now investigating the recovery of small single-use containers by separating them at source and using automated mechanical separation at its medical waste facilities. Single-use containers will be milled following treatment and sent to local plastic moulding companies for reuse."

In turn the clinical waste segment represented by single-use sharps would be almost fully recoverable and diverted from landfill. It is expected that the Med-X recovery system would reduce landfill volumes for medical waste by over 28%.



» For more information
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Monash University researchers and optimisation technology company Opturion have developed a cloud-based rostering system to improve alertness, productivity and safety among shift workers.

Funded by the Alertness, Safety and Productivity Cooperative Research Centre, the AlertSafe rostering system has already been trialled in hospitals across Victoria, including Austin Health and Monash Health. Hospital studies have reported a 15% reduction in medical incidents as a result of staff fatigue.

According to Safe Work Australia, shift work and irregular or long working hours can adversely affect the health, safety and wellbeing of workers. Strategies for alertness management are becoming increasingly important, and everyone in the workplace has a responsibility to ensure impaired alertness — or fatigue — doesn't create a work health and safety risk.

Professor Mark Wallace from the Faculty of IT said the system tracks the impact of shift work on each individual staff member during the rostering process and takes into consideration new alertness management guidelines.

It generates rosters using artificial intelligence-based optimisation, which infers the consequences of each assignment of a shift to a person who can and cannot be assigned to other shifts, Professor Wallace said. The platform then determines smarter ways to improve a roster time until it meets the preference needs of the roster and the people working within it, he said.

Associate Professor Mark Howard, a sleep and respiratory physician from Austin Health, said healthcare workers are the biggest shift-working population in the country and the recent COVID-19 pandemic has highlighted the stress they've been placed under.

There's been a lack of a systematic approach when it comes to effectively rostering shift workers so that they perform their roles safely and effectively, Professor Howard said, noting that the trialling allowed Austin Health to implement rostering changes for its medical staff who are working in an extremely high-pressure environment.

"The rostering changes have allowed us to carry out shorter rotations, which minimised staff burnout and stress, as well as lowering the adverse medical implications for patients."

The platform was developed in a collaboration with the Faculty of Information Technology (IT) and the Turner Institute for Brain and Mental Health at Monash University, the Institute for Breathing and Sleep at Austin Health and the University of Sydney.

The algorithms developed by the Department of Data Science and Artificial Intelligence in the Faculty of IT use a mathematical model based on the underlying biology of sleep to estimate the impact of work schedules on alertness levels.

The platform, which was commercialised by Opturion, has also been used in various construction projects, engineering applications and medical transport. Ambulance Victoria and the Victorian Level Crossing Removal Program have already been implementing the system within their rostering schedules.

The Managing Director of Opturion, Dr Alan Dormer, said the platform can be applied across a variety of industries including health care, the police force, emergency services, airlines, trucking, construction and mining.



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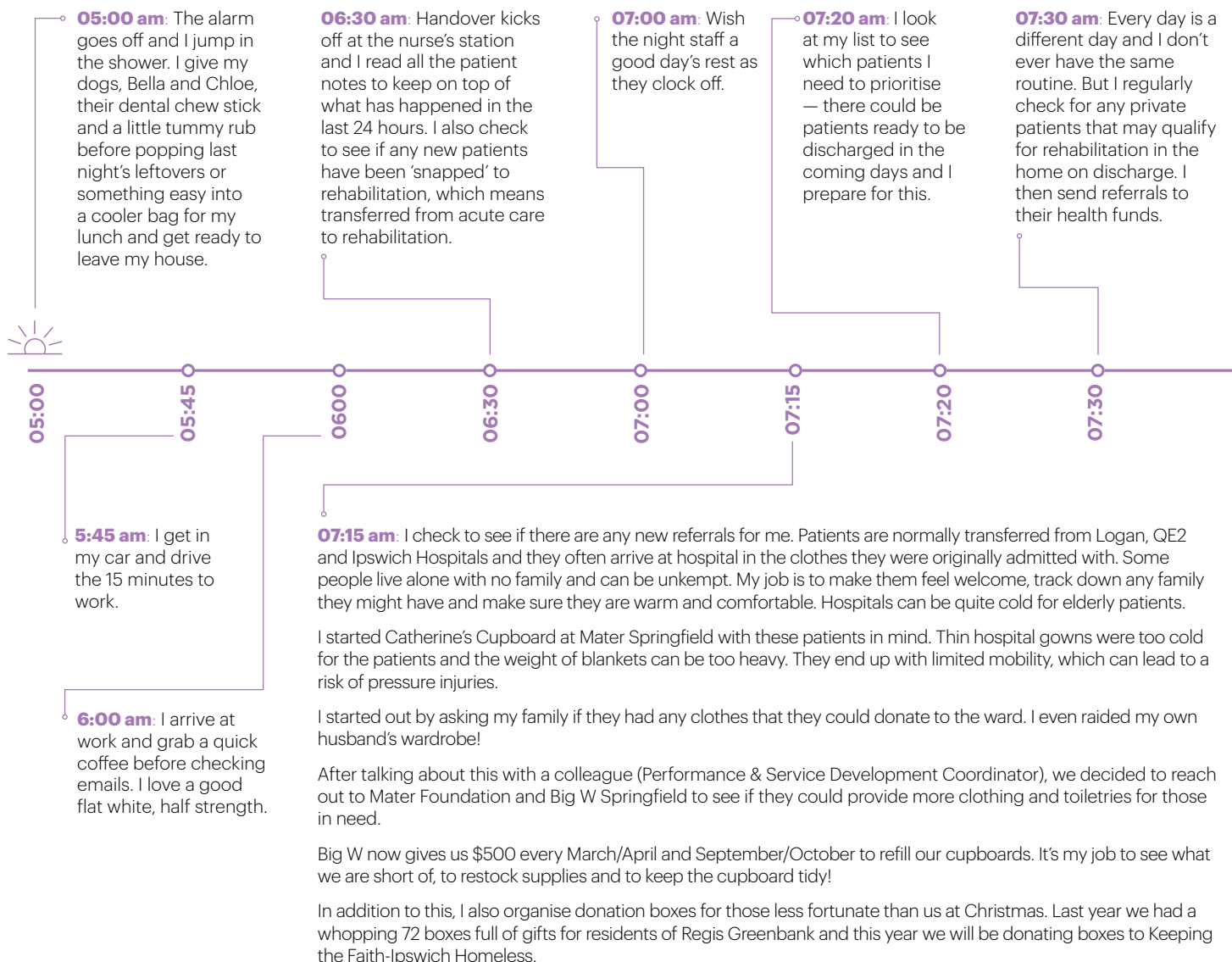
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A day in the life of nurse Lisa Russell

Lisa Russell is Discharge Coordinator at Mater Private Hospital Springfield. With 80 private beds as well as a day surgery unit, the hospital provides the local community in Greater Springfield with access to innovative healthcare facilities including four digitally integrated operating theatres and a cancer care centre.

Here, Lisa Russell shares her day.





8:15 am: On Thursdays, I attend the Rehabilitation Case Conference for all the rehabilitation patients on the ward. We discuss their progress and goals from a medical, nursing, physiotherapy, occupational therapy and discharge point of view.

9:30 am: I stop for a quick snack and take some time to rehydrate. Some mornings can be busier than others but I often get a bit peckish around this time.

8:30 am: I visit all the new patients and introduce myself. I have a chat with them to determine their social situation, community services, previous level of function and current level of function. This gives me a good picture on what services or programs they may need on discharge.

On Tuesday and Thursdays, I attend Length of Stay (LOS) meetings with fellow team leaders to discuss discharge dates and a plan of care for all patients who have been with us for more than five days.

10 am: I sit down to make some phone calls. I contact My Aged Care and relevant Aged Care Assessment Teams (ACAT) to find out if these patients have adequate approvals for required services or care. This can sometimes take an hour or more, depending on how many patients I have and who is on the phone the other side!



13:00

1 pm: It's lunchtime! Having spent the morning doing paperwork, liaising with patients and families and making phone calls, I sit down in the tea room and enjoy whatever I packed in my cooler bag. I don't sit for too long though — there's always quite a bit to get through.

1:25 pm: I start arranging services for patients to return home. This can include personal care services, domestic care services or medication management. I also talk to respite and residential aged-care facilities about patients who are unable to return home after discharge.

2 pm: I do rounds with doctors where we discuss the length of stay for each patient. Sometimes we might have 20 patients in our care, but other times could also have a full ward so it takes a bit longer.

If a patient requires permanent admission to a residential or respite care facility and they don't have the necessary approvals from My Aged Care, we coordinate the whole process for them from start to finish. This can include trying to find accommodation, completing paperwork, arranging Aged Care Assessment Teams (ACAT) to visit, assisting with Enduring Power of Attorney/ Advanced Health Directive (discussing advance care planning) and more. For one person, the whole process can take up to 8 hours, so things never stop.



13:25

4:30 pm: Time to head home and starting cooking dinner. Also time to give Bella and Chloe a pat.

14:00

6 pm: Sit down to dinner with my husband and then relax on the couch watching the news on TV. I love coming home after a big day at work and the best way for me to unwind is to have a long hot shower. On Fridays, I also like a glass of shiraz to help me move into the weekend.

16:30



18:00



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@wfmmedia.com.au.



Boosting dairy

reduces falls, fractures in aged-care residents

A two-year trial, which included 7195 residents from 60 Victorian aged-care facilities, has found that addition of dairy foods into the daily diet of aged-care residents can reduce fractures and falls.

The research was led by the University of Melbourne and Austin Health, and supported by grants from nine global dairy organisations and three philanthropic organisations, including Dairy Australia.

Around two-thirds of aged-care residents are malnourished or at risk of malnutrition, with the intake of dairy foods in this population typically less than half the amount recommended in the Australian Dietary Guidelines.

Around 30% of all hip fractures occur in aged-care residents. This claims to be the

first study to test the impact of providing additional calcium and protein through dairy foods on the risk of fractures and falls in older adults. Previous clinical trials have taken a pharmacological approach where residents have their diet supplemented with vitamin D or calcium tablets to reduce bone loss, according to the researchers.

Principal investigator Dr Sandra Iuliano, from the University of Melbourne and Austin Health, said, "We were keen to investigate this issue through a nutritional approach. We know that the consumption of milk, yoghurt and cheese, that are rich in calcium and protein, slows bone loss."

They found this simple intervention — where dairy food intake increased from approximately two serves per day to 3.5 serves per day — led to a significant reduction in fractures and falls.

Dr Iuliano said, "Our cluster randomised controlled trial showed muscles of the arms and legs [were] maintained and falls reduced in the residents given the additional dairy

foods. This is an achievable goal in any aged-care setting as these foods are widely available, palatable, low cost and can be incorporated into the daily menu."

The study found a 33% reduction in all fractures, a 46% reduction in hip fractures, and an 11% reduction in falls, with a significant reduction apparent between three and five months after the trial began.

Dr Iuliano hopes the outcomes from the trial will be used to improve policy and good clinical practice across the aged-care sector. Findings of the study were published in the *British Medical Journal*.

Dairy Australia Nutritionist Dr Rivkeh Haryono said, "The results of the clinical trial are clear — and, importantly, reconfirm that consuming sufficient levels of dairy in older adulthood plays a key role in safeguarding bone and muscle health.

"Dually, increasing the consumption of milk, cheese and yoghurt improves overall nutrition in aged-care residents."





Animation in healthcare

“Animation can distil complex health concepts or messages into digestible and memorable content — making it the perfect communication tool in today’s health industry.”

The digital revolution in healthcare is helping to improve a broad range of outcomes, from the prevention and treatment of disease to patient care. At the forefront of this trend, animation has now become an essential part of patient and HCP education and communication.

Animation can be an extremely powerful tool in the healthcare space as it helps to unpack complex information in an understandable, entertaining format. Particularly in healthcare messaging, animation helps to make potentially serious, sensitive or complicated information more accessible. Animations can be created in 2D, 3D or hybrid — a mixture of live footage with animated motion graphics.

Animation has many benefits including:

1. **Simplify Complex Information** — Whether it’s to showcase your services, explain how a product works or for internal communications such as on-boarding or training, animated content can provide information in an easy-to-digest, succinct format which allows opportunity to reinforce and drive home key messages.
2. **Overcome Barriers** — There are many reasons as to why your audience isn’t engaging with your message, including language or cultural barriers, low health literacy, learning or physical barriers. Animation utilises a variety of formats and communication tools that help overcome these.
3. **Unlimited Creativity** — Animations have the unique ability to be able to visualise

the mechanism or action of a drug, show a cross-section of a medical device or show a product from all different angles.

4. **Market Cut-Through** — Animation can break through a sea of live action videos to create something visually different and attract attention.
5. **Increase Video Effectiveness** — Animation has the highest information retention of all media styles. This style communicates succinctly and effectively in a way viewers will remember and is able to be updated when information changes.
6. **Connect With People** — Using animated characters allows viewers to find similarities between themselves and the characters in the story and this allows formation of a personal connection.
7. **Overcome the Physical Barriers of COVID-19** — the barriers that COVID-19 has presented to human interaction means many ideas and stories aren’t able to be visualised by actors.

Here are some examples of how you can use animation:

- **Explainer Videos** — Animated explainer videos are informative and engaging, it could be medication explainers, what the treatment might be like, how the recovery process works or how to use a product.
- **Promotional Videos** — Whether you’re trying to drive sales, inform people of a new product, service, or event, drive

traffic to your website, or even create public awareness of a health issue, animation can be a great, customisable tool.

- **Social Media Campaigns** — Video consistently outperforms static media. Creating videos that can be optimised to different platforms allows you to ensure the most effective strategy.
- **Hybrid Videos** — Using a combination of real footage and motion graphics you can create something unique and bespoke to your messaging, design and branding.
- **3D Animation** — 3D animation opens up a world of possibility, it depicts an accurate visualisation by exploring the intricacies of the science that can not be created from a 2D illustration, sketch, photography or even live-action.
- **Training Videos** — Comprehensive training, on-boarding or educational videos can be a valuable way of communicating with employees and volunteers and demonstrating workflows.
- **CALD Communication** — Translating relevant communication campaigns and resources into languages other than English is an important means to reach your target communities and promote your messages & services.

Laundry Lane has extensive experience working with leading healthcare organisations. We look forward to sharing our knowledge and expertise with you.



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The pandemic led to a significant increase in workloads at a number of hospitals across Australia with a massive influx of patients, forcing hospitals to quickly improve the speed and efficiency of their workflows.

The medical technology industry provides a wide range of products to diagnose, monitor and treat patients, and is instrumental in helping healthcare organisations to achieve better patient outcomes, lower healthcare costs, improve efficiencies and offer better patient care. New regulations, digitisation, data analytics, artificial intelligence, automation and the development of value-based healthcare represent some of the numerous challenges as well as opportunities facing the healthcare industry and its use of mobile devices.

Healthcare providers have used mobile technology for some time, including handheld computers and point-of-care devices that help clinicians as they provide bedside care. These devices, which are often wheeled around on a trolley to each patient, enable healthcare workers to connect with patient records and simplify the workflow for collecting specimens.

Mobile devices have improved the speed and quality of care in many valuable ways. For example, during shift changes, information about patients may often be lost in the transition from one team to the next.

The Internet of Medical Things

Whilst the Internet of Medical Things (IoMT) has improved the speed, quality and interconnectivity of health care in many

ways, mobile devices deployed in healthcare settings need to be carefully monitored to ensure they do not stop working in the middle of clinical rounds and cause disruption to patient care delivery.

The IoMT brings together people (patients, caregivers and clinicians), data (patient or performance data), processes (care delivery and patient support) and enablers (connected medical devices and mobile applications) to deliver improved patient outcomes efficiently.

However, with increased digitisation and interconnectivity comes complexity and hospital IT departments need to ensure that technology issues do not get in the way of the medical staff delivering essential frontline care. The digitisation of health care has led to medical devices and the traditional IT infrastructure becoming more and more intertwined. This subsequently means that medical IT has more points of failure than ever before.

Security risks

The sudden impact of the pandemic on healthcare providers led many to engage in massive adoption campaigns of mobile devices that required precise provisioning before use. Mobile device management (MDM) solutions simplified the ability of hospitals to deliver devices to users with the necessary software already installed while ensuring that security configurations met the healthcare organisation's privacy compliance requirements.

These capabilities have allowed organisations to pivot quickly during the pandemic, whilst minimising the security risks. However, with the influx of many new mobile devices comes an increasing need to ensure that they are working correctly. A centralised monitoring strategy is the best way to achieve this where a healthcare organisation monitors medical equipment and classic IT together.

Monitoring needs

Mobile medical devices usually require batteries to operate, and a technology support person needs to replace or recharge these devices. Should a device lose power during care delivery, it would be very disruptive for clinical staff and patients. Therefore, these devices need to be remotely monitored so that technical staff can schedule battery replacements before they run out.

Medical equipment has a specified time before preventative maintenance is required. If the equipment is old it might need servicing more often because it has become unreliable, or spare parts might not be readily available. In this case, replacement may be required and this maintenance and replacement lifecycle of the medical devices should be monitored remotely and scheduled so that it does not impact clinical delivery.

As healthcare organisations race to stay ahead of the impacts of the pandemic, care has truly become mobile. These nimble strategies are helping address pandemic challenges while keeping both patients and medical teams safer.



Sebastian Krueger, Asia Pacific Vice President

Virtual Visitors:

Helping Residents Live More Connected Lives with the Power of Technology

The COVID-19 Pandemic has forced change on Aged Care organisations at an unprecedented rate and increased the feeling of isolation and loneliness for many residents.

Older generations remain the most vulnerable to COVID-19 which is why we have seen restrictions of visitors and reduction in activities in Aged Care facilities. While necessary, we know that loneliness and social isolation have been linked to poorer health outcomes.

Creating Connections with Technology

Technologies are powerful enablers, smartphones, tablets and web cameras represent convenient ways for residents to connect with visitors virtually through apps and other platforms. While many older adults are tech savvy and can easily navigate the latest technology, others struggle to adapt to these digital tools.

There are several reasons why some struggle to adapt and at the heart of the problem can be functional movement and accessibility. Small devices, positioning of the device for virtual conversations, education and lack of space can all impact the user experience.

Solutions to Support Virtual Visitors

Ergotron focus on creating healthy and productive interactions between humans and technology and pride themselves on being a world leader in improving how people work, learn, play and care for others.



There are multiple Ergotron products available to support technology for virtual patient-family-physician interactions.

When considering options for your organization, prioritise these features to support the best experience for aged care residents: -

- Height adjustability: Easy adjustment ensures residents can position equipment at the proper ergonomic height for comfort and improved accessibility.
- Infection control: Open architecture designs with thoughtful cable management are often easier to clean, which promotes more frequent wipe-downs.
- Mobility: Lightweight carts and stands can roll anywhere for virtual conversions — the bedside, garden, visitor rooms and more, which gives choice and flexibility.
- Compact footprint: A small footprint allows carts, tables or stands to fit neatly in your facility without adding clutter or competing with important medical equipment.
- Quality: Look for professional grade options that are built to last with documented cycle testing and competitive warranties that

give you confidence in its safety and your investment.

- Versatility: Adaptable solutions can be used for virtual visitors, as well as telehealth consultations with a variety of specialists.
- Education: Take time to help familiarize staff and residents with all new equipment. Familiarity breeds comfort and the more comfortable the experience the higher level of engagement and connection.

We are here to help and if you would like assistance in determining which solution is best for your organization contact Corrine to arrange a virtual meeting and demonstration of Ergotron's broad portfolio of professional-grade healthcare solutions.

Contact Corrine Ormsby +61 2 8935 9437 or Corrine.Ormsby@ergotron.com to learn more.

View the Ergotron portfolio at <https://www.ergotron.com/en-au/markets/healthcare>.

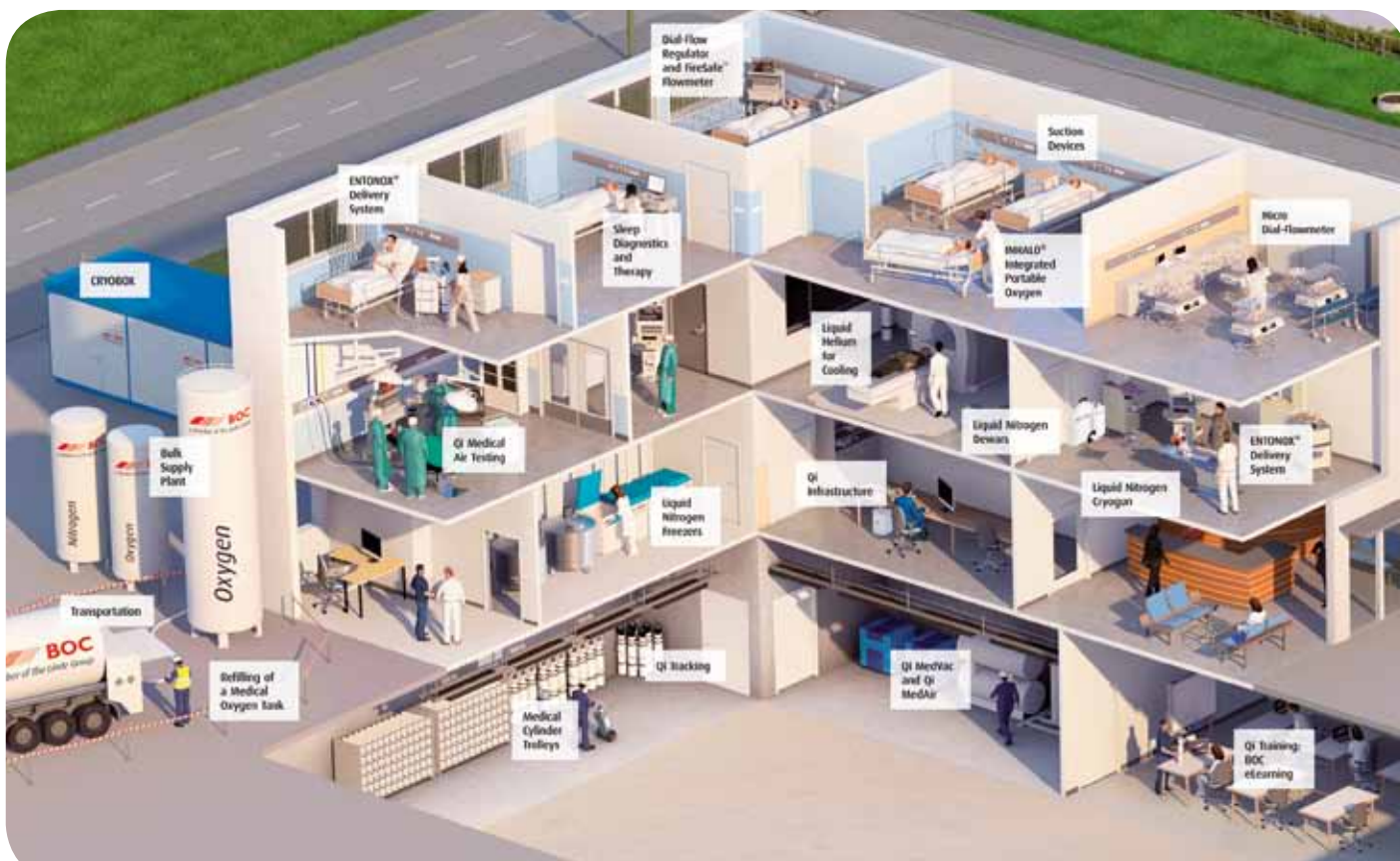
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QI Risk Medical gas pipeline system and operational assessment

A well maintained, fit-for-purpose medical gas reticulation system is critical to a healthcare facility's ability to deliver reliable and safe patient care. However, hazards in the system can be easily overlooked, potentially compromising reliable and safe operation of the facility.

Common medical gas system hazards within a healthcare facility can include:

- Outdated gas cylinder manifolds that no longer comply with safety design standards.
- Unmaintained or non-compliant medical air plants, compromising reliability of supply and delivering poor-quality medical air.
- Insufficient pipeline and instrumentation drawings, increasing the difficulty of troubleshooting and repair of the medical gas system.
- Non-compliant cylinder storage or cylinder segregation resulting in fire and asphyxiation hazards.

Drawing on over 60 years' experience of providing medical gas solutions and support, BOC has developed QI Risk as a proactive approach to manage the safety, reliability and compliance of medical gas reticulation systems.

QI Risk is a comprehensive medical gas pipeline and operational assessment package involving a thorough inspection, risk assessment, detailed reporting and recommendations by one of BOC's medical gas reticulation experts; giving your healthcare facility the insight required to ensure safe and reliable operation of the complete medical gas reticulation system.

BOC will work closely with you to tailor the scope of the QI Risk assessment package to meet the

specific requirements of your healthcare facility — this assessment can include all or part of the following areas:

- Liquid oxygen supply.
- Cylinder storage.
- Manifolds and manifold rooms.
- Medical gas alarm systems.
- Plant rooms, medical air and medical vacuum plants.
- Medical gas reticulation.
- Department, ward and theatre medical gas infrastructure.
- Medical gas training, policies and procedures.
- Safety regulatory requirements.

BOC can assist in the design, supply and fitting of medical gas infrastructure, equipment and maintenance; developing best practice solutions specific to a healthcare facility's needs and assisting in maintaining compliance and accreditation within current regulatory standards.

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The compassion paradox

Dr Olivia Ong*

It was a sunny autumn day in April 2020 when the reality of the first wave of the COVID-19 pandemic was starting to hit home in Australia. I had just eaten breakfast with my family when the news reported on an emergency physician from New York State who had jumped off the roof of the hospital she was working in. My heart sunk for the doctor and her loved ones as I reflected on the fact that this could have been me.

Eighteen months later, COVID hasn't gone away. It has affected us in so many ways. Some of us have lost loved ones. Others have lost jobs or businesses. The politicians are talking about their roadmaps to economic recovery. But it strikes me that very little is being said about emotional recovery.

My particular focus is on the wellbeing of doctors. The question of who is caring for the carers is top of mind for me. The truth of it is that physician burnout was at epidemic proportions before the COVID-19 pandemic. According to research presented at the 2018 American Psychiatric Association Meeting, 400 physicians die by suicide each year in the US. This is double the rate of the general population. In fact, doctors have the highest suicide rate of any profession in the US — including combat veterans.

The pandemic has exposed the cracks in the healthcare systems around the world. From inadequate testing and personal protective equipment (PPE) to overcrowded emergency departments, frontline staff are putting their lives at risk to care for highly infectious patients. Regardless of the fact

that the odds are stacked against them, medical professionals are responding to the crisis with characteristic selflessness, resilience and compassion. It strikes me as profoundly unfair, not to mention strategically unwise, for the people who are being relied on so much to be left to suffer in silence — to the point where jumping off a building looks like the best option.

For many physicians, COVID-19 was the straw that broke the camel's back. Being isolated physically from family and friends, and overwhelmed by the surge of sickness and death they face on a daily basis, means that depression, anxiety, post-traumatic stress disorder and secondary trauma are reaching levels that have never been seen before. They are burnt out.

Imagine if these medical professionals can use self-compassion so that they can heal and recover from burnout so that they can thrive at work and at home?

There are three pillars to self-compassion — mindfulness, common humanity and self-kindness. Self-compassion entails acknowledging that we are suffering (mindfulness), that we are all in it together (common humanity) and that we need to love and be kind to ourselves (self-kindness) before we can really do the same for others. I found a place of peace and power within myself through self-compassion. I believe

that creating a ripple effect from self-compassion is the best way forward for us as a collective.

Medicine is a calling for most doctors — but is it worth dying for? I don't think so. The way I see it, we all have a role to play in stemming the tide of physician burnout and suicide. The time has come to reaffirm the humanity of doctors and acknowledge their value to society. Medical culture and the healthcare system both need to change — that's the bottom line. Doctors must first acknowledge, and then heal, their pain and suffering with self-compassion. They have to do this for their own sake first and then for the sake of their patients and communities.

I have learnt self-compassion that helped me find my way back home to my heart. My mission is to arm doctors and other medical professionals with the tools they need to tap into the heart-centredness of medicine.

Doctors can practise self-compassion by acknowledging their suffering with burnout, connecting with people around them and themselves by asking for help when close to burnout or when they are already there and most importantly, they accept themselves for their imperfections and being kind towards themselves. The sooner the doctors can learn self-compassion, the sooner they can heal themselves.



*Dr Olivia Ong, author of *The Heart-Centeredness of Medicine*, is a resilience leadership consultant, life and business coach for doctors, and established pain physician. She is a keynote speaker on physician burnout prevention and runs programs helping doctors transform their lives from burnout to brilliance.



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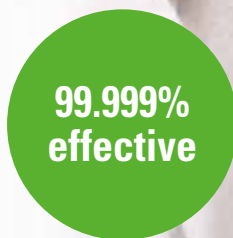
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Radiology, a core element of the healthcare system in Australia

As healthcare evolves, so does the role of imaging. The shift to value-based models means playing an active role throughout the patient journey — and keeping a watchful eye on outcomes.

One of the worldwide responses to a value-based approach is the better coordination of care across health and social services, and crucially, within the different levels of healthcare.

Analytics help healthcare organisations align with these new models while helping to improve patient care and outcomes.

With a Diagnostic Imaging Services market size of \$4.3bn in Australia, diagnostic imaging reports are arguably the most important assets radiologists contribute to patient care — helping to improve health outcomes by enhancing the diagnosis of medical conditions and guiding treatment protocols.

In radiology, the pressure is on to deliver even more in even less time and prove downstream value to care teams. Fortunately, radiology organisations can now effectively harness radiology-specific analytics to support their clinical decision-making and operations — whether the technology is streamlining MIPS reporting, profiling performance, or addressing critical issues like failed follow-ups.

AI is becoming the doctor's best assistant — accessible anywhere, and anytime.

New technologies in healthcare, particularly in medical imaging, allow the collection of increasingly diverse, rich and voluminous data, requiring on the one hand, large storage capacities and, on the other,

sophisticated analyses requiring huge computing power. Solutions to these issues exist today with cloud computing and AI, provided that patient data is protected. In doing so, healthcare organisations can save time, improve accuracy in diagnosis, better allocate their resources and optimise their productivity.

Right now, AI is transforming radiology — whether it's supporting diagnosis and care planning, enabling clinical research, or powering quality improvement initiatives. But the field of AI-driven analytics is often new to radiologists and their organisations.

AI and cloud computing make the perfect match for data driven decisions. Insights lead to better understanding and help inform and assist in the decision-making process. The time saved in analysing reports and images can now be spent with patients or taken for personal activities and reducing clinician burnout.

Whoever has the information, has the power

In 2018–19, more than 27 million radiology procedures were funded through the Medicare Benefits Schedule. Radiologists who supervised these exams, interpreted the images, and wrote reports to share with the patients, GPs and clinicians. The radiology reports must contain consistent information and recommendations about the pathologies of the patients.

In the radiologist journey, a tailored analytics solution can increase value by providing actionable insights to support radiologists in making better informed clinical decisions — every day.

With **Nuance mPower Clinical Analytics**, a cloud-based solution, hosted on Microsoft Azure in Australia, an ISO 27001 certified infrastructure, imaging services teams can access actionable insights that help optimise radiology performance, reduce cost and increase revenue — all while enhancing patient care.

mPower instantly offers easy-to-understand information that eliminates the time-consuming, iterative process typical of data analysis.

It also provides an unmatched look at the organisation's report quality and business performance giving the ability to review reporting versus billing to ensure all radiology exams are reported and claimed legitimately with Medicare.

Nuance mPower Clinical Analytics HealthCheck uses AI-powered natural language processing to extract data from radiology reports that reveal insights leading to practice improvements such as the strengthening of follow-up consistency, total cost of ownership reduction, increased revenues and enhanced compliance.

Reduced risk of burnout

With 82% of Australian clinicians in a recent HIMSS survey believing that the administrative burden of clinical documentation contributes significantly to overload, most importantly, the right technology can combat radiologist burnout, while delivering more value and better care.



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Towards equity in healthcare outcomes

David Dembo*



Inequities pervade the modern world, despite our technological advances and a growing awareness of the importance of human rights.

For example, while countries like Australia and New Zealand offer their citizens some of the best quality of life anywhere in the world, with health systems ranking among the highest on performance indices in the Organisation for Economic Co-Operation and Development (OECD), a deeper look shows the likelihood of a positive outcome for a citizen presenting at a hospital on a given day, in a given place, is far from equitable.

Variation across health systems in Australia and New Zealand drives this disparity in outcomes. Not all hospitals are the same; they differ in the

services they offer and have different processes and procedures. Likewise, not all doctors or nurses are the same — they have varying degrees of experience, specialties and ability to stay up-to-date on current medical advances.

Furthermore, hospital experience differs from day to day; present at a hospital on a Monday and your experience will differ quite considerably from another day of the week, depending on how busy the hospital is at that time or the backlog the staff is dealing with. Finally, consider the impact of hospital location on these disparities, as everyone does not have the same level of access to care.

The above variation imposes incremental risk to an individual in addition to whatever health risks they present with. In other words, these are not risks an individual acquires outside the healthcare system but risks the system imposes on the individual.

Health equity

Health equity (ie, equitable quality of health and access to health care) and equity of outcomes (ie, reduced variability, or equal chance of a positive outcome) have become issues at the centre of some of the world's pre-eminent health systems. These organisations believe equity is a core quality measure and part of their social contract with the citizens they serve.

The western world is better equipped than ever before to address health equity and equity of outcomes. Our health systems have made significant progress toward digitisation, and even without full digitisation, patients and their caregivers have left a wealth of digital footprints across the healthcare ecosystem. Modern technology can identify these digital footprints and analyse them for variation and inequity.

Clinical workflow

Emerging technologies such as artificial intelligence (AI), data science and data analytics can identify variance within and between health systems, creating opportunities for improvement and greater predictability in forecasting and planning. The key is integrating these technologies into the clinical workflow of the hospital.

UnityPoint Health, the 13th largest non-profit health system and fourth largest nondenominational health system in America, was able to 'give back' more than 1000 nights in their homes by reducing the average length of stay. By reducing clinical variation in treatment and building a strong analytics system around its efforts to support improvements, the group was also able to increase its sepsis screening rate by 36%.

Access variability

External variation, meaning variation in the communities that people live in and their location relative to health facilities, is a significant contributor to healthcare variation. In London, when travelling east from Westminster, every second tube stop represents more than one year of life expectancy lost according to the findings of the London Health Observatory.

In Australia, a report from the Australian Institute of Health and Welfare (AIHW)

showed potentially avoidable deaths in regional areas were far higher than metropolitan. Additionally, a New Zealand Medical Journal study showed Maori people had a much higher risk of COVID-19 fatality compared with New Zealanders from European backgrounds, with unmet health needs a key factor.

If our region is to maintain and build on its strong healthcare reputation and standards, it needs to bring greater focus to solving the healthcare inequity problem.

Analytics infrastructure

In addition to improving health outcomes for all members of their communities, health systems can enjoy another high-value benefit — reduced cost. Quality is a significant driver of cost savings, and equity is a core component of quality. UnityHealth was also able to lower its variable costs by more than AU\$1.75 million, savings which could be passed onto patients along with the benefits from enhanced treatment.

Australia and New Zealand combined spend over AU\$200 billion a year on health care. While there's no more worthy area to dedicate resources to than health, there is huge unrealised potential to maximise the value of that investment and provide best-practice health care to everyone in Australia and New Zealand.



*David Dembo is A/NZ Director for healthcare data and analytics technology and services provider, Health Catalyst, which recently launched in Australia and New Zealand.

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The Long and Winding Road

Managing complex information in a digitally hybrid world

Melanie Ford MN Healthcare Industry Consultant

On the cusp of the fourth industrial revolution, herein lies a space where digital technologies are intersecting and sometimes colliding. We are anticipating interoperability to the point of imperceptible boundaries between humanity and science. Disruption, agility, and innovation. A fusion of advances in artificial intelligence, robotics, the Internet of Things, Medical and otherwise.

3D organ printing, precision medicine, personalised medications, quantum information science, CRISPR and so many other technologies and disciplines we haven't even invented yet.

Sounds exciting? Absolutely. Is it here yet? Not quite. Well at least not in the realms of clinical data flow.

Patients rely on clinicians to make sound and safe decisions about their healthcare based on how they present, combined with all the rich data about their healthcare that preceded their current visit.

Not just data generated in your hospital but from their GP, pharmacist or the neighbouring hospital that saw them last week. This is where things can go horribly wrong. Omission of data is as dangerous to the patient in your care as inaccurate data. Either way, this rarely ends well.

As the majority of a person's clinical data resides in non-hospital systems (paper, electronic or hybrid), and digital interoperability between systems outside of your hospital EMR is far from complete, how do we, as providers of 21st century healthcare prevent 19th century outcomes?

In 2012, the Australian Commission on Safety and Quality in Health Care released The National Safety and Quality Health Service (NSQHS) standards. At their core, the intent was and is to be the framework for practice and barometer of safe and efficient practice. In other words, a nationally consistent level of care.

The NSQHS Clinical Governance standard Action 1.16 states that healthcare records should be available at the point of care, support an accurate and wholistic clinical and administrative record; comply with relevant privacy, security, and record retention requirements, support clinical audit, and integrate multiple disparate systems where digital interoperability doesn't exist. Yet,

As clinicians, we base our care on best practice, ongoing education, and access to patient history. If we don't have access to that information, we either repeat examinations that may have already been undertaken or in an emergency, base our judgement on the information at hand. This is traumatic for the patient, can delay treatment and seriously impact clinical outcomes; not to mention the additional expense.

as standards evolve, we still struggle with achieving semantic interoperability and data federation within hospitals. Let alone those systems outside of the inner sanctum.¹

If we had a single personal record that traversed all venues of care, ensured a national standard across all providers, crossed state and national boundaries, these standards would be easier to attain. Unfortunately, even the Australian My Health Record initiative has been unable to achieve this.

Remember, not all hospitals or primary care practices with EMRs are completely digital. Whilst public hospital EMR rollouts are progressing at varying paces, the implementation across each state and territory is far from paperless. In the private sector, adoption is still behind its public counterparts.

Perhaps one of the richest sources of current information are the ones we often forget. It's the documents the patient hands you with a list of their current medications, the interstate pathology report that is faxed to you or the discharge summary with a list of clinical conditions that is awaiting filing and scanning. These are of no use to you in the emergency

department with an unconscious patient if they only become part of the patient record at the end of their encounter.

A complete Electronic Health Record is the nirvana of healthcare and good clinical decision making. It was promised in the 1960's, partially delivered in the path to Y2K and decades later, is still in the process of implementation.

So, hey Mum, are we there yet? Soon dear. It's a very long and winding road.

Lexmark Healthcare have 30 years' experience in assisting healthcare organisations.

Solutions to assist the digitally disenfranchised; downtime solutions that cross systems; secure transmission of data and of course, integrating clinical information from other venues of care into your digital records.

See us at Digital Health Institute Summit Booth #37 to learn more about a path to managing complex information in a digitally hybrid world.

[1] According to HIMSS, whilst 75% of systems have achieved foundational interoperability, only 36% have reached a common vocabulary that paves the way for accurate and reliable communication.



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Beating burnout

Stuart Taylor, CEO of Springfox

After almost two years battling through the challenges of the pandemic with virtually no respite, research has revealed the drastic toll on the mental health of frontline hospital workers. And it's easy to see why. Hospital staff have worked — and continue to work — around the clock in high-stress, high-pressure environments, risking their personal wellbeing, and often without access to sufficient personal protective equipment.

Healthcare workers have exhibited higher rates of anxiety, depression and suicidal ideation during this time compared to the general population. A study by The Royal Australian and New Zealand College of

Psychiatrists (RANZCP) conducted on a Melbourne hospital during the pandemic revealed over 20% of healthcare workers showed significant symptoms of moderate to severe depression and anxiety, while 29% presented with symptoms of post-traumatic stress disorder.

In responding to the ever-evolving challenges of the pandemic, Australia's healthcare system has been stretched beyond capacity, putting healthcare workers on the brink of burnout. In 2019, the World Health Organisation (WHO) officially recognised burnout syndrome as an "occupational phenomenon" due to its high prevalence. It

is defined as a state of emotional, physical and mental exhaustion caused by excessive and prolonged stress. For healthcare workers, other contributing factors may include high-pressure environments, poor work-life balance, insufficient support from leadership or feeling a lack of control over, or simply overwhelmed by, work itself.

Research from RANZCP shows between 20% and 80% of healthcare workers suffer from burnout with symptoms including exhaustion, detachment, cynicism and a reduced sense of achievement. As a consequence, morale and workplace wellbeing declines and patient care becomes compromised.

In an industry centred on caring and supporting others, extending this same care towards our frontline workers has never been more important. As we prepare for COVID-normal, leaders must act to prioritise the mental and physical wellbeing of their

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teams and ensure staff have the necessary frameworks in place to prevent and recover from burnout.

Make time for recovery

In a fast-paced environment where staff are under constant pressure, finding time to recover and reset after a demanding period can feel impossible. For this reason, leaders must lead by example and empower staff to follow suit. Make use of your leave entitlements and encourage staff to do the same regularly. Provide space for your staff to unwind and recharge their energy levels, even if this is just a quiet corner of the break room. It's also worth considering staff wellness incentives such as quarterly spa vouchers or gym memberships to encourage staff to prioritise their physical and mental wellbeing outside of work.

Leading with care

Compassion towards patients is a fundamental part of any caring profession, but it's important leaders also extend this compassion to their staff, particularly during periods of high stress.

Compassionate leaders have a deep focus on caring for others and the organisation's 'greater good'. They encourage, support and lead with care and humility, and as a result, they often enjoy stronger connections with staff and higher levels of trust. By practising and nurturing compassion amongst teams, leaders will help to boost morale, foster greater psychological safety and mitigate

“Leadership trust is fostered around connection, steadiness, compassion, integrity, purpose and trust action”

against stress and burnout by ensuring staff feel seen, heard and cared for.

Nurture connection

Fostering connections between teams and departments will improve collaboration, communication and team morale, while minimising the hierarchical structures that are often prevalent in hospitals. Try to touch base with your team on a daily or weekly basis to see how each team member is travelling physically and emotionally. Offering the time to listen to their concerns will enable you to build trust and establish a sense of comradery.

It's also a good idea to schedule in a regular professional debrief session to talk through the events of the week with your team. This will provide an opportunity to spot the tell-tale signs of burnout or trauma and identify potential gaps or risks to staff wellbeing.

Cultivate psychological safety through leadership trust

Built on the foundations of leadership trust, psychological safety is one of the most vital ingredients for, and symptoms of, a healthy workplace. Defined as the shared belief that it's safe to take risks and think creatively without fear of admonition, psychological safety can be understood as the climate inside an organisation that compels you to either keep your head down or feel willing to speak up and share ideas. Instead of over-caring about the consequences of getting it wrong, staff understand they're more likely to be rewarded for speaking up in the first place. This is particularly important for younger healthcare workers in the early stages of their careers. As leaders, ensure that your communication clarifies that speaking up is okay and even encouraged.

As a leader, establishing a strong trusting relationship with employees is essential, as psychological safety can't exist without this. Leadership trust is the mutual confidence between leaders and teams which enables individuals to operate independently and feel comfortable voicing an idea or suggesting change. Leadership trust is fostered around connection, steadiness, compassion, integrity, purpose and trust action. With these elements in place, staff will be willing to take a risk and behave in a way that may lead to failure knowing they are backed by their leader.

Build resilience

Both individually and collectively, resilience helps us lead under pressure, maintain an optimistic outlook during periods of turbulence, navigate change with agility and bounce forward from setbacks. The power of resilience in business is that it acts as a buffer during particularly stressful or busy periods, preparing and enabling us to maintain balance in our lives, protect our wellbeing and sustain high performance at work.

Resilience gives leaders the ability to transform businesses and teams by cultivating greater psychological safety, fostering creativity and innovation, and increasing engagement, communication and purpose. Significantly, resilience also mitigates burnout and reduces the risk of a downward spiral. Proactively, frontline workers should be trained in resilience skills that are refreshed each month, including quarterly resilience assessments. Resilience coaching and EAP support may also be valuable here.

The challenges of the pandemic have taken a sizable toll on the healthcare industry at large. These strategies will equip leaders to protect staff mental health as COVID-19 cases continue to climb. At the end of the day, it has never been more important to safeguard the resilience of your greatest asset — your staff.

Protect your patients. Protect your staff.



High-touch surfaces in medical environments, such as keyboards and mice, need to be properly cleaned and disinfected throughout the day. Standard plastic keyboards cannot withstand repeated cleanings with harsh disinfectants. Constant use of consumer-grade wipes will wear off keyboard characters and, over time, damage the internal components. Cleaning and disinfecting your keyboard and mouse between patients is the best solution.

Founded in 1982, Man & Machine, Inc. has 39 years of experience in computer peripherals and custom hardware solutions, and 18 years of experience in the design and manufacturing of washable keyboards and mice. By listening to our customers, paying attention to ever changing safety protocols, and remaining flexible as a company, MMI has become the leading USA based manufacturer of waterproof

and disinfectable keyboards and mice. Our products are designed to maximize infection control protocols.

Man & Machine established the Medical Grade™ requirements as a standard for all keyboards and mice to be measured against when considering them for use in healthcare. These requirements include the product being hygienic white to easily identify the presence of blood and splatter; silent and ergonomic; able to be terminally cleaned in a 1:10 bleach solution per CDC guidelines; and able to stand up to the rigors of a medical environment with multiple users 24/7 and repeated harsh cleaning and disinfection.

In addition, MMI has developed an extensive range of lower cost washable keyboards and mice that can be used in clinical and administrative areas in the medical industry. Our washable keyboards and mice

have been designed to meet a variety of applications and requirements. From IP68 to Wireless to Lockable to Backlight, we give you what you want and need, at a price that works for your organization.

Through our years of experience, we have developed a partnership with HP, to provide the keyboard and mouse that is packaged with their Healthcare Edition AIO. Based on the success of this partnership, we have since developed sterilizable silicone barriers for key areas on the HP MFP Printers (available exclusively through HP).

Man & Machine's Fit for Purpose solutions also include barriers (laptop drapes and keyboard covers), and silicone mouse pads that can be sterilized in an autoclave. We also can provide Asset Identification solutions to easily identify where an asset should be located within your facility.



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For more information
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The Power of Mobility in Hospitals



We all know how frustrating it is to see the red bar on your phone when it is low on power, no charger in sight. This feeling is amplified in a healthcare scenario when you have patients relying on you and no time to wait for your device to charge.

For medical professionals, nothing is more important than saving patients from fatal conditions or helping them achieve an improved quality of life. To do this every day, week, month, requires precision, superior performance, and the ability to work on the move. Mobile technology solutions are designed to facilitate these demanding requirements; however, each technology platform performs differently and can affect workflows. By understanding the pros and cons of mobile devices and implementing the correct solution you can increase productivity and reduce downtime and staff stress.

Some of these solutions include Workstations-on-Wheels (WoWs), Medical Grade Tablets, and Handheld Computers. With these devices, healthcare professionals can easily access and input patients' data right by their bedside, without wasting time fetching files or risking hazardous mix-ups.

These devices all require power to work effectively, and this simple breakdown will help you choose the best resource for your environment.

The Freedom of WoWs

These are portable computing systems on a cart that are specifically designed for easy transportation and full functionality.

They can be freely wheeled from room to room and many WoWs also have in-built cameras and speakers to facilitate telehealth services. WoWs can operate in all surroundings, thanks to their ability to be powered in three different ways.

Medical computers with hot-swap batteries are cordless and fully battery-powered. Their hot-swap batteries allow for dynamic battery change without the device powering down. Extra batteries are always kept charged and ready for use. The batteries power the computer and accessories including, keyboard and mouse.

Workstations-on-Wheels can also be powered by an external battery-powered system, a self-contained modular battery cell pack attached to the cart column and plugged into a wall socket to charge. These are great for easy onsite maintenance, upgrade, or renewal of end-of-life systems. An example is the Wamee DC PLUS System which can run for up to 28 hours with only a six-hour charge. It powers the computer and all its accessories and connected devices such as the keyboard, mouse, printers, and scanners.

Lastly, WoWs with integrated battery systems operate on in-built batteries, which provide extra functionality, including automatic height adjustment and height presets. These are charged in a wall socket and will last for one to two shifts before re-charging is required. Integrated batteries, such as the Humanscale Touchpoint T7, also power the keyboard, mouse, printers, and scanners.

Medical Grade Tablets — The Perfect Dose

These mobile devices are portable, lightweight and can also operate on a hot-swappable battery system, such as the Wamee 313YMD. When the external battery runs low, it can easily be swapped for a charged one while the unit is still working. These devices cover entire shifts without powering down or causing an interruption in patient care. Hospitals and other medical institutions can also avoid the loss of patient data or the additional stress of swapping devices during busy shifts.

The Future is in the Palm of your Handheld

Everyone knows how convenient it is to have dependable, small, and lightweight devices that can easily fit into their pockets. These mobile devices can help nurses save 2 to 6 hours per week, increasing their efficiency and job satisfaction. They are convenient, easy to ease, and highly efficient.

An example is Zebra Technologies TC52/57, which features barcode scanning, video streaming, secure text messaging, mobile alarms, and alerts. You can charge it on a charging cradle or swap the Li-ion batteries and charge with a battery charger. Handheld computers are all-inclusive and do not need an external keyboard, mouse, or scanner.

Need help with the best mobile technology solutions for your establishment? HPA is an ICT Healthcare Solutions provider that specialises in helping hospitals improve their workflows and downtime through state-of-the-art mobile devices and technologies.



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How AI is shaping the future of oral wellness

Dr Fadi Yassmin*

As technology continues to evolve at a rapid rate, what was once the stuff of science fiction is now a daily reality for healthcare practitioners across a wide range of fields. In the field of dentistry, artificial intelligence (AI) is not just revolutionising patient care, it is also providing us tools to create better outcomes for patients.

Put simply, AI uses machine learning to analyse, diagnose and suggest the most appropriate treatment options. This technology works by looking at new data and mapping it against the knowledge or similar data it has accumulated from other patients.

As practitioners, we do this countless times every day — drawing on our years of experience and training to diagnose a problem and then determine the type of treatment that we believe will give the best results. AI is able to do this faster and more accurately than any human. It also has the advantage of being able to compare new patient data with hundreds of thousands or even millions of similar cases — far more than a humble human doctor could ever treat and remember in their lifetime.

While AI is unlikely to replace the expertise of a trained healthcare professional, it has terrific potential to complement and support the work we do in our practice.

Digital dentistry

If used correctly, AI can be a real game changer. This technology is already being applied to areas of diagnostic radiology with promising results. It can, for example, be used to identify and label teeth from periapical radiographs with a high degree of accuracy¹. It's also capable of detecting and diagnosing dental caries — in 3000 periapical radiographs of posterior teeth, AI was able to detect carious lesions with an accuracy of 75.5–93.3%². That it can do so at speed makes these results even more impressive.

Many of the conditions that affect the oral cavity not only have a significant effect on oral health and quality of life, they are also largely preventable. The AIHW reports that 72,000 annual hospitalisations for dental conditions may have been prevented with earlier treatment³. AI technology helps us identify potential issues earlier and more quickly than ever before.

A long-term approach

What really excites me, however, is the potential for AI to extend diagnostic radiology beyond the walls of the clinic and into our patients' homes. For example, we offer patients a complete oral wellness subscription program, which harnesses AI technology to offer guided at-home monitoring of their oral health, in conjunction with in-clinic exams.

Using their own smartphone, together with customised attachments and software provided by us, patients take a scan of their teeth each month and upload it for our clinical team to monitor. This allows us to spot any potential issues as early as possible; from there, we can either give treatment advice over the phone or recommend the patient visit our clinic for specialised care. This is complemented by quarterly in-person oral health visits. This technology empowers patients to actively participate in their oral health management from the comfort of their home.

We form a two-way partnership with patients in which we are co-participants in the longevity

of their oral wellness. Patient compliance is essential to the success of any dental treatment plan; giving a patient access to these tools makes it easier for them to stay engaged for the long term.

Reaching remote communities

These same tools also have the potential to extend the reach of quality oral healthcare to remote or disadvantaged communities. In my work with Darren Weiss and the Humble Smile Foundation, we've developed a technology that allows clinicians to use AI to monitor oral health in developing countries and territories.

Our first study will be in a township in South Africa, but the potential for this really is global. I believe it's only a matter of time before artificial intelligence technologies make it possible for remote communities everywhere — including in Australia — to have access to some of the best oral healthcare in the world.

1. Nguyen, T.T., et al. Use of artificial intelligence in dentistry: current clinical trends and research advances. *J Can Dent Assoc* 2021;87:17
2. Lee JH, Kim DH, Jeong SN, Choi SH. Detection and diagnosis of dental caries using a deep learning-based convolutional neural network algorithm. *J Dent*. 2018;77:106-11
3. AIHW. Oral health and dental care in Australia. 2021

*Dr Fadi Yassmin graduated from Sydney University in 1993 and is a dental implant and cosmetic practitioners in Sydney. He has a Masters in Aesthetic Dentistry from Kings College London, a Master Clinician in Implantology (gIDE UCLA) and a post-graduate diploma in orthodontics from the city of London Dental School.

Featured Products

Keep up with the latest industry innovations

Mounting system

In response to the industry's growing need for flexible accessible solutions, Con-Serv has developed its Hideaway Mounting System that allows accessible fittings such as grab rails to be installed, removed and re-installed as required.

The Hideaway system is compatible with Con-Serv's Hygienic Seal and Linear grab rails, backrests and shower seats. It comprises Blank End Flanges (HS 032 C BF) that use the same wall mount plate used to install the grab rail, backrest or shower seat.

The installer simply removes the fitting, leaving the wall mount plates in place, and covers the mounting plates with the Blank End Flanges until the fitting is needed again.

The Blank End Flanges are installed using a tamperproof hex key (supplied) and conceal the wall mount plate with an unobtrusive cover that is available in a range of finishes.

Con-Serv's Hideaway Mounting System complies with recent additions to the AS 1428.1:2021 Backrest clause 12.2.4 Backrest appendix (g) which now requires backrests in Accessible Sole Occupancy Units be capable of being removed and refitted. Con-Serv Hygienic Seal Backrests with the Hideaway Mounting System meet this requirement.

Con-Serv

www.con-serv.com.au



Theatre table

The Mindray HyBase V8 operating table has just been launched overseas and is available in Australia only through Hospital Products Australia (HPA).

With increasingly complex surgical procedures, today's surgical environment requires a table that instantly adapts to all the versatility to provide the highest level of care.

The modular design of the tabletop is tailored for various surgical needs, which can lower the cost for hospitals as they only need to buy the specific module, instead of a new table, for an additional surgical type.

The longitudinal shift of up to 350 mm and the ultra-thin base allows the C-arm to descend to the lowest position and rotate over 360° without interfering with the base or frame. The carbon fibre tabletop ensures good radiolucent imaging. With a wide imaging access and better radiolucency.

The table is easy to use with one-button design to remove or install head and leg plates, and easy to move and clean.

Users can enhance patient safety with the intelligent collisions protection system which monitors the positions of the table elements during movement and colour coded indication technology on the remote control to show the angle and issue a timely warning when it comes to excessive Trendelenburg and reverse Trendelenburg position.

Hospital Products Australia

www.hpaust.com



Operating theatre ventilation systems

Camfil Focus ultraclean ventilation (UCV) systems cater to a range of operating theatre requirements — from day surgeries and surgical rooms with less-demanding airflow requirements through to orthopaedic and neuro-operating theatres where deep wound surgery is carried out and there is a high risk of hospital-acquired infection via airborne routes.

Due to extensive design research, computational fluid dynamics modelling and refinement over 20 years of installations in Australian hospitals, Focus unidirectional and UCV systems are designed to provide superior air quality at the operating theatre table level compared with the conventional arrangement of individual terminal ceiling-mounted HEPA filters.

Focus systems comply with the local Australian Council on Health Care Standards (ACHS) guidelines for air flow and velocity at the operating table level and international standards nominated in UK HTM-03 and European standard ISO/DIN 1946-4 (2008-12).

Each Camfil Focus is custom designed to suit the specific requirements of each client, with available options including gel or gasket seal HEPA filtration, integrated return air and perimeter lighting, and low-profile, hybrid or bulkhead-style configurations.

With branches in every major city and in-house engineering, technical sales and service teams, Camfil can provide support and services through the entire process from system design to installation as well as after-sales service, NATA-accredited testing and maintenance.

Camfil Australia Pty Ltd

www.camfil.com.au

Power management system

DC PLUS is designed to be a safe, high-powered and self-contained long-lasting power management system designed to run computers and peripherals on workstations on wheels. The modular battery cell pack allows for easy onsite maintenance, upgrade or renewal of end-of-life systems.

The system has a run time of up to 28 hours and uses space-age cell matching and balancing algorithms to ensure cells charge and discharge evenly to provide long cell life and management. The DC:DC technology saves up to 30% of battery capacity to extend runtime and battery life and reduce charging and environmental impact.

The system can be front or rear mounted and upgrading an existing GCX or Humanscale workstation on wheels to the DC PLUS Battery System can be done on site in half an hour. The system's efficiency, long capacity warranty, modularity and cell pack exchangeability are said to add up to a significant system cost saving over a cart life.

Hospital Products Australia
www.hpaust.com



Hand hygiene compliance calculator

The Whiteley McLaws Hand Hygiene Compliance Calculator has been developed by renowned epidemiologist Professor Mary-Louise McLaws to improve hand hygiene compliance in hospitals.

This simple calculator is designed to assess how many hand hygiene moments healthcare staff are performing daily and estimates the amount of hand hygiene product usage that is required to meet recommended compliance levels.

The McLaws Hand Hygiene Calculator is designed to: improve hand hygiene compliance within healthcare facilities; determine healthcare facilities' current compliance vs target compliance; remove audit bias; and alert infection prevention teams about performance and training requirements.

Whiteley
www.whiteley.com.au



*This information represents findings from a multiple hospital case study at Klinikum Hospital in Stuttgart, Germany; Groupe Hospitalier Nord in France, is running Torin in Orsay and Longjumeau; and Tokyo Medical University Hospital in Japan.

Torin

Planning, management and optimisation of your surgical department - made easy.

Torin is the complete OR management solution that helps you predict better surgery times. Using artificial intelligence, you can improve your surgery planning and prioritise long surgical waiting lists. With Torin, you are utilising resources efficiently in and across departments.

- ✓ To enable increased utilisation in the OR*
- ✓ To assist in time reduction for OR coordination
- ✓ Promoting a calm care environment for patients*

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GETINGE 

Featured Products

Socially responsible AI robot

MATLDA is an intelligent, person-centred, multilingual social robot with human-like features designed for providing holistic care services; for example, emotional wellbeing, multilingual translation and vital signs.

Available in physical, virtual (telehealth) and mixed-reality forms, the robot communicates with its human partners via face, gestures, voice commands, smartphone, touch panel, SMS messages or email. It is an Australian innovation and an outcome of 10 years of research in aged care, disability support, education and robot process automation sectors respectively.

As a proactive device, MATLDA has been evidenced through home-based and residential care deployments to possess an advantage over e-health monitoring and screen-based systems as its 'human qualities' elicit higher levels of patients' emotional, visual and behavioural engagement. Even patients with limited knowledge of technology and those with mental or physical impairments can interact with the device.

The robot operates offline (complete data privacy) as well as online and can help with the following: provide emotional wellbeing, monitoring, reminders, remote patient management in hospital settings and at home including smart home services for at high-risk seniors. The device can also help reduce premature escalation of care arrangements for seniors because of lack of support systems at home.

Other features and benefits include: medication monitoring and communication of patient conditions and needs to medical staff on their smartphone to reduce and avoid preventable hospital stays; augmented intelligence through life-style analytics, cloud-based patient service management, posture tracking, fall detection, anti-wandering services; social connectivity to help with patient recovery and provide respite to carer and medical staff; integrating lifestyle big data with clinical management systems for better treatment and diagnosis of various chronic disease and mental health conditions; administrative and workflow automation functions.

Human Centred Innovations Pty Ltd
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HEALTHCARE

Personal hygiene products

Solaris Paper has introduced the Sorbent range of products into the care market as Sorbent Professional.

The range is designed to be soft, strong and absorbent, including: toilet tissue rolls individually wrapped and jumbo toilet rolls, both with a modern emboss; facial tissues that are hypoallergenic, with softness for sensitive skin; TAD hand towel using Australian technology to create an interlock weave for improved absorbency meaning fewer towels needed, along with softness for frequently washed hands; and matching dispensers, provided free on loan with the purchase of Sorbent Professional products.

The range is kind on sensitive skin and the environment with 100% independently certified sustainable fibre.

Solaris Paper Pty Ltd

solarispaper.com.au



Management solution

Torin is a complete OR management solution that helps predict surgery times. Using artificial intelligence helps with surgery planning and prioritising long surgical waiting lists. It allows users to deploy resources more efficiently in and across departments.

The solution aims to reduce administrative tasks to free up time for quality patient care, with both long-term and daily planning becoming easier and more accurate, which would in turn lead to reduced waiting times and increased OR utilisation*. Torin also presents the hospital management with real-time data, enabling better hospital-wide decisions.

It is designed to improve the way coordinators and staff collaborate both in and across departments. By organising the workflow within the OR and to the other departments, staff have easy access to the same updated information, which reduces the need for phone coordination and minimises disruptions.

The solution provides staff with valid and updated information to support communication to patients and their relatives. The desired outcome is for patients experiencing the reassurance of a well-organised, calm hospital with surgeries that run according to schedule and have the necessary resources and staff available at the right time*.

*This information represents findings from a multiple hospital case study at Klinikum Hospital in Stuttgart, Germany; Groupe Hospitalier Nord in France is running Torin in Orsay and Longjumeau; and Tokyo Medical University Hospital in Japan.

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In Conversation

with Christine Gee



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 Christine Gee, CEO of Toowong Private Hospital in Brisbane and former President of the Australian Private Hospitals Association (APHA). She was recently awarded the 2021 ACHS (Australian Council on Healthcare Standards) Gold Medal, which recognises an individual for improving quality and safety in Australian health services.

Congratulations on the award! What, or who inspired you to get into health care?

Thank you, it is a huge and very treasured honour.

My career in health care started by chance. After finishing high school I got a job at the Redcliffe Hospital as an Internal Reliever in Administration whilst waiting for the university year to start. It was a great job, essentially being the relief person for any of the administration staff who were on leave.

After a month in the job, I knew I would never be able to work anywhere but a hospital... it felt like home and I loved it. So rather than a gap between school and university, it provided the foundation for a career in health care and a change in the choice of university degree! Somewhat of a strange choice given I will admit to having a healthy dose of nosocomephobia.

Tell us about the early days in your career?

The early days at Redcliffe Hospital provided a fantastic opportunity and platform to really get to know all of the

fundamentals that go into the operations of a hospital. In the two years I spent as an Internal Reliever I got to experience almost every administrative role there was, from switchboard operator, ward clerk, payroll, stores, medical secretary, medical records, theatre bookings, patient liaison and human resources. I also got to work with the full range of professions that make up a hospital and, in that, learnt how everyone involved contributes to the experience and care a patient receives.

I realised quickly that whether it is the direct clinical care from doctors, nurses and allied health, the clinical support of pharmacy, radiology or pathology right through to the administrative, engineering, catering and cleaning support services, everyone has to play their part for things to run smoothly and for people to be able to access the care and services they need. A passion for hospital management was ignited and has never dimmed.

How did you become involved in safety and quality?

This was really a case of right time, right place. Being a hospital CEO you really do

have to focus on safety and quality because at the end of the day the whole point of a hospital is to provide quality and safe care. Feeling that I had gained a solid foundation in hospital management, I joined the Board of the Australian Private Hospitals Association in the mid-90s to become involved at an industry level.

Not long after that an opportunity presented itself to represent the private hospital industry on a Commonwealth Department of Health initiative that brought the private sector together to develop Private Sector Quality Criteria. I jumped at the chance given I already had a well-developed interest and understanding of safety and quality from my own facilities experience. It was not long after this time that Australia developed a more national focus on patient safety and I was passionate about the necessity for private sector inclusion in the development and implementation of national quality and safety initiatives.

What are your career highlights?

I'm really fortunate to say there are many and I hope the best are yet to come. I am most



grateful for the opportunities to participate at an industry-wide level and that is due to my roles and work with the Australian Private Hospitals Association. Being President of the APHA is something I will always be immensely proud of; especially being the 1st female President of the association.

Celebrating the milestone of 25 years as Toowong Private Hospital's (TPH) CEO in September was an absolute highlight. The team at TPH is one of the finest you will find in any hospital anywhere. Their dedication and commitment to providing our patients with the best possible psychiatric care is outstanding and something I have great pride and admiration in.

Chairing the Mental Health Advisory Group for the Australian Commission on Safety and Quality in Healthcare (ACSQHC) and working with Suellen Allan, Andrew Moors and those at the forefront of mental health services and lived experience across the country is both a highlight and profoundly rewarding.

My work with the Medical Board of Australia through Chairing the National Special Issues Committee, which is part of a leading initiative in transforming the regulatory management of sexual boundary and family violence notifications, is a significant highlight.

Clearly being awarded the ACHS Gold Medal is right up there.

A real highlight for me though is knowing that I have contributed to a patient getting the care and services they need and that they have experienced as positive a time

in hospital that they can. Maybe my own experiences with nosocomophobia gives me that little extra empathy for people at their most vulnerable.

How would you describe your leadership style?

Open. I believe in the old-fashioned open door policy — be that for managers, staff or patients and their families. My office is central in the hospital — if you need to see me, I am there. I am approachable and I listen. I would never ask or expect anyone to do anything that I was not prepared to do myself. My parents instilled a 'captain goes down with the ship' philosophy... so you can guarantee regardless of success, challenge or failure, I'll be there and I'll be responsible and accountable.

Did you face challenges as a woman leader? If yes, how did you navigate those?

I did and I still do. Being a leader first involves getting the opportunity to be one, and for a woman the biggest challenge has been and remains equality in the workplace, any workplace. I have relied on my communication skills, emotional intelligence and determination. I was raised in a family of strong women and men; gender didn't really feature in opportunities or expectations. I was taught from a very young age that if you wanted something, you needed to work hard and keep at it. That's what I have done and I hope they are the skills and personal ethos I have embedded in my own son and daughter.

What do you think are the key elements of being a successful leader?

I think a successful leader has to be able to inspire people; to do that they need to be knowledgeable and they certainly need to have both great communication and listening ability. To be able to inspire others you must have empathy, vision and resilience. I also believe that a good leader has to have integrity and be accountable.

What would be your advice for emerging leaders and those interested in quality and safety?

Put the patient/consumer at the centre of everything. My personal philosophy has always put patients at the centre of care and I think that is reflected in my work. My belief that ensuring and protecting the best interests of patients will achieve significant improvements in the system — from efficiency through to effectiveness — has guided my work in both quality and safety and in general.

Lastly, what do you like outside of work?

Outside of work, I enjoy nothing more than spending time with family and our menagerie of pets... three beagles, four cats and an aquarium of tropical fish. I'm an avid reader and will admit to an obsession with podcasts and Netflix series. Post pandemic, I look forward to getting back to discovering the joys of holiday travel.

Out & About

Disability leaders recognised

The National Awards for Disability Leadership have recognised the achievements of seven disability leaders.

The recipients include a youth activist successfully lobbying ministers, an innovator with a passion for beach going, a leading LGBTIQ disability advocate, a Commonwealth public servant making significant internal change, a well-respected author and researcher on autism and two fashion designers making inclusive and adaptive fashion.

These awards recognise outstanding achievements by individuals, or disabled people's organisations, who have significantly contributed to advancing the status of disabled people. The 2021 Recipients of the National Awards for Disability Leadership are:



Lesley Hall Award for Lifetime Achievement **Wenn Lawson**

Wenn works with researchers around the world on vital topics like ageing and quality of life, has written 20+ books and co-developed monotropism, a person-centred theory to conceptualise autism. Dr Wenn Lawson is a proud family man and member of the LGBTIQIA+ community.



Rights Activism **Chloe Polglaze**

By sharing her lived experience, she directly contributed to a significant policy change that will positively impact children with disability around Australia. Following her contributions at the Children and Young people with Disability Australia (CYDA) and Families Australia policy forum, Community Services Ministers met and agreed to add a fourth priority group to the National Framework for Protecting Australia's Children successor plan.



Inclusion **Ruby Susan Mountford**

Ruby Mountford's contribution to LGBTIQIA+ disability communities and work in community development and inclusion has involved co-authored research reports, co-designed resources for self-advocacy and employment inclusion, and developing an accessibility inclusion plan to reduce barriers and support community participation for LGBTIQIA+ people with disabilities.



Innovation **Shane Hryhorec**

Shane connects communities, councils, surf life savers clubs and people with disability around Australia to make over 50 Australian beaches more accessible.



Social Impact **Nikki Hind**

Nikki Hind is Australia's first legally blind fashion designer and the Founder of her fashion label Blind Grit. Nikki is also the Fashion Editor for Wb40 — Women Beyond Forty Magazine. She is a Disability and Inclusion advisor and media consultant.



Change Making **Kimberley Congram**

Kim worked to reform and transform the inclusion network for people with disability in the Attorney-General's Department (AGD) and the APS. She redeveloped the Celebrating Ability Network (CAN), growing membership from 0.3% to 11%.



Arts **Carol Taylor**

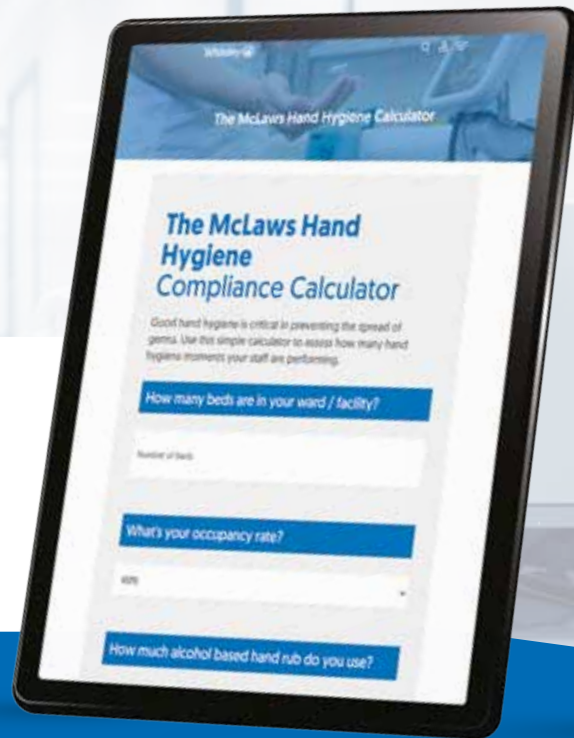
Carol Taylor is a lawyer, award-winning artist, the world's first quadriplegic fashion designer. In addition she is a disability advocate through both her works as a founding member of the Queensland Law Society Diverse Abilities Network and through her role as a non-Executive Director of Spinal Life Australia.

NEW!

The McLaws Hand Hygiene Compliance Calculator™



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AUST R: 335834

Developed by renowned epidemiologist Professor Mary-Louise McLaws to improve hand hygiene compliance in hospitals.



Prof Mary-Louise
McLaws [UNSW]

Hand hygiene compliance is crucial within hospitals to prevent the spread of bacteria and infection from one patient to another.

This simple calculator is designed to assess how many hand hygiene moments healthcare staff are performing daily, and estimates the amount of hand hygiene product usage that is required to meet recommended compliance levels.

- ✓ Improve hand hygiene compliance within healthcare facilities.
- ✓ Determine healthcare facilities current compliance vs target compliance.
- ✓ Remove audit bias.
- ✓ Alert Infection Prevention teams about performance and training requirements.

Data for this model has been supplied by Prof Mary-Louise McLaws [UNSW] who was the chief investigator of 'Automated hand hygiene auditing with and without an intervention' Am J Infect Control 2016; 44:1475-80. doi: 10.1016/j.ajic.2016.08.014.

To try the calculator visit: whiteley.com.au/hand-hygiene-calculator

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