

HOSPITAL AND HEALTHCARE

OCTOBER 2026

**INFECTION
CONTROL
ISSUE**

THE COST OF
NOT CLEANING

**GOLDEN STAPH
COLOUR TEST**

**NATIONAL MODEL FOR
CLINICAL GOVERNANCE**

**DEADLY SUPERBUGS
ON HOSPITAL
WORKERS' PHONES**

Hydrofin for optimal infection control

Advanced infection control
design reducing splashing by
up to 90%.

Trusted globally in hospitals,
health and aged care.

*Armitage
Shanks*

GalvinEngineering 
the mark of reliability



Explore the GalvinAssist®
Contour 21 Basins range at
www.galvinengineering.com.au

CONTENTS

HOSPITAL HEALTHCARE



06

Facility admin

*Dr Cathy Balding
Director of Qualityworks PL
and a Board Director with RSL
LifeCare NSW*



*Gillian Giles
Executive Director of Clinical
Governance for the Australian
Commission on Safety and
Quality in Health Care*



12

Infection control

*Georgia Matterson
Member of the research
team on the CLEEN study
and Research Assistant at
Avondale University*



*Professor Brett Mitchell
Chief Investigator on the
CLEEN study and Professor
of Health Services Research &
Nursing at Avondale University*



15

Mental health

*Jane Cameron
Program Director, Medicare
Mental Health Check In, St
Vincent's Health Australia*



32

Technology

*Tony Burnside
Head of APAC at Netskope*

DAILY NEWS

hospitalhealth.com.au

[/hospitalhealth](https://www.facebook.com/hospitalhealth)

[hospital_health](https://twitter.com/hospital_health)

STRAIGHT TO YOUR INBOX

hospitalhealth.com.au/subscribe

STRAIGHT TO YOUR DESK

hospitalhealth.com.au/magazine

STRAIGHT TO YOUR PHONE



SCAN to see
the latest *Hospital +
Healthcare* news



INFECTION CONTROL ISSUE

FACILITY ADMIN



06

**A new national approach to
clinical governance**

INFECTION CONTROL



12

The cost of not cleaning
how to reduce infections
and save money

REGULARS

DESIGN IN HEALTH



20

Simulating settings

A DAY IN THE LIFE OF...



28

Dr Hayden Cain
a rural generalist anaesthetist and
men's mental health advocate

MENTAL HEALTH



15

Medicare Mental Health Check In
— helping clinicians close the gap

TECHNOLOGY



32

From ransomware to resilience
navigating data risk in health care

CASE STUDIES



14

Eureka Prize-winning discovery
affects one in four women
worldwide



26

**Preserving paediatric data beyond
the point of care**



istock.com/koro_fga

This magazine is FREE for industry professionals. Subscribe: www.hospitalhealth.com.au/subscribe



Editor: Dr Joseph Brennan, PhD
hh@wfmedia.com.au

Publishing Director/MD:
Janice Williams

Art Director/Production Manager:
Linda Klobusiak

Circulation: Alex Dalland
circulation@wfmedia.com.au

Copy Control: Ashna Mehta
copy@wfmedia.com.au

Advertising Manager:
Richard Austin
+61 401 400 866
raustin@wfmedia.com.au

PUBLISHED BY
Westwick-Farrow Media
A.B.N. 22 152 305 336



www.wfmedia.com.au

Head Office
Unit 5, 6-8 Byfield Street, North Ryde
Locked Bag 2226
North Ryde BC NSW 1670
AUSTRALIA
ph: +61 2 9168 2500

If you have any queries regarding our
privacy policy please email
privacy@wfmedia.com.au

Subscriptions for unregistered readers -
price on application

Printed and bound by Ive Group
Print Post Approved PP100022780
ISSN 2204-3438 PRINT
ISSN 2204-3446 DIGITAL



Westwick-Farrow Media is committed to using environmentally responsible print services to produce our publications. This edition is made with a mixture of materials from FSC-certified forests, recycled materials, and/or FSC-controlled wood. While controlled wood doesn't come from FSC-certified forests, it mitigates the risk of the material originating from unacceptable sources. It is delivered in a totally degradable plastic wrapper.

NOTICE:
All material published in this magazine is published in good faith and every care is taken to accurately relay information provided to us. Readers are advised by the publishers to ensure that all necessary safety devices and precautions are installed and safe working procedures adopted before the use of any equipment found or purchased through the information we provide. Further, all performance criteria was provided by the representative company concerned and any dispute should be referred to them. Information indicating that products are made in Australia or New Zealand is supplied by the source company. Westwick-Farrow Pty Ltd does not quantify the amount of local content or the accuracy of the statement made by the source.



istock.com/brizmaker

Welcome to the October 2026 Infection Control Issue

When budgets tighten, hospital cleaning is often seen as a cost to cut. However, as Georgia Matterson and Professor Brett Mitchell —two members of the research team on a recent trial in a large Australian public hospital — explain, evidence suggests the opposite should be true: with investing in environmental cleaning carrying the potential to improve patient outcomes while reducing overall healthcare costs. Also in this infection control issue we have: the results of DNA samples from 95 mobile phones of Australian and United Arab Emirates hospital workers, which found, on average, 3.62 out of 10 species of bacteria associated with the highest global mortality rates; a rapid colour-changing test designed to distinguish between different strains of golden staph, including those likely to be virulent and antibiotic-resistant; and details on this year's Australian Infectious Diseases Research Centre Eureka Prize for Infectious Diseases Research winner, the Women's Microbiome Innovation Group, for a discovery that bacterial vaginosis, which affects one in four women worldwide, is sexually transmitted.

In addition to further infection control-related stories, we also bring you our usual breadth of coverage. This includes our lead feature on the Australian Commission on Safety and Quality in Health Care's new National Model for Clinical Governance, with the Commission's Gillian Giles and clinical governance expert Dr Cathy Balding explaining what the national model means for those working in Australian hospitals;

Jane Cameron — Program Director, Medicare Mental Health Check In, St Vincent's Health Australia — outlining the new national digital service delivering free, evidence-based early mental health support for mild challenges, with and the health workforce having a central role in guiding people toward it for the right support at the right time; and Tony Burnside — Head of APAC at Netskope — setting out some key data security challenges and risks healthcare organisations in Australia are currently facing, along with potential ways to mitigate them.

Plus, much more, including some of our regulars, such as this issue's A Day in the Life, which we spend with Dr Hayden Cain, a rural generalist anaesthetist who has a particular interest in men's health and mental health, including how clinicians can better support men to open up, stay engaged and follow through with care. Our Thursday spent with Dr Cain in Lithgow, complete with a video diary, is perfectly timed for next month's November and its Men in Mind initiative for which Dr Cain is an advocate. Happy reading.

Dr Joseph Brennan, PhD

Editor, H+H
hh@wfmedia.com.au



WANT TO CONTRIBUTE?

We welcome articles and research reports from health professionals across Australia for review for the bimonthly 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.

The Rounds

Updates in health care

Back pain hybrid model funded to ease hospital bed pressure

Led by Associate Professor Gustavo Machado from the University of Sydney, the Back@Home project is designed to support early discharge for older adults who have been admitted to hospital with back pain, allowing them to recover at home — while also freeing up hospital beds. To do this, the project will test a hybrid virtual and in-person care model for adults 65 years and older who have been admitted to hospital with back pain.

“Hospitalisations for back pain have increased every year for the past 10 years and are now estimated to cost the healthcare system \$2.2 billion each year. This is around two-thirds of all healthcare spending on back pain,” Machado said. “Older Australians are disproportionately affected by back pain. People aged 65 years and over are three times more likely to be admitted to hospital for back pain than younger adults. They are also vulnerable to complications such as falls, infections and loss of physical function during their hospital stay.”

The project is one of 16 research projects the Australian Government is funding through the Partnership Project Program. The projects will receive a total government investment of \$17.3 million, with an additional \$27.7 million committed by funding partners. This particular model could, the government said, reduce complications, shorten hospital stays and be scaled nationally.



Incorporating an ‘rpavirtual’ model of care, which sees patients receiving care remotely in their own homes, the trial will be conducted across the Sydney Local Health District. You can learn more about the trial via the Institute for Musculoskeletal Health at www.imh.org.au/back-at-home.

Eco-friendly antimicrobial coating trial underway

An eco-friendly antimicrobial coating made from Queensland agricultural waste is part of a two-year trial in the ICU of the Future at Brisbane’s The Prince Charles Hospital. Healthcare-associated infections (HAIs) such as golden staph cost Australia’s health system \$1 billion every year. Now, researchers from the University of Queensland (UQ) are testing the performance of an antimicrobial coating for hospital surfaces and equipment. The coating, NanoAM, was designed to improve patient safety and protect hospital staff from microbes in hospital environments, which include bacteria and viruses.

“The technology works by converting green waste, including sugar cane, banana and hemp, into long-lasting, hospital-grade surface protection,” said NanoAM lead developer Associate Professor Nasim Amiralian of UQ’s Australian Institute for Bioengineering and Nanotechnology. “Acting as a sustainable, self-cleansing and non-toxic shield, the coating kills pathogens and prevents microbial build-up — in turn reducing hospital-acquired infections in vulnerable patients and prolonged hospital stays,” Amiralian said, adding: “We are also focused on protecting healthcare workers, who can easily pick up infectious bacteria during patient care, and finding ways to reduce that risk.”

With infection accounting for 38% of all hospital-acquired complications and contributing to 7000 deaths each year, to address the risk, Amiralian said Queensland hospitals currently rely on chlorine or bleach-based disinfectants, approaches that “are short-lived — damaging surfaces, fuelling antimicrobial resistance, releasing toxic materials — while generating tonnes of chemical and hazardous healthcare waste across the state every year”.

Professor John Fraser from UQ’s Institute for Molecular Bioscience, Director of the Critical Care Research Group and an intensive care director and clinician, said: “For some time, we have recognised the devastating impact hospital-acquired infections can have on patients, often leading to increased use of antibiotics, contributing to antimicrobial resistance. The trial aims to reduce antimicrobial contamination in ICU on surfaces, making the hospital environment safer for patients and their caregivers,” Fraser added.

If the trial is successful, Amiralian said the technology could be extended to other healthcare settings and applied to public services including food contact surfaces.



University of Queensland researchers Dr Sandya Athukoralalage, Dr Adrian Goldsworthy and Associate Professor Nasim Amiralian



NanoAM antimicrobial coating spray up close

Images: The University of Queensland



A new national approach

to clinical governance

GILLIAN GILES* AND DR CATHY BALDING*



All health ministers have urged acute health services to implement new clinical governance guidance from the Australian Commission on Safety and Quality in Health Care. The Commission's Gillian Giles and clinical governance expert Dr Cathy Balding explain what that means for those working in Australian hospitals.

From the wards to the boardroom and executive offices, support services and corporate teams, everyone who works in a hospital can influence the quality of patient care.

While clinicians and support staff are committed to delivering the best possible care, the complexity of modern health care can make it challenging to deliver consistently high-quality care.

As in all countries, Australian hospitals are facing evolving challenges such as workforce shortages, growing patient numbers and new models of care.

Patient outcomes are influenced not only by individual effort, but also by the systems, processes and organisational culture in which people work. We know from accreditation data and inquiries into safety failures that aspects of clinical governance remain difficult for many health services.

After the states and territories requested national leadership in this area, the Australian Commission on Safety and Quality in Health Care (the Commission) prioritised strong, outcome-focused clinical governance as part of national efforts to strengthen the safety and accountability of health care.

As a first step, the Commission recently released a new National Model for Clinical Governance (national model) as part of a broader program of work that aims to drive high-quality care and better outcomes for patients in Australian hospitals.

Based on the latest evidence and contemporary best practice governance as well as rigorous consultation across the health system, the national model reshapes Australia's approach to clinical governance.

It shifts the main focus in public and private acute health services from accreditation compliance as an end in itself to part of a broader strategy for delivering consistently high-quality care.

Importantly, the national model highlights the crucial role of boards and executives in governing for high-quality care.

What does clinical governance mean?

A term originally coined by Britain's National Health Service in the 1990s, clinical governance has not always been meaningful for the health workforce.

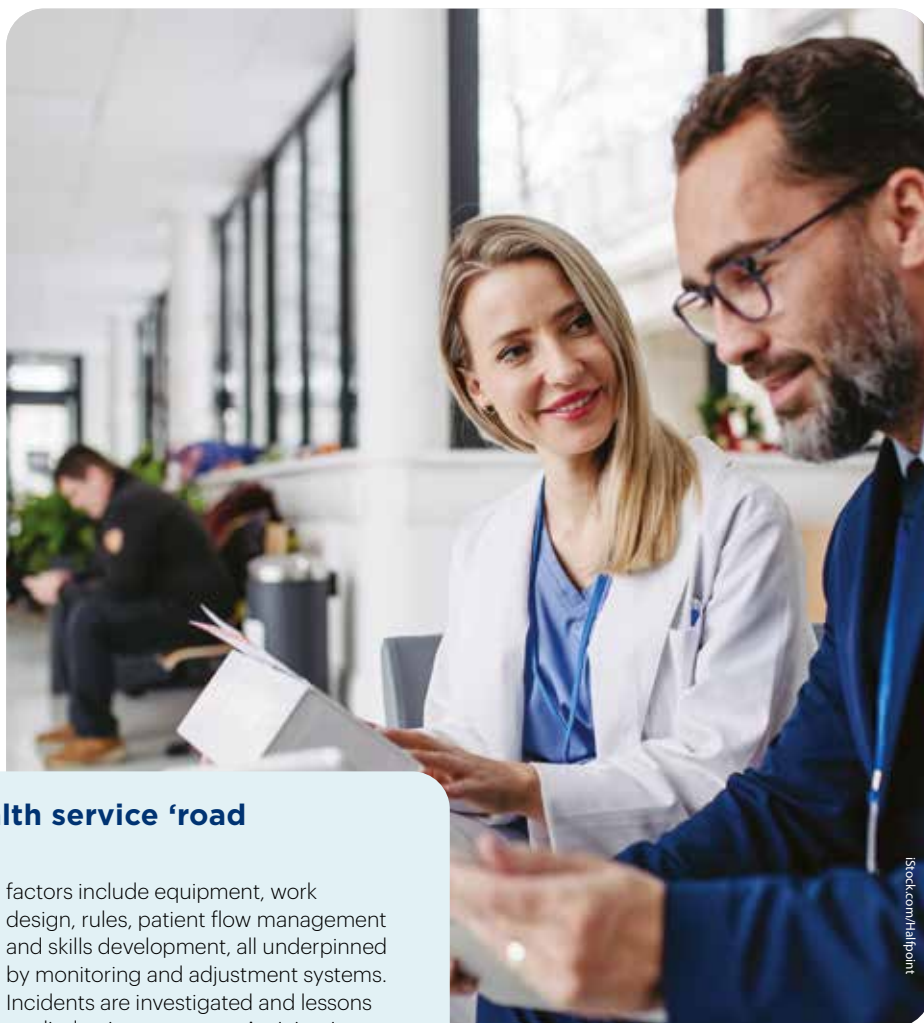
iStock.com/Halipoint

The Commission has created a new definition that highlights the purpose — providing high-quality care for patients:

Clinical governance is central to providing the best possible outcomes for patients. It is the combination of organisational culture, systems and structures that enables everyone in a health service to deliver care that is consistently high quality and improving.

Effective clinical governance means that boards, executives, clinical leaders and the workforce are clearly accountable to patients and the community for providing high-quality care — care that is person-centred, safe, effective, accessible and integrated, provided in a way that is equitable, efficient and sustainable.

Simply put, clinical governance enables health service boards to govern for high-quality care.



iStock.com/Helipoint

Clinical governance: your health service 'road safety system'

Think of clinical governance as being like a road system, with high-quality care as the destination.

If everyone always drove well, there would never be an accident. But safety on the roads cannot be guaranteed because the road system is complex. The road system is managed to achieve the goals of a safe and efficient journey for drivers, via a mix of factors that can be controlled and responding to those that cannot.

Accidents and other disruptions to achieving these goals occur for many reasons. Some factors — such as the weather, driver behaviour, the volume of cars on the road and human error — can be managed but not controlled. These factors must be anticipated, identified and responded to in real time. Accidents are then investigated and lessons applied to improve the way that roads function.

Factors that can be controlled include road signs, design and construction, and road rules and enforcement, all underpinned by monitoring and adjustment systems. Public campaigns guide drivers to do the right thing while speeding fines and other deterrents are an incentive to drive safely.

Health care is even more complex. On any given day, staff can only manage — not control — many factors, such as the type, number and condition of patients, response to treatment, staff shortages, emergencies, pandemics and human error.

As with the road system, boards, executives and managers must support staff to deliver high-quality care within this challenging environment. Controllable

factors include equipment, work design, rules, patient flow management and skills development, all underpinned by monitoring and adjustment systems. Incidents are investigated and lessons applied to improve care. Anticipating and responding to the 'uncontrollables' with planning and responsiveness is also essential.

Effective clinical governance is designed and implemented to support both proactive and responsive approaches, including:

- A culture where leaders understand, plan for and implement the organisational conditions for high-quality care
- A workplace where there are enough skilled staff and that they understand their critical role in high-quality care
- A physically, psychosocially and culturally safe workplace where staff can speak up for safety and help to predict and manage the 'uncontrollables'
- Partnerships with consumers to identify and fix care 'potholes', and design for high-quality care
- Rules, guidance, systems, work design and training that support consistent practice
- Systems that anticipate and minimise the impact of human error
- Deterrence from doing the wrong thing, and support for accountability without blame when errors occur
- Monitoring, feedback and learning

The new National Model for Clinical Governance

In developing the new national model, the Commission reviewed the latest evidence and consulted with leaders and clinicians across Australia to understand how clinical governance is understood and applied, gaps in capability and delivery, and what high-performing organisations do differently.

The result is a short, simple, principles-based document that health services can use to review and strengthen their clinical governance arrangements.

The national model describes organisational systems that support health services to deliver high-quality care, structured around six foundations of clinical governance (see Figure 1). When combined, these foundations underpin an effective organisational approach to providing consistently high-quality care.

The national model stresses that of all the foundations, leadership is a critical enabler of effective clinical governance. That is because a hospital cannot provide high-quality care at all levels of the organisation without a clear strategic direction and the necessary leadership and accountability.

It also emphasises the close link between staff satisfaction and patient outcomes and shows

Figure 1: The six foundations of clinical governance**Figure 2: Roles in supporting high-quality care in a health service**

This illustration has been adapted from an Australasian Institute of Clinical Governance resource – 'I take responsibility'.

how provision of high-quality care depends on a healthy workforce culture in which staff feel respected, valued and safe to speak up for safety.

Each foundation includes good practice examples and warning signs to alert boards and executives to strengths and weaknesses in their clinical governance systems.

What should health services do with the model?

All health ministers have urged Australian hospitals to implement the national model as soon as possible.

Boards and executives can use the six foundations of clinical governance to check that their organisation's strategy, systems and culture are aligned to deliver care that is consistently high-quality and improving.

The Commission has developed a practical guide to implementation that supports health services to compare their existing clinical governance arrangements against the national model, identify gaps and implement necessary changes for their own contexts.

Health services are not expected to revise their existing clinical governance frameworks immediately. But it is worth noting that the Clinical Governance Standard in the next edition of the National Safety and Quality Health Service (NSQHS) Standards will be structured around the national model's six foundations of clinical governance. From 2030, all health services need to meet this standard to maintain their accreditation.

Effective implementation of the national model will strengthen health services' clinical governance arrangements and position them to better address the requirements of the NSQHS Standards.

What will the changes mean for the workforce?

We know from our consultation that there is a tendency for some members of the hospital workforce to think of clinical governance as something the safety and quality manager does — a series of forms and boxes to be ticked for accreditation.

We hope the national model will change that. It stresses that everyone in a health service needs to be involved in working with and improving clinical governance systems, because providing high-quality care should be everyone's focus (see Figure 2).

A key message is that clinical governance is not an end in itself. It is not something that needs to be 'done' because the Commission has released a new model, or because accreditation requires it.

Implementing the national model as intended will help health services to operate with renewed purpose. The workforce will be more supported and feel more appreciated; they will know their organisation backs them with the right culture, structures, support and leadership to provide consistently high-quality care, and patients will receive the care they need and expect.



Read the national model

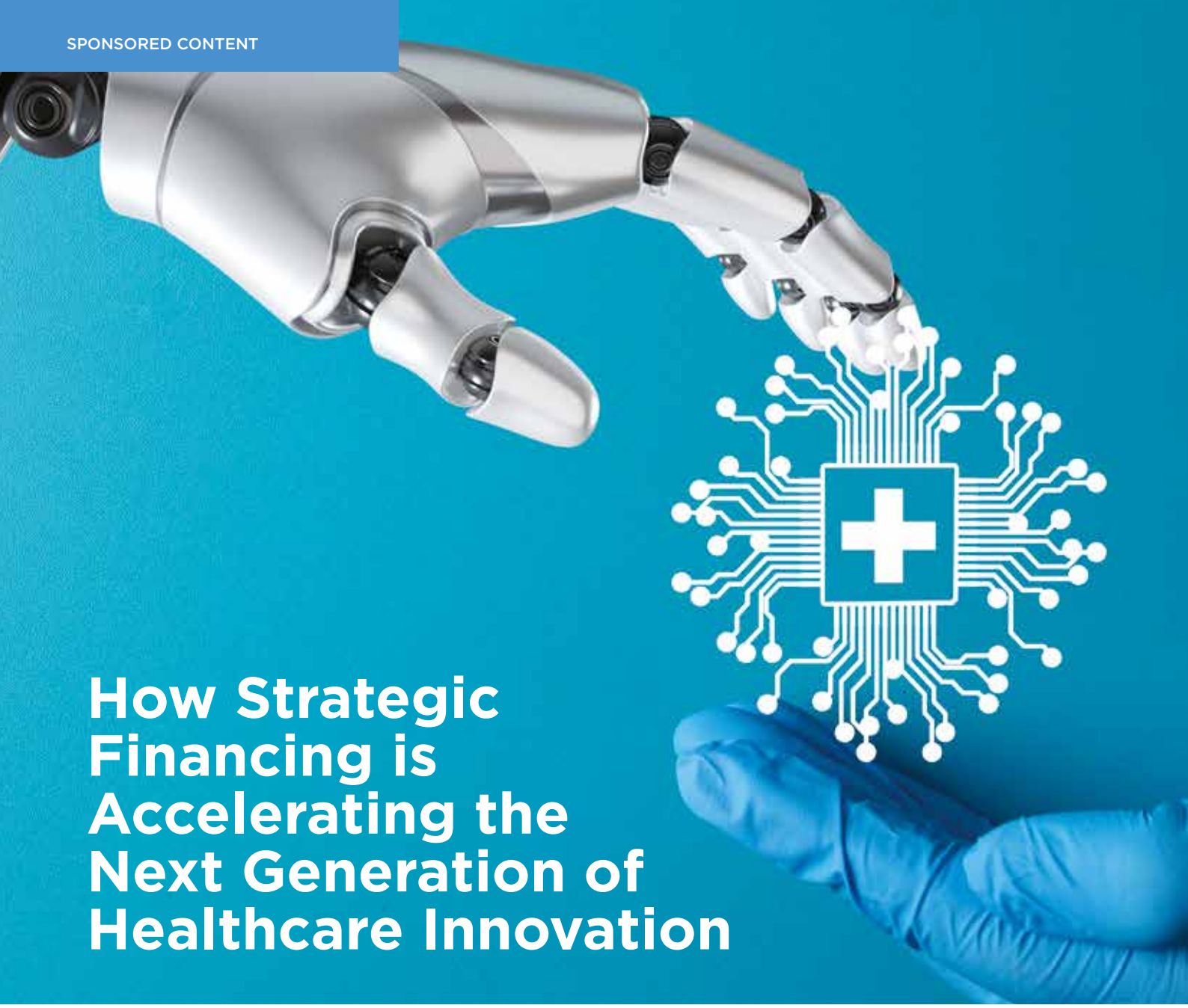
safetyandquality.gov.au/cg



*Gillian Giles is Executive Director of Clinical Governance for the Australian Commission on Safety and Quality in Health Care.



†Dr Cathy Balding is Director of Qualityworks PL and a Board Director with RSL LifeCare NSW. Balding specialises in designing and implementing quality and clinical governance systems for impact at the point of care.



How Strategic Financing is Accelerating the Next Generation of Healthcare Innovation

Australia's healthcare sector is entering a period of unprecedented technological advancement. From AI-enabled diagnostics and robotic-assisted surgery to connected patient monitoring and digital health platforms, healthcare organisations and providers are gaining access to technologies that have the potential to transform patient care, improve operational efficiency and deliver better clinical outcomes. The challenge is determining how healthcare organisations can quickly adopt new technologies while maintaining financial sustainability.

According to Troy McMullen, Country Sales Manager, and Rachael O'Hayon, Business Development Manager, at DLL, a global financial solutions partner, financing is playing a far broader role than simply funding equipment purchases. "Healthcare organisations are recognising that finance can be a strategic tool for innovation," Troy said. "Instead of delaying technology adoption until capital becomes available, healthcare organisations and providers are using finance solutions to bring forward investments in technologies that improve efficiency, clinical outcomes and patient experience."

Accelerating Return on Investment (ROI)

Healthcare organisations are under increasing pressure to demonstrate value from technology investments, but many are rethinking how that value is achieved. Rather than tying up significant capital in a single upfront purchase, healthcare organisations and providers are increasingly adopting financing structures that align costs with usage, patient demand and realised benefits.

The evolution of healthcare financing is also changing relationships between healthcare providers, technology vendors and funding partners.

"Through a pay-per-procedure model, the hospital was able to adopt the technology sooner, build clinical experience and establish demand, while ensuring costs aligned with usage."

This type of flexible funding model allows healthcare organisations and providers to validate business cases in real-world clinical environments while bringing innovative services to patients far earlier than traditional funding approaches may allow.

Turning Finance into a Strategic Advantage

Rather than preserving capital simply as a defensive measure, healthcare organisations and providers are using financing to increase organisational agility, accelerate technology refresh cycles and maintain access to emerging innovations.

"We're seeing organisations use finance as a growth enabler rather than simply a funding mechanism," Rachael said.

"Healthcare organisations are preserving capital while creating the flexibility to invest in multiple strategic initiatives simultaneously. That could be clinical innovation, digital transformation, workforce capability or expansion projects."

"Ultimately, patients benefit when providers can access innovative technologies sooner," she added.

Building Innovation Ecosystems Through Partnership

The evolution of healthcare financing is also changing relationships between healthcare providers, technology vendors and funding partners.

Rather than being involved at the end of a procurement process, finance specialists are increasingly engaged much earlier in the process to help design commercial models that support the acquisition and adoption of emerging technologies.

"DLL brings together healthcare providers and technology suppliers to create funding structures aligned with clinical objectives, operational requirements and long-term growth plans. Every healthcare organisation has different priorities and different revenue models," Troy said.

"Our role is to work closely with both healthcare organisations and technology

partners to develop solutions that help organisations access innovation in a way that is commercially sustainable."

This collaborative approach is particularly valuable for manufacturers and suppliers introducing new technologies to market. By providing flexible strategic financing solutions, it helps remove barriers to acquisition and adoption, supports access to the latest healthcare innovations, and accelerates market penetration.

Looking ahead

As healthcare technology continues to evolve, strategic financing is becoming an increasingly important enabler of innovation across the sector.

"The healthcare organisations that will lead in the future are those that can adapt quickly and embrace innovation confidently," Troy said.

"Strategic finance is critical to helping make that possible by removing barriers to technology adoption and creating pathways for sustainable growth."

To learn more about DLL's services, reach out to the team at www.dllgroup.com/au/en-au/industries/healthcare.



Bios



Troy McMullen is DLL's Country Sales Manager for ANZ, supporting healthcare providers to turn technology plans into practical, commercially sustainable investments.



Rachael O'Hayon is a Business Development Manager at DLL, providing flexible finance solutions that help healthcare organisations adopt innovation sooner.

This document is provided for general information only. You should seek independent legal, financial and tax advice that takes into account your individual circumstances. Finance is provided by De Lage Landen Pty Limited (ABN 20 101 692 040) and is available for business purposes only. Credit criteria, fees, terms and conditions apply.



»
For more information visit
DLL
www.dllgroup.com/au/en-au

The cost of not cleaning

how to reduce infections and save money

GEORGIA MATTERSON* AND PROFESSOR BRETT MITCHELL†



When budgets tighten, hospital cleaning is often seen as a cost to cut. However, evidence from the CLEEN trial shows the opposite: investing in environmental cleaning improves patient outcomes while reducing overall healthcare costs, as two members of the research team explain.

Healthcare-associated infections (HAIs) affect approximately one in 10 hospitalised patients and contribute substantially to patient morbidity, mortality and healthcare expenditure. Environmental contamination has long been recognised as an important source of transmission, yet uncertainty often exists regarding who is responsible for cleaning shared medical equipment and how frequently it should occur.

To address this challenge, researchers undertook the *C*leaning and *E*nhancEd *D*isinfection (CLEEN) trial in a large Australian public hospital.¹ Rather than relying solely on clinical staff to clean shared equipment between patient use, the study introduced a dedicated cleaning model focused on equipment frequently used across multiple patients.

The intervention was intentionally simple

Additional cleaning staff were allocated dedicated time (three hours, each ward, each weekday) to clean shared medical equipment, including blood pressure monitors, infusion pumps, wheelchairs and commodes. This was supported by education, regular auditing of cleaning performance and feedback to staff. Importantly, no new technology was required. Existing hospital-grade disinfectant wipes were used throughout the program.



Auditing of equipment during the CLEEN trial

The project addressed a common challenge faced by hospitals worldwide: when responsibility for cleaning shared equipment is unclear, cleaning often does not occur.

Before the intervention, only 18% of audited equipment was found to have been adequately cleaned. Following implementation, cleaning thoroughness increased to more than 56%, demonstrating that dedicated accountability and resourcing can dramatically improve performance.



Cleaning undertaken by cleaning staff during the CLEEN trial

Better cleaning translated into better patient outcomes

The study involved more than 5000 patients across 10 hospital wards. Researchers found HAI prevalence fell from 17.3% during the control period to 12.0% following implementation. After statistical adjustment, the intervention was associated with a 34.5% relative reduction in HAIs. Significant reductions were also observed across major infection categories including bloodstream



The project addressed a common challenge faced by hospitals worldwide: when responsibility for cleaning shared equipment is unclear, cleaning often does not occur.



*Georgia Matterson is a member of the research team on the CLEEN study and Research Assistant at Avondale University.

infections, pneumonias, urinary tract infections and surgical site infections.

The financial results were equally compelling

A subsequent economic evaluation found that for every 1000 patients, the enhanced cleaning program prevented approximately 30 HAIs and released 384 hospital bed days. Rather than increasing costs, the intervention reduced them. Total hospital costs were estimated to be more than AU\$640,000 lower per 1000 patients compared with usual practice. The analysis found a 90.5% probability that the intervention would save money.²

Challenging the common perception

These findings challenge the common perception that environmental cleaning is primarily a consumable or workforce expense.

For healthcare leaders, the CLEEN trial demonstrates that reducing cleaning budgets

may inadvertently increase costs elsewhere through longer hospital stays, increased antibiotic use, additional treatments and reduced bed availability. Conversely, investing in cleaning can improve patient safety while supporting hospital efficiency.

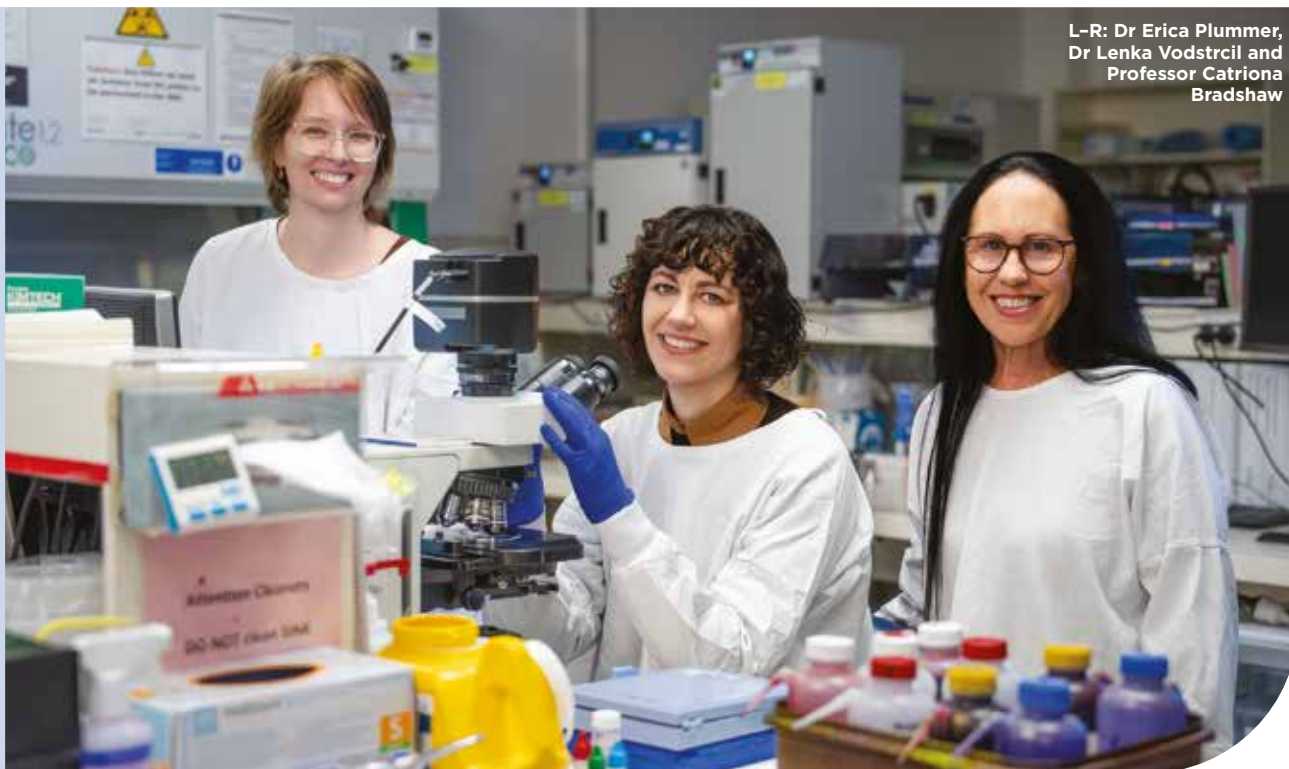
At a time when hospitals are striving to maximise value, environmental cleaning should be viewed as an area where strategic investment can deliver measurable returns for both patients and health services.

You can learn more about the study at cleenstudy.com.

1. Browne, K., White, N., Tehan, P., Russo, P. L., Amin, M., Stewardson, A. J., et al. A randomised controlled trial investigating the effect of improving the cleaning and disinfection of shared medical equipment on healthcare-associated infections: the CLEENing and Enhanced disinfection (CLEEN) study. *Trials*. 2023;24(1): 133. doi: 10.1186/s13063-023-07144-z
2. Brain, D., Sivapragasam, N., Browne, K., White, N. M., Russo, P. L., Cheng, A. C., et al. Economic evaluation of enhanced cleaning and disinfection of shared medical equipment. *JAMA Network Open*. 2025;8(4): e258565. doi: 10.1001/jamanetworkopen.2025.8565



†Professor Brett Mitchell is a Chief Investigator on the CLEEN study and Professor of Health Services Research & Nursing at Avondale University.

L-R: Dr Erica Plummer,
Dr Lenka Vodstrcil and
Professor Catriona
Bradshaw

Eureka Prize-winning discovery affects one in four women worldwide



This year's Australian Infectious Diseases Research Centre Eureka Prize for Infectious Diseases Research went to the Women's Microbiome Innovation Group for their discovery that bacterial vaginosis (BV), which affects one in four women worldwide, is sexually transmitted. The award is one of several categories in the Australian Museum's 2026 Eureka Prizes, an annual recognition of excellence across research and innovation, leadership, science engagement and school science.

The StepUp trial by Monash University and The Alfred showed treating male partners reduces BV recurrence in women by more than 60%, a finding that, Monash said, has reshaped international thinking on the condition. Partner treatment is transforming clinical practice for BV, an infection associated with serious reproductive complications such as preterm birth and miscarriage, Monash added.

The trial was completed in 2025 by Professor Catriona Bradshaw, Dr Lenka Vodstrcil and Dr Erica Plummer and published in *The New England Journal of Medicine* (doi: 10.1056/NEJMoa2405404), with Bradshaw saying that her team are now focused on the next steps.

"We are now looking at the male genital microbiome to figure out how we can prevent women from acquiring BV in the first place," Bradshaw said. "We're also studying the small group of women who weren't cured by partner treatment, aiming to develop more targeted and effective treatment options for them."

Believing that a better understanding of the vaginal and penile microbiomes could reshape future sexual and reproductive health, Plummer said: "Our findings have already demonstrated that male

partners play a critical role in recurrence, fundamentally changing how clinicians approach treatment."

While Vodstrcil noted that the team's work has shown that male partner treatment is highly acceptable and cost-effective in the Australian healthcare setting, supporting changes to national guidelines. "Our trial proved that male partners are key to improving BV cure, and this strategy is transforming global practice and policy."

You can learn more about the StepUp trial at www.mshc.org.au/research/research-studies/stepup-study.

L-R: Dr Erica Plummer, Professor Catriona
Bradshaw and Dr Lenka Vodstrcil

Images: Monash University



iStock.com/AJ Watt

Medicare Mental Health Check In

— helping clinicians close the gap

JANE CAMERON*

A new national digital service is delivering free, evidence-based early mental health support for mild challenges — and the health workforce has a central role in guiding people toward it for the right support at the right time.

For many Australians, the hardest part of getting mental health support is not the therapy itself. It's the long wait times, cost, uncertainty about whether their concerns are serious enough to seek help or the sense that things need to reach crisis point before help is available. For people experiencing mild or emerging mental health challenges, that gap between "not quite coping" and "eligible for intensive care" has long been one of the most difficult spaces in the system to serve.

Medicare Mental Health Check In is designed to fill this gap. Launched on 1 January 2026 and delivered by St Vincent's Health Australia on behalf of the Australian Government, the service offers free, confidential early mental health support to people aged 16 and over who live in Australia. No referral, diagnosis or Mental Health Treatment Plan needed, and there is no cost for the user. It represents a significant addition to Australia's stepped-care mental health landscape; and for the hospital,

health and aged care professionals who sit at the referral points of that system, it is a service worth understanding well.

What is Medicare Mental Health Check In?

Medicare Mental Health Check In offers six digital programs addressing common challenges such as managing worry, improving sleep and lifting low mood. Each >

program is designed to take around six weeks to complete. People can work through the program with the guidance of a qualified mental health practitioner via telehealth, or they can complete the same program independently, at their own pace, whenever and wherever it suits them. This model is designed to meet people where they are; whether they want the reassurance of a guided experience or the flexibility of self-directed support.

The clinical model is early intervention. By helping people build practical skills and confidence while their symptoms are still mild, the service aims to prevent challenges from escalating into more serious conditions that require more intensive and resource-heavy care.

Case study

Mark, 48 years old, lives in regional Victoria and works full-time. He had been struggling with negative thoughts for a while that were keeping him up at night, and he felt like he needed support. He started searching online for anything that might help and came across the Medicare Mental Health Check In website. He wanted to learn new skills. Talking to someone about his mental health felt like a big deal, and he wanted the reassurance of speaking with a mental health professional.

The practitioner he was matched with was warm and easy to talk to. He felt properly listened to — not rushed or judged. Doing it online suited him well: it was confidential, and the convenience meant he could fit a session into his lunch break without anyone at work knowing. The practical side of the program, the activities and resources he was given gave him something concrete to work with between sessions, and seeing the same practitioner each time over the six weeks meant he didn't have to re-explain himself repeatedly. The program felt tailored to what he was going through.

"The person I spoke to was really helpful. I felt like they listened ... having somebody checking in on you that was empathic and warm really supported me. Online was also good because it felt confidential and was convenient, I could do the activities at work in my lunch break."

Beyond the relief of getting help, there was something else: it made him feel less alone in it, like he wasn't "totally weird" for having the thoughts he'd been having.

Months on, Mark still uses strategies from the program. He's more attuned to his own thoughts now. He notices them rather than getting swept up in them and says he feels significantly better as a result.

Key takeaways for healthcare professionals

The value of a service like Medicare Mental Health Check In depends heavily on how well the mental health ecosystem understands and uses it. While Medicare Mental Health Check In is a self-service and telehealth offering aimed directly at consumers, it is not intended to operate in isolation. It sits within the broader Medicare Mental Health reforms and the stepped-care model — a model where GPs, hospital clinicians, aged care staff and allied health professionals play a central role in guiding people towards the right level of support.

Key points for clinicians:

- Medicare Mental Health Check In offers a low-barrier option to recommend to patients aged 16 years and over presenting with mild or emerging symptoms.
- The service is suitable for people who may not meet the threshold for a Mental Health Treatment Plan, who are experiencing mild anxiety, low mood or transient distress, or who simply want to start building skills while they consider their options.
- Low-intensity CBT works best for people with mild symptoms. People experiencing severe depression, debilitating anxiety, complex trauma or acute crisis will still require the intensive treatment that psychologists, psychiatrists and hospital services provide.
- The service is best understood as part of the stepped-care pathway, providing an early-intervention option that complements rather than replaces the acute and specialist end of the system.

To support clinicians in making confident, appropriate recommendations, downloadable resources are available to help understand the service, explain it clearly to patients and integrate it into their referral conversations. Health professionals can access these resources at www.mentalhealthcheckin.gov.au/resources.

For health services looking to make the most of the service, here's a few practical steps:

- Understand the service: familiarise clinical and frontline staff with the two pathways (guided and self-guided), the six programs available and eligibility — people aged 16 and over, living in Australia, with no referral or diagnosis required.
- Build it into referral conversations: consider Medicare Mental Health Check In for patients with mild or emerging symptoms, as one component of a stepped-care approach.
- Use the resources: download and display the materials in shared spaces to support consistent, accurate conversations and direct patients to the website at www.mentalhealthcheckin.gov.au or call Medicare Mental Health on 1800 595 212.

Source: Australian Department of Health, Disability and Ageing



iStock.com/Choreograph (Konstantin Yuganov)

The value of a service like Medicare Mental Health Check In depends heavily on how well the mental health ecosystem understands and uses it.

Clinical safety is embedded throughout the service. Participants complete routine outcome measures, including measures such as the PHQ-9 and GAD-7, to track wellbeing and identify deterioration or increased risk. Mental health practitioners monitor responses, and clinical escalation protocols are activated when additional assessment, outreach or a step-up to more intensive support is required.

Medicare Mental Health Check In meets nationally recognised safety, quality and regulatory standards, including accreditation against the National Safety and Quality Digital Mental Health Standards and compliance with Therapeutic Goods Administration requirements for digital mental health tools.

The service is built with accessibility in mind. Key information is available in 10 languages, with interpreting services available in more than 150 languages. People can access the service by calling Medicare Mental Health (1800 595 212) which provides a non-digital entry point for those who need or prefer it.

The model is based on an evidence-based approach that uses Low-intensity Cognitive Behavioural Therapy (LiCBT) developed by the United Kingdom's NHS Talking Therapies program which helped almost 100,000 people in 2024–25.

A national advertising campaign is underway to improve understanding of the service and encourage people experiencing mild mental health challenges to seek support early. You can view the campaign advertisement at youtu.be/GrPMI88Aldk.

As Australia's mental health system continues to grapple with long waiting lists and services under strain, a free, evidence-based early intervention option is a welcome addition. The task now is to translate growing awareness into everyday practice, ensuring the right people are guided to the right support, at the right time.

Medicare Mental Health Check In is part of the broader Medicare Mental Health services (www.medicarementalhealth.gov.au).



Health
professionals
FAQ



*Jane Cameron is Program Director, Medicare Mental Health Check In, St Vincent's Health Australia.

Wipe the floor with germs and infection

Fill spray bottles, mop buckets and floor scrubbers automatically with a SEKO chemical dispensing system



SekureMax

Safe, secure chemical storage and dispensing



ProMax

Perfect proportioning at the push of a button

- ✓ Consistent results
- ✓ Reduced chemical consumption
- ✓ Customisable systems
- ✗ Wasted chemical
- ✗ Erratic cleaning performance
- ✗ Staff exposed to concentrated chemicals

seko



seko.com

The healthcare transformation challenge

delivering more care with diminishing resources

GLENN JOHNSON

Australian healthcare organisations are constantly being asked to do more with less — and the gap between demand and capacity is only widening. Aging and growing populations are pushing more people and organisations into a system that was never designed to absorb the current and forecast levels of pressure.

At the same time, healthcare leaders are being asked to improve patient outcomes, address entrenched workforce shortages, accelerate digital transformation, and strengthen cyber resilience — all while budgets remain flat or shrinking, and scrutiny from regulators, boards and the public intensifies.

To gain more insight into these challenges, *Hospital + Healthcare* spoke with Tony Mahony, Head of Healthcare & Emergency Services – National at Nexon Asia Pacific, who has spent years working directly with public hospitals and other health services across Australia, helping them navigate exactly this balancing act. His perspective is shaped by the day-to-day realities of healthcare delivery, from frontline clinical environments to the operational functions that keep health services running.

Growing demand, diminishing capacity

The starting point for almost every healthcare leader's dilemma is a simple mismatch: demand for services is growing

faster than capacity to deliver them. This forces hard prioritisation decisions. Sometimes digital transformation projects get delayed or scaled back to protect frontline clinical spending, even when that technology could ultimately reduce pressure on frontline services, so it is important to make sure that digitalisation projects are as efficient as possible and fit for purpose — keeping patient outcomes top of mind.

"Healthcare organisations face challenges that are very different from those in many other industries," said Mahony. "It's important that ICT strategies are aligned to the priorities of clinicians, operational teams and the communities they serve, which is why Nexon has set up totally dedicated healthcare services.

"The way we look at it here at Nexon is to focus on patient care, and where it is best for funding to go in ICT infrastructure and software to be able to achieve those outcomes. We have personnel dedicated to focusing only on services for healthcare and emergency services, because when you don't do that, priorities can become misaligned or it becomes harder to keep patient outcomes at the centre of decision-making."

Workforce sustainability

It is well known that workforce shortages sit underneath almost every other pressure that healthcare organisations face. In this

environment, technology's role shifts: it isn't just about efficiency or modernisation, it's about protecting the people already inside the system from being overwhelmed.

Instead of asking "what can this system do?", the question that needs to be asked is: "does this reduce the burden on our clinical and administrative staff, or does it just give them one more thing to learn and maintain?"

"This may seem obvious, but in the case of a code blue for example, technology can be used to create greater efficiencies," said Mahony. "What people don't talk about enough in health care, however, is the stress and anxiety faced by healthcare workers.

"Emergency departments are very high-stress, high-impact environments, therefore we don't just look at how we are delivering an ICT product into that environment, but also how we can reduce the impact and the stress on the individuals that are working there. By improving workflows for the staff members to move through — whether that be voice systems, data systems, or the duress system, or wayfinding through a large hospital — we make sure that we find the best scenario that reduces the most risk for staff."

Building trust and safeguards alongside automation is increasingly what separates successful workforce-relief projects from those that create new problems, according to Mahony.



iStock.com/Drazen Zilic

"From a practical standpoint, we know that the delivery of the technology also revolves around funding and business decisions, so when we do this, we need to look at how we can reduce the stress of making changes to an existing work environment," he explained. "So, when we do a major uplift of a hospital technology, we will have staff on site, with trainers walking the floors just to make sure everyone's okay. One thing we've learned over the years is that if you don't do that, it just takes someone to 'miss the memo' and all of a sudden there can be a problem, potentially when you least need it."

Having respect for the work of healthcare professionals is also fundamental to successful ICT delivery outcomes.

"I know I can't do a nurse's job or a doctor's job or a medical imaging person's job," Mahony added. "If I have to get an X-ray, they are the most polite people: talking you through what has to happen, and helping you through the process — they are built that way. At Nexon we try to find people to work for us that are built the same way, but work in ICT, so they can give that same respect to the healthcare workers."

From digital investment to measurable outcomes

Digital transformation has become close to mandatory language in every healthcare strategy document in the country. The

National Digital Health Strategy sets the direction nationally, and each state and territory has its own digital health plan.

"The health system in New South Wales for example has got a clear goal to move towards more digital capabilities," said Mahony. "In this digital age, everything needs to move towards digital, so that being 'digital ready' is the number one thing that hospitals should do. Then your records are digital, your medical imaging is passed through digitally — and we have to move to that environment. Our goal is to help provide that digital readiness."

However, a piecemeal approach to transformation and engaging multiple disconnected vendors can lead to digital transformation efforts stalling. This heightens the importance of integration, interoperability and technology partners that can help simplify complexity across the digital ecosystem.

"As healthcare organisations continue to invest in digital technologies, one of the biggest challenges is ensuring all of those systems work together effectively," said Mahony. "Whether it's infrastructure, communications, clinical support systems or operational platforms, the goal should be to create a connected environment that supports clinicians and improves the experience for patients."

Building resilient healthcare organisations

Unfortunately, health care remains one of the most heavily targeted sectors for cyberattacks in Australia. On top of this, smaller regional hospitals and health services are frequently expected to meet the same cybersecurity and availability expectations as large metropolitan providers without anything close to the same budget or specialist resourcing.

"This is a really difficult problem, because we find they often don't have budgets to keep up with technology," said Mahony. "It's not just the ICT and voice systems either: there are usually medical devices on the network that need things like firmware upgrades."

"Healthcare environments are complex, with technology investments often needing to support operational and clinical requirements over many years," said Mahony. "Medical devices and critical systems also have different lifecycle considerations compared with other industries. This requires a thoughtful approach to planning, risk management and ongoing technology investment."

"This is where Nexon is unique. We have developed a deep understanding of the environment. We know how to put risk mitigation in place. We know how to look at or take the environment in a holistic form and break it down so that we can find a window to do the work. And we work with all the parties, whether it's at a hospital, an emergency service or triple zero."

"That said, a lot of the healthcare organisations out there do a very good job of cyber risk management with what they have to work with," Mahony added.

Balancing the priorities

None of these four pressures — growing demand, workforce sustainability, digital investment and resilience — can be solved in isolation. They interact constantly: an under-resourced digital project heightens cyber exposure; workforce shortages push organisations toward automation without proper safeguards; cost pressure delays the very investments that would relieve future demand.

What's clear is that healthcare leaders no longer have the luxury of treating these as separate workstreams with separate budgets and separate owners. Decisions made in one area increasingly have implications across the organisation, reinforcing the need for a coordinated approach.

"We understand the hospital environment, we understand the underlying technologies, and we take responsibility for making those technologies work together in support of clinical care," said Mahony.



About Tony

With over three decades of industry leadership, Tony Mahony serves as National Director, Healthcare & Emergency Services at Nexon Asia Pacific. A trusted advisor

to executives across Australia's health and emergency sectors, Tony specialises in translating complex operational challenges into practical, high-impact strategies. He is dedicated to helping organisations strengthen long-term resilience and harness technology that directly supports the clinicians, frontline teams, and communities who rely on them every day.



»
For more information visit
www.nexon.com.au



Images: Flinders University

Simulating settings



Using advanced manikins and spanning 500 m², The Dr Joan Durdin AM Clinical Simulation Suite has opened at Flinders University's City Campus. It features large clinical labs with 14 hospital beds and advanced training for nursing, midwifery and allied health students in low- to high-risk clinical scenarios. Technology where training is monitored by Flinders educators providing real-time guidance in a hospital setting is also included.

Located near the Royal Adelaide and Women's and Children's hospitals on the 6th floor of the Flinders City Campus, the suite simulates hospital, aged care and community health settings and is intended to strengthen students' connections with the city health precinct. Training like this will also be a feature of the \$300 million, 10-storey Flinders HealthCARE Centre — to be built at Bedford Park.

The suite is named after a pioneer in South Australian nursing education at Flinders, the late Dr Joan Durdin AM. "Throughout her life, Dr Durdin championed the idea that education changes lives and that better-prepared health professionals lead to better care, which is why it's fitting that the new simulation suite is named in her honour," Flinders University Vice-Chancellor Colin Stirling said.



Throughout her life, Dr Durdin championed the idea that education changes lives and that better-prepared health professionals lead to better care, which is why it's fitting that the new simulation suite is named in her honour.



The rise of non-clinical, community-led safe spaces

how lived experience is reshaping suicide prevention

LANI WARDS*



With the emergence of the non-clinical, community-led safe spaces model, Australia's approach to suicide prevention is changing.

For decades, suicide prevention has largely sat within the clinical mental health system. Hospitals, crisis services and mental health professionals play a vital and irreplaceable role. But as our understanding of suicide deepens, so too does the recognition that no single part of the system can meet every need.

Suicide remains one of Australia's most pressing public health challenges. Each year thousands of lives are lost, and many more people experience suicidal distress. Behind those numbers are families, friends and communities navigating grief and uncertainty.

Despite significant investment in mental health services, many people still struggle to find the right support when they need it most. For some, hospital EDs or clinical crisis services can feel overwhelming, inaccessible or simply not what is actually going to help them when they reach out for support.

What we are increasingly recognising is that effective suicide prevention requires a broader ecosystem of support — one that extends beyond clinical care and into communities themselves.

Across Australia, communities are beginning to explore new models that offer compassionate, accessible alternatives during moments of distress, including the emergence of community-led safe spaces.

A different way to support people in distress

The community-led safe spaces model offers something simple, but powerful: a place where people can walk in and be met with warmth, understanding and connection. They are non-clinical environments where people can reliably access support from trained volunteers who themselves have a lived experience of suicide. These volunteers are present during regular opening hours, creating a consistent and welcoming space for people who need support.

The approach is intentionally different from traditional crisis responses. Community-led safe spaces operate on a 'no wrong door' philosophy. There are no long waiting times, no clinical assessments to navigate before being heard and no expectation that someone must be in an acute crisis to access support.

Instead, the focus is on listening, connection and peer support. For someone experiencing distress, the opportunity to sit down with another person who understands what suicidal thoughts can feel like can be incredibly meaningful. These conversations are not about diagnosis or treatment. They are about being heard, feeling safe and reconnecting with a sense of feeling understood and not alone.

Importantly, community-led safe spaces offer the opportunity for early intervention. They provide support before distress escalates into a crisis that may require emergency care. Across Australia and internationally, these models are increasingly recognised as an important complement to traditional mental health and suicide prevention services.

Why lived experience must lead innovation

One of the defining features of community-led safe spaces is that they are co-designed and delivered by people with lived experience of suicidal distress in each individual community where they operate, so they fit the needs of each local community.

People who have navigated suicidal thoughts themselves bring a depth of insight that cannot be replicated through theory alone. They understand what it feels like to reach a point of despair, and they also understand what kinds of support can make a difference in those moments.

This perspective helps shape environments where people feel understood rather than judged. When someone enters a community-led safe space, they are entering a space shaped by people who have walked similar paths.

That lived experience leadership is fundamental to how these services operate. It challenges longstanding assumptions about who holds expertise in suicide prevention and recognises that those closest to the issue must be central to shaping solutions.

The community-led safe spaces model offers something simple, but powerful: a place where people can walk in and be met with warmth, understanding and connection.

A model gaining momentum

The growth of safe spaces across Australia reflects a growing recognition of the value of community-led alternatives. Recently, six new community-led safe spaces have been established across the country, including Australia's first mobile service. This innovation expands support to communities that may otherwise have limited access to services.

With these additions, Australia will soon have 19 community-led safe spaces operating nationally. This expansion reflects growing confidence from governments, communities and service providers in the role these models can play. It also signals strong demand for accessible, warm, non-clinical options during moments of distress.

At the community level, these spaces are helping to reshape how suicide prevention is understood. By encouraging communities to have ownership in supporting their own — and establishing local-led sustainable groups to oversee this valuable work — we can demonstrate that support does not always have to begin with a clinical intervention. Sometimes it begins with a conversation and a person willing to listen.

As these models continue to develop, there is also an opportunity to embed them more

clearly within the broader framework of services supported through the National Mental Health and Suicide Prevention Agreement.¹

Rethinking how we measure impact

As new models emerge, we must also evolve how we measure success as traditional clinical metrics alone cannot capture the full value of community-led supports like this. The impact of these spaces often lies in moments that are difficult to quantify.

A person feeling heard for the first time. Someone choosing to seek support earlier rather than waiting until they reach a crisis point. A renewed sense of connection to community. These positive impacts are challenging to convert into statistics. Outcomes may include people feeling supported during moments of distress, reduced reliance on EDs, earlier access to support and stronger links to ongoing services.

Building an evidence base for these models remains essential, but measurement approaches must reflect the unique nature of peer-based, lived experience-led support. If we rely only on traditional clinical indicators, we risk overlooking the very things that make these models effective.

Scaling what works

The expansion of community-led safe spaces across Australia demonstrates what is possible when communities, governments and lived experience leaders and community members work together. These models remind us that suicide prevention is not solely a medical challenge, it is also a human one.

Connection, compassion and community-based support must be part of the response. As Australia continues to strengthen its national approach to suicide prevention, there is a clear opportunity to invest more deeply in models that bring lived experience of suicide to the centre.

Community-led safe spaces are not designed to replace clinical services. Rather, they complement them and offer another pathway for people to access support in ways that feel safe, respectful and accessible.

For many people, that difference can be life-changing — and sometimes even life-saving.

If you are affected by any of the issues discussed in this article, Lifeline has a 24/7 crisis support service that can help. Please call 13 11 14.

1. The National Mental Health and Suicide Prevention Agreement. Federal Financial Relations. Accessed 19 June, 2026. <https://federalfinancialrelations.gov.au/agreements/mental-health-suicide-prevention-agreement>

*Lani Wards is General Manager Service Delivery at Roses in the Ocean.



Tiny gold particles power golden staph colour test

A rapid colour-changing test is designed to distinguish between different strains of golden staph, including those likely to be virulent and antibiotic-resistant.

With more than a million fatalities each year, golden staph is a major human pathogen and leading cause of infection-related deaths globally. Using tiny gold particles that behave like artificial enzymes (nanozymes) combined with short

DNA molecular binders to create colour 'fingerprints' unique to each strain, a colour test for golden staph has been developed. These fingerprints, researchers say, can help separate high-risk strains from others and inform next steps of care.

L-R: Professor Rajesh Ramanathan from the Sir Ian Potter NanoBioSensing Facility and NanoBiotechnology Research Laboratory in RMIT's School of Science and Dr Pabudi Weerathunge examine colour changes during a laboratory test used to identify bacterial strains

The fingerprint test can also indicate whether a strain carries markers associated with increased virulence, and whether it is likely to have antibiotic resistance. The project was led by RMIT University with research collaborators Western Sydney University, the University of Massachusetts Amherst in the US and the National Institute of Pharmaceutical Education and Research in India.

About the test, Professor Rajesh Ramanathan from the Sir Ian Potter NanoBioSensing Facility and NanoBiotechnology Research Laboratory within RMIT's School of Science called it a rapid, low-cost screening tool that could complement culture- and PCR-based tests and could be modified to spot different dangerous strains of other pathogens.

"Speed matters when you're dealing with serious bacterial infections, and today's gold-standard tests take time, specialist infrastructure or both," Ramanathan said. "The rapid test gives clinicians an early, evidence-informed 'heads-up' if an infection may be more aggressive or harder to treat."

The system was deliberately built to capture subtle biological differences without needing prior knowledge of the bacteria's surface, team member Dr Pabudi Weerathunge from RMIT said. "Instead of hunting for one perfect target, we use a small panel of molecular binders that attach to different parts of the bacterial surface," Weerathunge said. "This is a practical pathway toward point-of-care-style screening across clinical settings."

Further, the sensor was tested in simulated wound fluid spiked with different golden staph strains, in order to assess how it might perform in more realistic environments. In simulated wound fluid, the sensor produced comparable strain fingerprints and showed stronger and faster responses in some cases, RMIT said.

Tarun Sharma, Wilson Wong, Mugdha Joglekar, Anandwardhan Hardikar, Mahdieh Yazdani and Vincent Rotello were the other researchers on the study.



L-R: Professor Rajesh Ramanathan, Dr Pabudi Weerathunge and Distinguished Professor Vipul Bansal, Founding Director of the Sir Ian Potter NanoBioSensing Facility, in the laboratory with a plate used for colour testing of bacterial strains

Images: Will Wright,
RMIT University



Keeping the healthcare sector clean

From hospital wards to doctors' surgeries, the healthcare sector presents unique challenges across every aspect of cleaning and hygiene, with the protection of patients, visitors and staff vying for attention against budget limitations.

Therefore, it's essential that on-site cleaning and hygiene equipment is capable of achieving and maintaining the highest standards in even the most demanding environments.

This begins with surface cleaning, where chemical dispensers used for dosing concentrated and pre-mixed solutions into sinks, spray bottles, mop buckets and scrubber dryers must combine precision and consistency with robustness and longevity.

In fast-paced environments such as operating theatres where excessive force and accidental collisions are common, a tough, impact-resistant dispenser casing helps to ensure consistent, reliable performance while reducing the cost of maintenance, repair and replacement.

When budget is tight it may be tempting to opt for lightweight dispensers, but while such systems are cheaper per unit, they are also unreliable and have a short lifespan, costing more in replacements in the long run compared with higher-quality, longer-lasting equipment.

In many cleaning stations it's common to see concentrated chemical containers such as 20-litre drums stored unbundled on the floor, causing a potential leakage or trip hazard.

Or, worse still, staff dosing detergent and other solutions manually, exposing them to potentially harmful concentrated chemical.

Integrated chemical storage can help solve this issue, enabling operators not only to save space and make cleaning stations tidier and more presentable, but also providing vital health and safety benefits by keeping the chemicals off the floor and avoiding possible spillage and trip hazards.

Such systems typically feature a cabinet-style enclosure where various-sized chemical containers can be stored and connected to the built-in dispenser. Lockable cabinets help to prevent theft and tampering and protect employees against exposure to harsh concentrated chemical.

Managers in the healthcare sector may also be responsible for their site's on-premise laundry which, if not properly overseen, can be a source of excessive consumption and wastage of chemicals, water and energy.

To avoid this, and to ensure that bed linen, blankets, towels and uniforms are washed to the same high standard every time, it's advisable to install trusted automatic chemical dosing systems that achieve accurate, consistent chemical dosing over the long term.

The same is true of on-site warewash machines handling high volumes of crockery, cutlery and glassware and in both cases the best systems are built with premium-grade components that offer superior chemical compatibility.



This means parts are more resistant to degradation from harsh concentrated detergents, helping to deliver repeatable results and extensive equipment lifespan while reducing maintenance requirements.

The integration of Internet of Things (IoT)-enabled technology in some chemical dosing equipment is allowing managers and technicians to monitor detergent consumption statistics and system status at their convenience via smart device, PC or laptop, with the only barrier being a Wi-Fi connection.

When it comes to maintaining exceptional standards in healthcare, it's clear that a little investment can go a long way. Cleaning and hygiene expert SEKO knows this better than most as the company has been helping operators for decades with a dedicated range of chemical dilution, dispensing and dosing equipment.

These include the modular ProMax dilution system, which allows users to dispense premixed chemical solutions into spray bottles, mop buckets and scrubber-dryers, along with an IoT-enabled warewash and laundry dosing range that gives operators 24/7 access to wash data via the dedicated SekoWeb app and online platform.

Visit www.seko.com to explore the complete range.

seko

»

For more information visit www.seko.com

Preserving paediatric data beyond the point of care



When caring for critically ill babies and children, clinician learning typically begins with the continuous stream of physiological data generated at the bedside. Much of this valuable information has traditionally been difficult to preserve once care has been delivered, limiting opportunities for clinical improvement, research and future innovation.

To address this, Big Data for Small People is a Sydney Children's Hospitals Network (SCHN) clinician-led, research-driven program that seeks to securely preserve high-fidelity physiological data beyond the bedside. To help translate research into practical clinical applications, Philips is collaborating on the program — a collaboration that brings together SCHN's clinical and research expertise with Philips' Acute Care Informatics capabilities.

The program includes an automated digital infrastructure that securely captures and preserves data that provides valuable insights into how a child's condition changes over time; the program being designed to provide clinicians and researchers with richer, more complete clinical information to investigate significant events, better understand complex cases and identify opportunities to improve patient safety and outcomes.

Philips' High-fidelity Data Export (HFDE) enterprise clinical software is designed to enable continuous physiological signals, including waveforms and device alarms, to be securely captured and preserved

CASE STUDY



Healthcare professionals reviewing clinical information together at Sydney Children's Hospital



Image: Westmead Children's Hospital

from paediatric intensive care units, neonatal intensive care units and operating theatres — a solution that is being used to help SCHN establish a longitudinal clinical record that supports research, clinical audit and quality improvement.

By preserving these data beyond the point of care, it is intended that clinicians and researchers will be able to better understand complex cases, review clinically significant events and identify opportunities to improve patient safety and outcomes. The initiative also establishes a foundation for future capabilities, Philips said, including advanced visualisation, automated analysis, machine learning and AI-enabled clinical decision support.

Philips Electronics Australia
www.philips.com.au/healthcare

Clinical research recruitment platform

Clinrol Connect is a patient recruitment and engagement platform for clinical trial sites, designed to consolidate patient communication, pre-screening, scheduling and workflow management into a single connected system. It is designed for site networks that manage high volumes of incoming patient enquiries across multiple concurrent trials, to alleviate stress and burnout across site coordinators and improve the overall patient experience.

The platform integrates into existing clinical trial management systems (CTMS) as a dedicated recruitment layer. It uses AI to prioritise patients by eligibility likelihood, automate reminders and rescheduling, and structure phone screening with live eligibility checks, which is designed to reduce manual coordinator workload and improve lead quality.

It is designed to deliver real-time reporting and funnel visibility across the entire patient journey from initial enquiry to enrolment. The platform is HIPAA- and GDPR-compliant and supports TGA/HREC- and FDA/IRB-regulated environments. Implementation is conducted through a workflow-mapping process with the site team prior to go-live.

Clinrol Connect is designed to combine inbound lead management, patient communication, AI pre-screening, enrolment tracking, AI calling, SMS outreach, automated follow-up and live eligibility screening with configurable criteria per trial into a single platform. It also includes a sentiment analysis tool to support coordinator-led patient calls, a recruitment funnel dashboard with site performance analytics, and structured workflow mapping for onboarding across multi-site networks within weeks.

Clinrol Pty Ltd
www.clinrol.com



6 key pillars of frailty prevention and management

Developed and endorsed by 77 healthcare experts and six consumers with lived experience, UQ researchers have published a national frailty framework.

Frailty — a complex clinical syndrome characterised by a decline in a person's cognitive and physical function and a reduced ability to recover from stresses such as illnesses or injuries — can lead to falls, hospitalisation, worsening mobility and death and, it is estimated, impacts more than 20% of Australians aged over 65.

Now, a national frailty framework — the Australian Consensus Statements — has been developed as practical recommendations for clinicians. Published open access (doi: 10.5694/mja2.70182) in the *Medical Journal of Australia* and commissioned by the Queensland Health Reform Office in partnership with the University of Queensland's (UQ) Australian Frailty Network, its recommendations were designed in consultation with Australian healthcare professionals, older adults with lived experience of frailty and caregivers.

"We have developed 19 consensus statements to guide frailty prevention and management and enhance quality of life for adults over 65 years," said Dr Sakshi Chopra of UQ's Frazer Institute. "Our aim is to reduce long-term complications, take pressure off the health system and offer practical recommendations to support healthcare professionals in delivering consistent and proactive care."

Health promotion and screening, nutrition, exercise, social activities, medicine optimisation and management of severe frailty

"By raising awareness and providing guidance to healthcare practices, we hope the framework will empower healthcare professionals and the public to recognise early signs and take action," Chopra added. "We want to ensure people living with severe frailty continue to be valued and receive appropriate, person-centred care."

The framework outlines practical recommendations for clinicians, including supporting adequate protein intake, structured exercise, meaningful social engagement, tailored care plans, raising awareness of frailty and personalised counselling on health behaviours.

Focusing on six key pillars — health promotion and screening, nutrition, exercise, social activities, medicine optimisation and management of severe frailty — Chopra said the pillars have been further categorised to support the management of mild, moderate and severe frailty, something, Chopra said, "that has not been attempted before". "We want everyone to take a lifelong approach to frailty prevention, and these pillars can be applied to people of all ages," Chopra said.

"In order to optimise the health and quality of life of older people, it is important for frailty to be prevented and, if it does occur, for it to be managed appropriately," said geriatrician and Australian Frailty Network Director, Professor Ruth Hubbard.

"Evidence supports the effectiveness of multicomponent interventions, and our 19 consensus statements are guided by the six pillars to improve health outcomes for adults across the spectrum of health — from robust to severely frail."

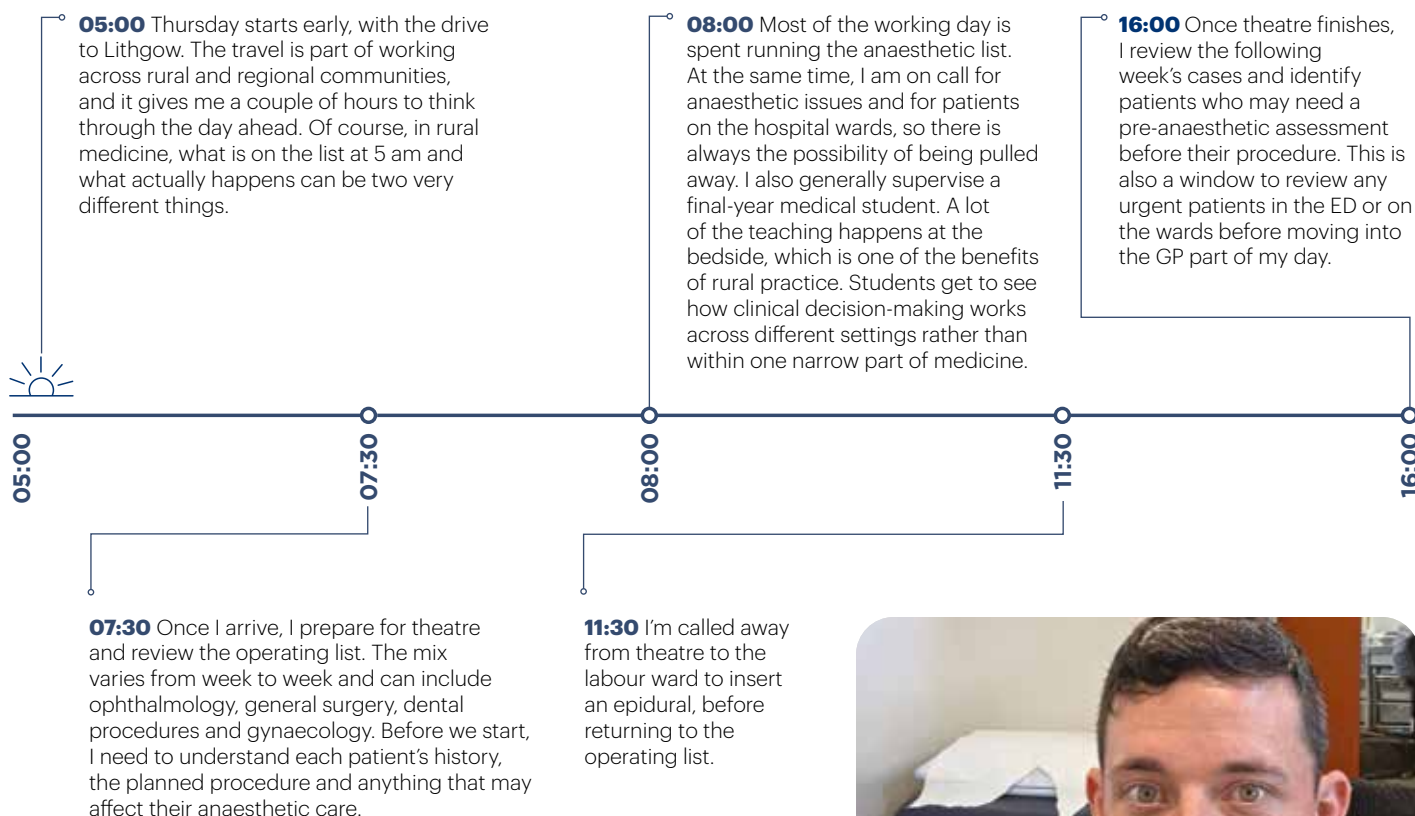


A day in the life of Dr Hayden Cain

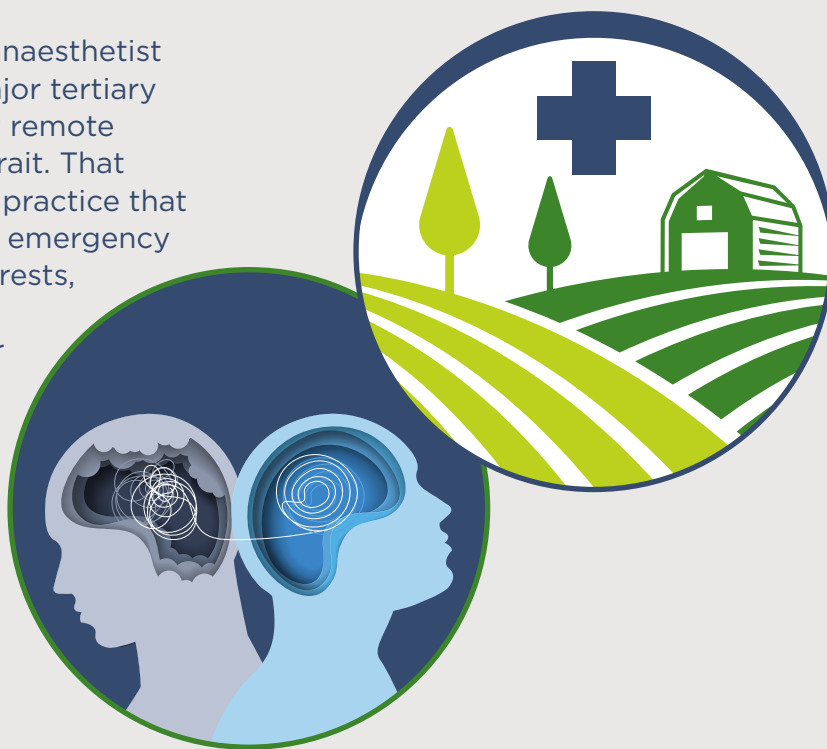
a rural generalist
anaesthetist and
men's mental
health advocate



Images and video: Supplied



Dr Hayden Cain is a rural generalist anaesthetist whose career has taken him from major tertiary hospitals to some of Australia's most remote communities, including the Torres Strait. That breadth of experience now shapes a practice that spans anaesthetics, general practice, emergency care and a wide range of clinical interests, from sports and musculoskeletal medicine to palliative care and minor procedures. He also has a particular interest in men's health and mental health, including how clinicians can better support men to open up, stay engaged and follow through with care. One of his regular Thursdays in Lithgow is a good example of just how varied rural generalist medicine can be. Here's a day in his life.



istock.com/SiberianArt
istock.com/CafPro

16:30 My evening GP session can cover almost anything: removing a skin lesion, preparing a mental health care plan, following up a patient after a hospital admission or completing a pre-anaesthetic review. This part of the day is a good reminder that the reason someone presents is not always the whole story. In general practice, especially where there is continuity over time, you have the opportunity to notice changes, ask a little more and create space for concerns that may not come up straight away. That is particularly relevant in men's health.

Many men may make it through the door of primary care, but building the trust that keeps them connected to care can be another challenge. Sometimes the presenting concern is only part of the picture, and distress or other issues may be underplayed, left unsaid or emerge indirectly. It is an area I care deeply about, and one I have explored through my work with Movember's Men in Mind for Primary Care. The program is designed to give health professionals practical, evidence-informed tools to strengthen conversations with men, recognise when concerns may be hiding in plain sight and support continued engagement with care. (You can learn more about the program at meninmind.movember.com/primarycare.)

16:30

19:00

22:00

19:00 After general practice, the day can shift back to inpatient medicine. After general practice, I return to the hospital to admit patients, including people presenting through the ED with anything from heart failure to pneumonia, as well as patients transferring back from other hospitals following procedures such as hip replacements and coronary bypass surgery. One of the realities of rural generalism is that you often see patients across different stages of their care. The boundaries between hospital medicine, general practice and follow-up are much less rigid.

22:00 Some Thursdays finish around 9 pm. Others do not. On this particular day, I am called back into the hospital for a resuscitation in the ED. By the time I leave again, it is around 11.30 pm.

It has been a long day, but also one that captures why rural generalist medicine is difficult to describe with a single job title. In the space of one Thursday, I have worked across anaesthesia, obstetrics, teaching, general practice, mental health, inpatient medicine and emergency care. And the next Thursday will almost certainly look different again.



Video
diary



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.



A Good Cleaning Schedule: Best Practices for Healthcare Facilities

Key Takeaways

- Identify surfaces and equipment (patient rooms, bathrooms, devices) and assign cleaning frequencies such as daily, between patients, spot cleans and periodic deep cleans.
- Detail methods for each task: cleaning followed by disinfection, appropriate detergents, colour-coded cloths, correct dwell time and staff PPE.
- Include risk assessments, monitoring and record-keeping to adjust the schedule as patient load, infection risks or regulations change.

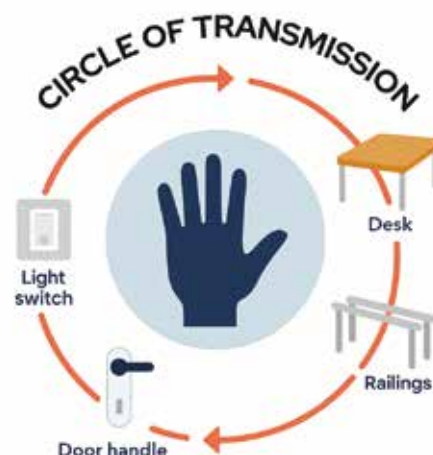
A well-structured cleaning schedule keeps high-risk surfaces safe and prevents gaps in hygiene. This guide explains how to build a cleaning timetable for healthcare facilities, specifying what to clean, how often, how and by whom. Follow these principles to maintain infection control and meet audit requirements.

What Should a Good Cleaning Schedule Include?

Drawing from RACGP guidelines and best practice standards, here's what a comprehensive **routine cleaning** schedule for healthcare settings should detail:

1. Surfaces and Equipment to Be Cleaned

- **Patient rooms:** Beds, furnishings, doorknobs, light switches, countertops
- **Toilets and bathrooms:** Minimum daily full cleaning and disinfection, with at least twice daily checks by facility staff or cleaners
- **Waiting areas:** Focused cleaning on high-touch surfaces like chairs, door handles, and magazines
- **Other areas:** Reception desks, hallways, and administrative spaces tailored to usage patterns



2. Frequency of Cleaning

- **Daily:** Minimum daily cleaning of patient rooms, toilets, and shared touch points
- **Between patients:** Equipment and surfaces disinfected immediately after each use
- **Spot cleaning:** Rapid cleaning of spills or contamination events
- **Additional cleaning:** Based on risk assessments, patient turnover, or environmental factors

Setting clear expectations for the **frequency of cleaning** ensures nothing is missed, even during busy times.

3. Cleaning Methods and Approved Products

- **General cleaning:** Using healthcare-grade neutral detergents to remove visible dirt and debris
- **Disinfection:** Using TGA-approved disinfectants to kill pathogens effectively
- **Specialised equipment:** Colour-coded cloths, mops, and zone-specific cleaning tools to prevent cross-contamination

Frequency of Cleaning namoli	
	Daily: Minimum daily cleaning of patient rooms, toilets, and shared touch points
	Between patients: Equipment and surfaces disinfected immediately after each use
	Spot cleaning: Rapid cleaning of spills or contamination events
	Additional cleaning: Based on risk assessments, patient turnover, or environmental factors

Other Important Considerations for Effective Cleaning Schedules

- **Immediate risk assessment:** Regular environmental checks for patient safety risks
- **Monitoring and evaluation:** Ongoing audits and adjustments of schedules for effectiveness

- **Compliance:** Strict adherence to Australian infection control regulations and healthcare standards

Why Standard Commercial Cleaning Isn't Enough

As explained by Mike Liddle, General Manager of Namoli Healthcare, **healthcare cleaning** requires a specialist approach. Unlike commercial cleaning, it must comply with **infection control guidelines** mandated by federal authorities and implemented by each facility.

General commercial cleaners may not understand how to avoid cross-contamination or apply zone-specific cleaning techniques, which is why partnering with specialist providers like Namoli is crucial.



Images: Namoli



Bio

Michael Liddle, General Manager – Namoli Healthcare, has been in the commercial cleaning and facilities management industry since 1991, bringing

34 years of hands-on and leadership experience. He has specialised in healthcare cleaning since 2005, applying 20 years of expertise in infection prevention and hygiene management. Over the past 20 years in senior management roles, Michael has successfully led operations, developed national compliance programs, and built high-performing teams across Australia's healthcare sector.



»
For more information visit
www.namoli.com.au



iStock.com/Jacob Wackerhausen

From ransomware to resilience

navigating data risk in health care

TONY BURNSIDE*

In Australia, health care has been the industry most exposed to data breaches in recent years. Here are some key data security challenges and risks healthcare organisations in Australia are currently facing — and potential ways to mitigate them.

Today, the health industry is racing to transform how it delivers care. Both patients and clinicians want seamless connections between care pathways, improved efficiency and better health outcomes. In this quest, hospitals and practices are digitising at speed by adopting smarter, connected devices, migrating records and applications to the cloud, and embracing AI.

But this digital transformation sweeping through health care means that every system, from scheduling to radiology, is now dependent on uninterrupted digital access to a vast store of highly sensitive personal information. This is where the healthcare industry risks losing its

balance: with every digital advancement comes more exposure to risk. Data access is critical, but data security is essential.

Valuable data and aging systems

In Australia, health care has been the industry most exposed to data breaches in recent years.¹ This is often attributed to the wealth of data it holds, which is extremely attractive for cybercriminals; but the widespread legacy systems and technical debt in the sector have also become liabilities, making healthcare organisations easy targets for attackers. Decades-old electronic healthcare record (EHR) systems, mainframes and custom applications are difficult to patch or integrate

to modern workflows and systems. Pandemic-era quick fixes — most notably VPNs bolted onto aging networks — have also become weaknesses.

This has left many healthcare organisations with legacy and fragmented IT infrastructures that hinder visibility over workflows and data movements, create security gaps, inflate costs and threaten the ‘always on’ reliability that health care depends on.

Understanding healthcare risk

When it comes to risk in health care, the impact goes far beyond fines or reputational harm. Lives are in jeopardy when critical systems go down, and the loss of sensitive records can shatter patient trust.

Ransomware is a particularly acute threat. When clinicians are locked out of essential tools and patients face treatment delays, the pressure to pay becomes overwhelming. Ransomware-as-a-service has made it easier than ever to launch sophisticated campaigns, accelerating breaches across the sector and fuelling a cycle of cybercrime. Ransomware is just one weapon in a growing arsenal of tactics available to cybercriminals, all of which can lead to paralysing care delivery if they are successful.

Insider and third-party exposure is another key challenge for healthcare organisations. With the sophistication of social engineering, an increasing proportion of successful data breaches and cyber incidents are now associated with human error. Overstretched medical staff, contractors or third-party providers who click a malicious link, open an infected file or are lured into sharing credentials and sensitive files with the wrong people can all compromise the entire organisation.

Meanwhile, the rapid adoption of AI is creating new channels for sensitive information to slip through the cracks via generative AI prompts, outputs and AI tools used by healthcare staff outside the purview of security teams and without security guardrails. Together, these pressures form a complex, converging risk landscape that traditional perimeter defences and point solutions are not designed to handle.

Unifying security for modern care

As the health industry gets serious about the effective use of data to inform care pathways and improve health outcomes, it must also improve the architectures it implements to secure that data. Piecemeal solutions are simply not good enough, leaving organisations with complex security architectures that are hard to monitor and manage, and made of poorly integrated tools that do not communicate well with each other.

Data security needs to be unified, meaning that it closes the gaps that allow risk to spread across the system, with security tools that complement each other and are part of the same fabric. Healthcare organisations need to be able to see and manage their network, and the full spectrum of risk it might be exposed to, through a single interface, and

converge access control, data protection and threat prevention around users and data for more efficiency. Data protection is an essential piece of the puzzle and should be able to protect data in motion as well as data at rest, and across web traffic, cloud/SaaS applications and AI environments.

At the heart of this model, zero trust principles should restrict users' access in real time based on their context. Security should be smart enough to consider a user's location, device and behaviour, and adjust

access rights accordingly. This ensures that clinicians, contractors and third parties are granted only the access they need, when they need it, and no more.

By unifying data security, healthcare organisations gain unified visibility, enabling them to manage risk, from exposure to disruption, and analyse events and data through one consistent framework. Modern health care's greatest opportunity and challenge lies in managing data risk without slowing technological progress.

The organisations that will achieve this will deliver care that is secure, connected and trusted without compromise.

1. Office of the Australian Information Commissioner, Notifiable data breaches report: July to December 2024, May 2025, [Internet] Sydney (AU): OAIC;2025. <https://www.oaic.gov.au/privacy/notifiable-data-breaches/notifiable-data-breaches-publications/notifiable-data-breaches-report-july-to-december-2024>



*Tony Burnside is Head of APAC at Netskope.

When it comes to risk in health care, the impact goes far beyond fines or reputational harm. Lives are in jeopardy when critical systems go down, and the loss of sensitive records can shatter patient trust.

Nurse-led infection control training program



To support healthcare teams to strengthen routine practices and apply them more consistently, healthcare protective solutions supplier MUN Australia has provided free, face-to-face infection prevention training to a range of providers — including hospitals, aged care facilities, dental clinics and community health services — delivered by registered nurses, including in rural and remote communities.

With a focus on key areas such as personal protective equipment (PPE), hand hygiene and sharps safety, the program was designed to support consistent, evidence-based infection control in everyday care. The program was aligned with national and state-led programs aimed at improving infection control and reducing waste.

These included NSW Health's 'Gloves Off! Clean Hands. Safe for All' campaign — with a focus on reducing unnecessary non-sterile glove use and improving hand hygiene compliance — and Queensland Health's 'Bare Below the Elbows' approach, which supports more effective hand hygiene practices among healthcare workers, reinforcing the role of simple, consistent behaviours in preventing transmission.

"This training gives healthcare workers the opportunity to refresh essential infection prevention skills in real clinical settings," said Sarah Hill, Queensland-based Clinical Educator and registered nurse. "In rural and regional areas especially, we've seen strong engagement, highlighting how important it is to reach teams through face-to-face education."



Sarah Hill (right), Clinical Product Specialist at MUN Australia, delivering infection prevention training to healthcare staff in regional Queensland

Image: Supplied

Hospital workers' mobile phones carry deadly superbugs

— study reveals



Hospitals place a strong emphasis on hand hygiene, but mobile phones are often overlooked despite being handled constantly in clinical settings.

What this means, these researchers suggest, is that these devices may act as reservoirs for hard-to-treat infections.

Regarding the complex communities of bacteria and disease-causing genes found on mobile phones, 'phonome' was the term used by the research team to describe the microbial ecosystem observed; the study's findings — while not examining direct transmission of infection — pointing to, the researchers said, a potential cross-contamination pathway that is currently under-recognised in clinical settings.

"Hospitals place a strong emphasis on hand hygiene, but mobile phones are often overlooked despite being handled constantly in clinical settings," said one of the study's authors, Dr Lotti Tajouri of Bond University. "These devices move between wards, patient areas and personal spaces, yet they are rarely disinfected as part of routine infection-control practices."

That mobile phones are rarely included in routine hospital disinfection protocols is described by the researchers as a blind spot in infection control that may undermine strict hand hygiene practices; with Tajouri suggesting that simple measures such as regular phone disinfection protocols could become an additional tool in reducing the spread of hospital-acquired infections.

The study was published open access in *MicrobiologyOpen* and you can read it at doi.org/10.1002/mbo3.70321.

DNA samples from 95 mobile phones of Australian and United Arab Emirates hospital workers found, on average, 3.62 out of 10 species of bacteria associated with the highest global mortality rates.

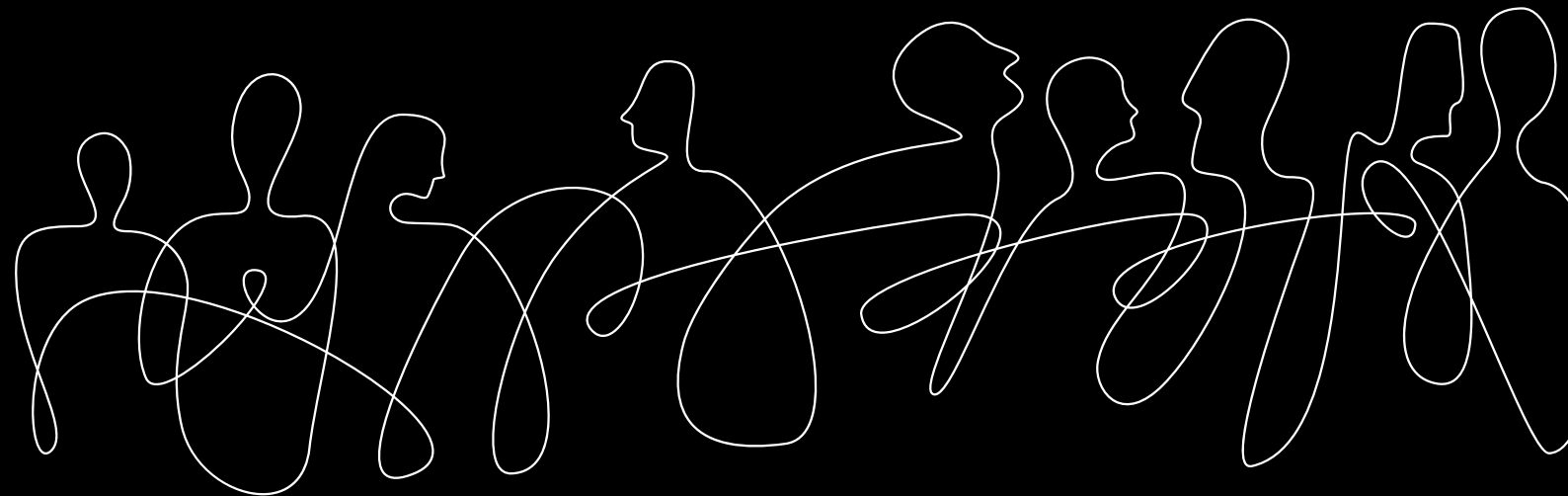
In Europe alone, hospital-acquired infections account for more than 25 million additional hospital bed days each year, costing between 13 and 24 billion euros. This study, using a technique called metagenomics, involved an international team of scientists scanning the raw DNA on the phones, with samples primarily collected from EDs and paediatric wards, including some from neonatal and paediatric intensive care units.

Bacterial species responsible for a significant proportion of the 13.7 million deaths caused

by bacterial infections in 2019 alone were identified, with *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Escherichia coli* among what they found — all designated priority pathogens by the World Health Organization.

The technique used identified not only the bacteria themselves but also the genes they carry that can shield them from drugs — the researchers suggesting that phones also harbour the genetic 'toolkit' bacteria use to share and acquire antibiotic resistance traits.





Upgrade to Premium – it's free

Vital information and resources for industry and business professionals, with complimentary membership for qualifying applicants.



www.WFMedia.com.au/subscribe



premium members receive



print & digital publication



e-news



online platform



videos



best practices



white papers



case studies



events, roundtables & webinars



12 industry
media mastheads



BETTER MOBILE SIGNAL. BETTER CARE. BETTER OUTCOMES.

In-building mobile coverage for hospitals, aged care and retirement villages — powered by the **CEL-FI QUATRA 4000e**.



Carrier-approved in-building coverage



Whole-building — every floor, every ward



Installed by certified CEL-FI partners



www.powertec.com.au/hh

1300 769 378

sales@powertec.com.au

**WE CAN IMPROVE
YOUR MOBILE SIGNAL**

