THE AUSTRALIAN
HOSPITAL HEALTHCARE
BULLETIN AUTUMN 2017

RAPID ACCESS

to time-critical diagnostics and medical treatment

Telemedicine
Speeding patient access to critical services

Emergency Department
Adult retrieval and reducing PICU admissions

Technology
Surgical robotics and pharmacy automation

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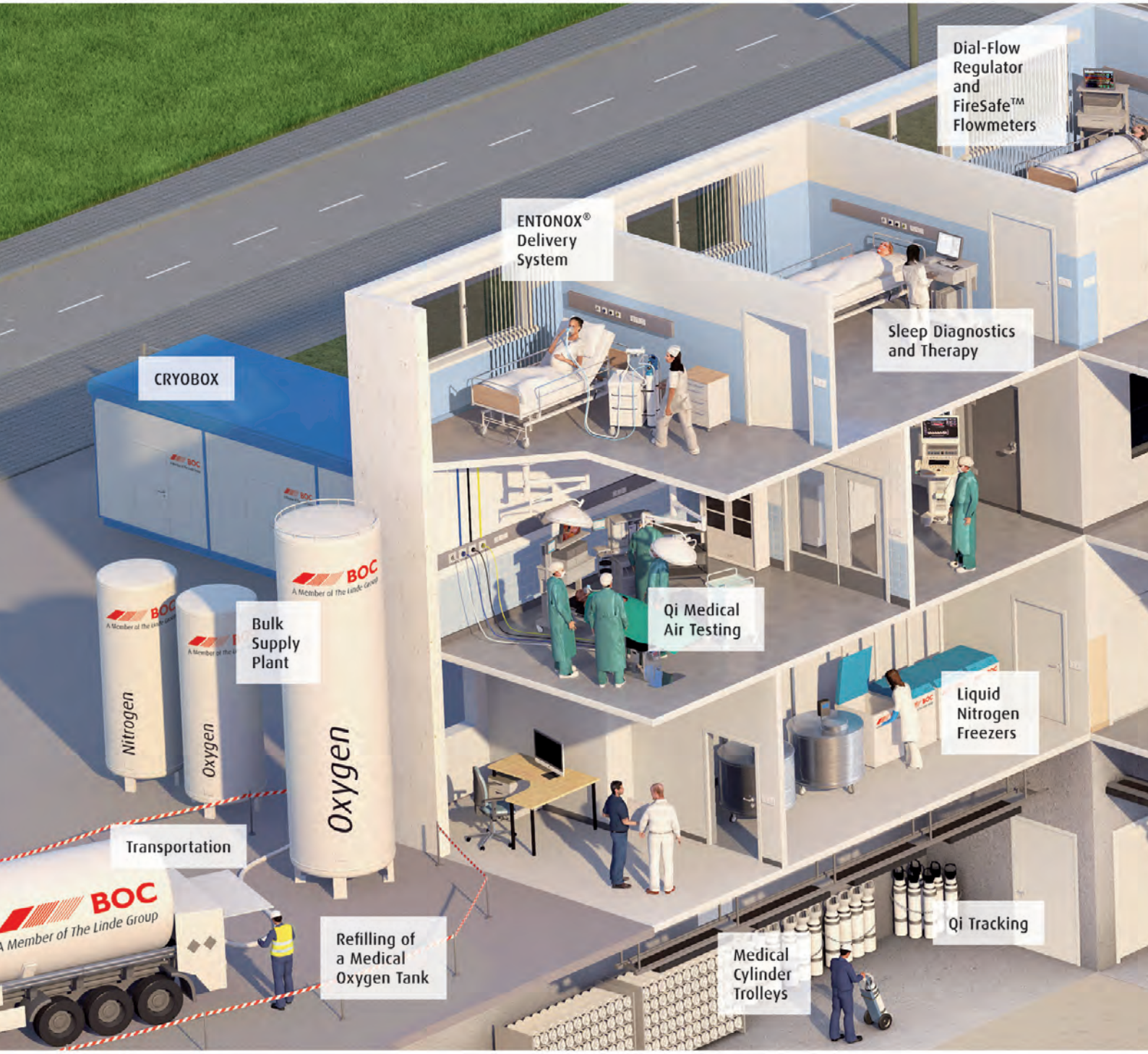

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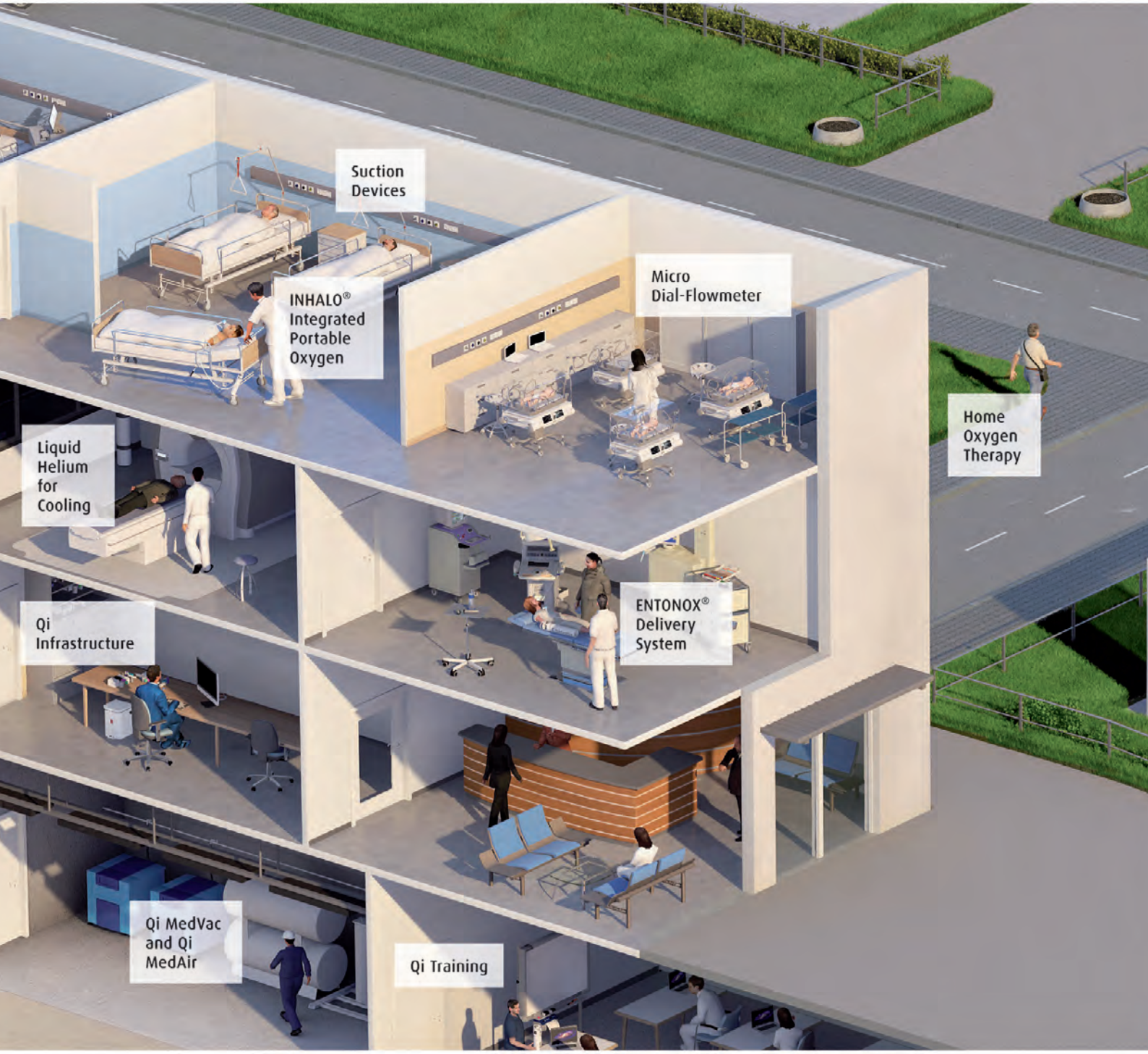

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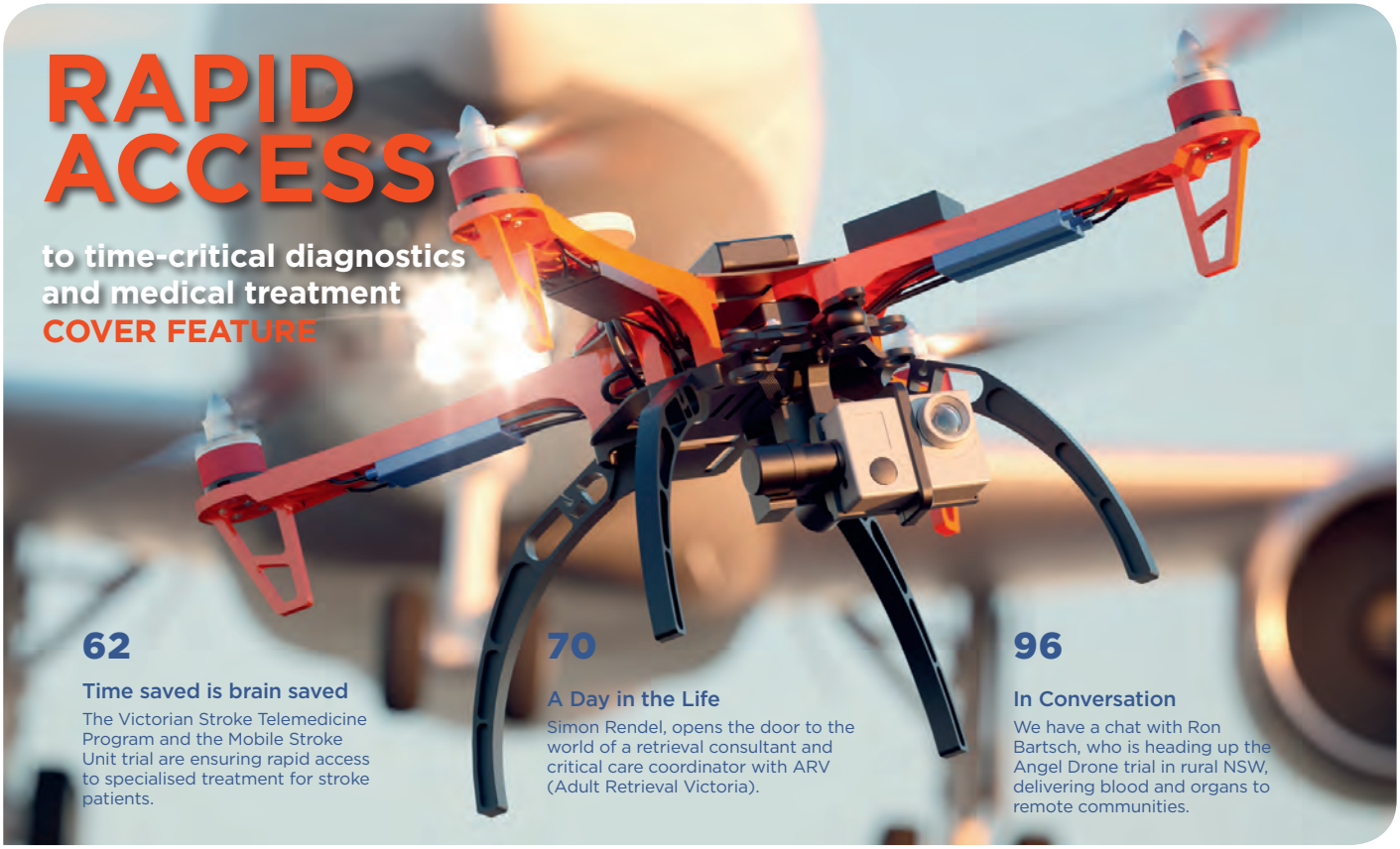
THE AUSTRALIAN HOSPITAL + HEALTHCARE BULLETIN

CONTENTS



RAPID ACCESS

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CONTENTS

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Rapid access to time-critical diagnostics and medical treatment

Welcome to your Autumn 2017 issue of AHHB.

Victor Hugo told us: "There is only one thing stronger than all the armies of the world: and that is an idea whose time has come."

We are starting to see some of these ideas emerging as tangible innovations that are dramatically enhancing healthcare delivery. New treatment protocols and advancements in medical technology are only effective if patients have timely access to them. In this issue of AHHB we take a look at some key solutions promoting rapid access to life-saving treatment.

'Time saved is brain saved' is the motivation behind two such programs: the Victorian Stroke Telemedicine (VST) Program and Australia's first ever dedicated stroke ambulance, made possible by a $7.5 million, four-year commitment from the Victorian Government.

When someone suffers a stroke, every minute counts. With a population spread between sprawling cities and remote communities, and a new stroke occurring every 10 minutes, how do we ensure rapid access to life-saving treatment for everyone?

We already know how to treat these patients, the problem is delivering the treatment to them, in time.

For remote patients, the VST program provides a solution through a roster of Melbourne-based neurologists brought bedside via mobile computing technology to rural emergency departments. And Australia's first ever dedicated stroke ambulance will hit the city streets this year, providing the quickest possible diagnosis and treatment for stroke patients in Melbourne.

Going with the theme of rapid access, our In Conversation guest, Ron Bartsch, steps us through the NSW angel drone trial. Dr Charlie Teo, everyone's favourite neurosurgeon, is backing the trial that will have drones delivering supplies such as blood and organs by unmanned aerial vehicles to hard-to-reach areas.

Access to treatment in a big country like Australia is a challenge. I was encouraged to see how many solutions to this challenge were featured at this year's Australian Healthcare Week conference across the sectors of healthcare design, technology and aged care.

The conference was also a wonderful opportunity for me to meet with some of AHHB's regular columnists and dedicated readers. On behalf of the AHHB team I would like to thank you all for your ongoing support and valuable feedback.

Corin Kelly
Editor, AHHB
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WANT TO CONTRIBUTE?

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

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Engineered for protection

The Rounds
Updates in Healthcare

Injection of funds for new stroke research

Stroke Foundation will provide more than $205,000 to eight Australian researchers, underpinning new research projects and supporting future leaders in stroke.

Projects funded included expanding the use of a smartphone app to improve communication between ambulance and hospital staff, research into sexuality after stroke, post-stroke fitness and how telehealth can deliver memory rehabilitation for stroke survivors.

Stroke Foundation Chief Executive Officer Sharon McGowan said high-quality research was vital to improving outcomes for Australian stroke patients.

"The Stroke Foundation is proud to support the delivery of new research into how stroke is treated and managed in Australia," McGowan said.

More information about the Stroke Foundation's Research Grants is available at https://www.strokefoundation.com.au/what-we-do/research/research-grants.

Duress alarms offer protection to staff

Hospitals have been distributing panic or duress alarms in the crackdown on violence against staff. Advances in mobile duress alarms provide security for greater numbers of people over wider geographic areas with more precision-finding capacity than fixed duress alarms offered in the past. Healthcare workers are now better protected with innovations in infrastructure, digital networks and cloud computing becoming the norm across the healthcare system.

For example, working across the mobile phone network, duress alarms can contact multiple numbers with an SMS message and two-way voice call and send a GPS location map. Automatic 'man down' sensors also provide an extra level of protection for workers in remote or high-risk environments. Wearability is important and duress alarms are now available that can be clipped to a belt or worn as a lanyard, wrist band or embedded into work clothes.

Twig Embody. Image supplied by Twig Australia.

TB progress threatened by global rise of multidrug resistance

Tuberculosis (TB) kills more people each year than any other infectious disease. New antibiotics are becoming available for the first time but without accurate diagnostics, clear treatment guidelines and improved control efforts, their effectiveness could be rapidly lost.

The rise of multidrug-resistant (MDR) and extensively drug-resistant (XDR) TB threatens to derail decades of progress in controlling the disease. In most regions of the world, drug-resistant TB is now predominantly caused by transmission, with an estimated 95.9% of new cases infected with MDR-TB strains due to the bacteria spreading from one person to the next.

Dr David W Dowdy, Johns Hopkins Bloomberg School of Public Health, USA, believes we will see either an unprecedented drug-resistant TB epidemic or a reversal of the global problem. "The difference between these two outcomes lies less with the pathogen and more with us as a global tuberculosis control community and whether we have the political will to prioritise a specific response to the disease. Drug-resistant tuberculosis is not standing still; neither can we," he said.

Telehealth stands to help thousands with chronic knee pain

Researchers at the University of Melbourne have developed an online treatment program, including Skype consultations, to improve symptoms and functioning for people suffering knee osteoarthritis. The IMPACT project is funded by the NHMRC.

Professor Kim Bennell, of the Department of Physiotherapy, said participants in the IMPACT project had seven Skype sessions with a physiotherapist to learn home exercises, and completed an online pain-coping skills training program over three months.

Compared to a control group, who only had access to online educational materials, they reported significantly greater improvements in pain, physical functioning and quality of life at three and nine months.

"Currently, many people with this condition are not receiving key treatments but are relying on drugs, which have serious side effects, and costly surgery," Professor Bennell said.

"About 30,000 Australians have knee replacement surgery each year, so helping people to better self-manage can significantly reduce the need for surgery and drugs."

Prescribing touch — early experiences shape preterm babies' brains

Findings reported in *Current Biology* show that babies' earliest experiences of touch impacts how their brains respond to gentle touch later. Researchers from the US Nationwide Children's Hospital and Vanderbilt University Medical Centre looked at the impact of touch on both premature and full-term babies.

Preterm babies' brains were found generally to have a reduced response to gentle touch compared with full-term babies, but when the babies in neonatal intensive care units spent more time in gentle contact with their parents or healthcare providers, their brain response was stronger. In contrast, the more painful the medical procedures premature infants had to endure, the less their brain responded to gentle touch later. So new parents are encouraged to take heart: their touch matters more than they may realise.

UNSW's Dr Parisa Sowti Khiabani wearing the UV-sensitive skin patch she developed.

Early warning UV skin patch

University of NSW (UNSW) scientists have developed a skin patch that acts as an early warning device, alerting the wearer when it is time to get out of the sun. This safe, affordable and easy-to-use sun-sensitive sensor is blue and discolours gradually in response to UV light.

Developed by Professor Justin Gooding and Dr Parisa Sowti Khiabani, the paper device is made with an ink-jet printer and contains benign materials such as food dye. The patches are calibrated to simulate the varied UV exposure times of different skin types, even after sunscreen has been applied.

A provisional patent has been filed for the technology, which could help decrease the high rate of UV-related skin cancer in Australia. The research is one of the projects undertaken by experts of the newly launched NSW Smart Sensing Network. For more information, visit www.nssn.org.au.

The Rounds
Updates in Healthcare

Could the Australian Synchrotron help to find a superbug supercure?

Australian scientist Professor Alice Vrielink from the University of Western Australia, believes so.

"The rise of multidrug resistance in bacteria has led to the dramatic increase in the number of deaths worldwide from bacterial-mediated sepsis," said Professor Vrielink.

"This is a major public health threat that has the potential to claim the lives of millions of people every year," she said.

"At the Australian Synchrotron we used a technique called X-ray crystallography to map the three-dimensional shape of a protein, called EptA, which causes resistance to antibiotics," said Professor Vrielink.

Professor Michael James, head of science at the Australian Synchrotron, explains why this is significant: "By understanding the structure of a protein, researchers can unlock its function, which will allow scientists to design new and effective treatments to treat the bacteria."

Results so far provide novel insights into the mechanism of endotoxin modification and will aid a structure-guided rational drug design approach to treat multidrug-resistant bacterial infections.

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Train like a memory athlete

Stanford scientists have found that teaching people a time-honoured mnemonic technique used by 'memory athletes' (people adept at quickly memorising the sequence of cards in a deck or a vast string of digits) not only boosted their recall ability but also induced lasting changes in the organisation of their brains.

The study, published in *Neuron*, showed that training normal humans to be memory athletes bulks up the brain's memory networks.

The memory of participants who underwent a six-week course of daily online-training sessions in the method of loci improved dramatically. They could recall almost as many words as the memory athletes could, and they achieved similar results four months after completing training. Their resting-state functional connectivity patterns also now more closely resembled those of the memory athletes than they had prior to training.

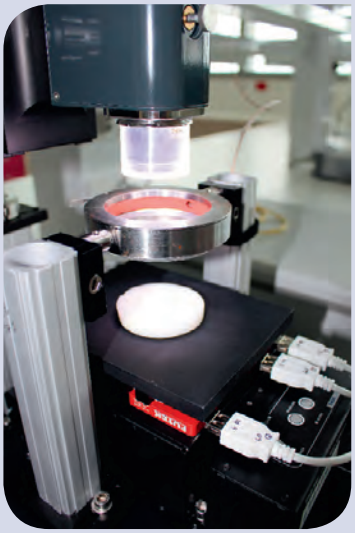
No such memory gains and brain-connectivity changes were seen among participants who received working-memory training or no training at all.

New imaging technique helps prevent secondary breast cancer surgeries

Researchers at BRITElab at Harry Perkins Institute of Medical Research and the University of WA have developed an imaging technique that assists surgeons to effectively remove all tumours during initial breast cancer surgery. The aim is to remove all malignant tissue surrounded by a 'margin' of healthy tissue avoiding secondary surgeries.

Compression optical coherence elastography (OCE) is a high-resolution optical imaging technique probing the mechanical properties of tissue, identifying malignant tumours and creating a 3D image of tissue elasticity.

A benchtop motorised lab-jack must apply bulk preload to tissue before elastography is performed. The Futek miniature s-beam load cell (on the lab-jack) measures force ensuring a suitable intra- and inter-specimen comparison of elasticity reading.



TECHNOLOGY

FEATURE

To reduce the risk of incorrect drug selection, automated drug cabinets will only provide access to the ordered medication.

Pharmacy automation is delivering real benefits

Western Australia's Fiona Stanley Hospital (FSH) is enhancing the safety, efficiency and governance of its medications across the 783-bed major tertiary hospital through a sophisticated pharmacy automation system.

“Resupply of medication to the wards can now be done in under 10 minutes, which is three times faster than a manual process.”

Kenneth Tam, Fiona Stanley Hospital’s Acting Deputy Chief Pharmacist – Operations, with one of the hospital’s three robotic drug dispensary systems.

The automated inventory management system, the largest of its kind in the Southern Hemisphere, supports the hospital’s delivery of comprehensive care services through five key components. These include:

- 3 robotic drug dispensary systems
- 55 automated drug cabinets (ADCs) in clinical areas
- 44 secured anaesthesia drug stations in operating theatres
- 2 electronic controlled drug safes
- 156 medication workstations on wheels.

At the heart of the system are drug dispensary robots that can precisely scan, move and store more than $200,000 worth of medicines each day.

Robotic arms identify and validate medications from suppliers before neatly storing them on shelving units. When orders are received, these robots select the requested medications and prepare them for delivery to the wards.

Barry Jenkins, FSH’s chief pharmacist, said this groundbreaking technology is delivering substantial benefits to the hospital and patients.

“These robots can accurately manage 75% of our pharmacy stock from receipting, storage and tracking of expiration dates in a fraction of the time it used to take us,” he said.

“They have replaced most of the manual tasks associated with drug inventory management and this frees up staff to focus more on patient care.”

The robotic dispensary is linked to secured ADCs located in clinical areas that store imprest medications and electronically tracks their usage and inventory.

As an added security measure, nurses log in to the cabinets using a biometric identifier generated from their fingerprint to access medications.

Medications retrieved from the ADCs are securely stored in patient-specific drawers on the ward’s mobile medication workstations before they are delivered to the patient by the bedside.

When stock levels in an ADC fall below a predefined limit, an automated reorder message is sent to the pharmacy management system which coordinates the selection and resupply medications.

Jenkins said this has led to a 70% reduction in the number of occasions wards had run out of stock.

"Resupply of medication to the wards can now be done in under 10 minutes, which is three times faster than a manual process," he said.

The system has also added a greater level of security for controlled drugs as these are monitored through an electronic register that records all transactions in accordance with relevant state legislation.

As these medications are used, stock is issued from the pharmacy-controlled drug safe to resupply clinical areas. An electronic governance chain tracks the movement of these medications from pharmacy to clinical areas and automatically flags transactions that require follow-up review.

FSH is the only hospital in the country where every operating theatre and procedural area is equipped with a secured anaesthesia drug station designed to align with the anaesthetists' workflow. These unique stations provide better access to lifesaving drugs, promote safer drug selection and improve the tracking of controlled drugs.

The use of electronic registers has also eliminated the need to maintain labour-intensive paper registers for imprested controlled drugs in wards and pharmacy areas and reduced the frequency of controlled drug counting.

Using the product's barcode, detailed data on every transaction is recorded and can be used for auditing and reporting purposes. It also allows the hospital to gain a better understanding of usage trends, review discrepancies and identify areas requiring further optimisation.

FSH's comprehensive medication management platform delivers real-time efficiency, safety and governance benefits and supports the hospital's closed loop medicines management vision.

"At the heart of the system are drug dispensary robots that can precisely scan, move and store more than $200,000 worth of medicines each day."

Nurses can securely access the automated drug cabinets using a biometric identifier generated from their fingerprint.

Achieving Integrated Care as the Foundation of Population Health Management

As Healthcare providers struggle to improve services while keeping costs down, many are turning to the concept of Integrated Care for help.

Integrated care — healthcare that crosses organisational boundaries and different care settings, bringing together all parties involved in delivering healthcare through the sharing of information is the goal of health systems worldwide.

Many of the challenges facing healthcare globally are underpinned or driven by fragmented healthcare services and tackling these challenges requires re-architecting care delivery models. One of the most complex and critical aspects of this is building an IT infrastructure that enables all participants in the healthcare system to access and share the information they need, and to streamline and automate their processes to ensure the most efficient clinical and administrative workflows.

To deliver truly integrated care, and build an enabling information technology platform there are **six key** (non-linear) steps to follow:

I. Acquisition: Acquiring data from disparate information systems and care locations. Many clinical systems format, store and share data in different ways. To get the complete picture of an individual's health, an IT system needs to enable data acquisition for accurate and reliable interoperability with a wide array of systems.

II. Aggregation: Secure storage of structured, normalised and identified data. Each of the systems contributing data to a healthcare network has its particular characteristics and conventions for formatting and sharing data. The data that needs to be aggregated must include systems for identity management and terminology services to ensure normalisation of data across multiple systems.

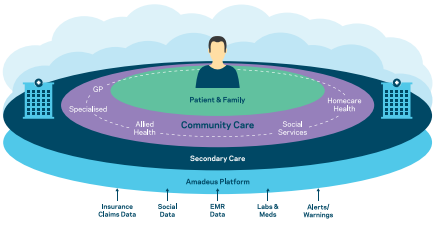
III. Analytics: Tools for risk identification, management and quality improvement. Mining data for views into population health and finding the actionable insights that can drive improvements to quality and efficiency drive the need for analytics as a fundamental component of a successful integrated health network.

IV. Access: Fast, easy and convenient access to information for the entire circle of care. Clinicians, administrators, patients, family members and many others need secure access to various aspects of a healthcare network's data. Each have their own unique set of priorities, permissions and technical sophistication level to consider, but for all of them, access to data must be as frictionless as possible to support initial and ongoing adoption.

V. Action: Turning information and insights into activities and outcomes. A key technology requirement is coordinated workflow tools that enable care managers to deploy consistent care pathways based on patient and population data, and to document and communicate progress with the healthcare providers and patients they support.

VI. Adoption: User engagement and adoption of tech. Adoption is as much an issue of technical prowess as it is an emotional and behavioural one. If clinicians and care coordinators fail to adopt, key information will not be used for decision-making and outcomes will suffer.

We have entered a new era in healthcare where we are orienting our health system around the patient. To deliver care that best serves individuals, we must promote the bringing together of services and systems across the health spectrum.



Healthcare IT has a huge part to play in the seamless integration of our healthcare systems and adopting the right strategy — and making the right investment — is crucial to generating improved outcomes — both clinical and financial. To find out how these six steps to Integrated Care can be implemented in your organisation visit orionhealth.com/au.

Five ways to improve the healthcare user experience

Why managing unstructured content makes life easier for end users

Unstructured content – the information that resides outside of your organisation's core systems and processes – plagues nearly every healthcare organisation. For patient care, it's been estimated that up to 75 percent of patient information – in paper or electronic form – exists outside of your clinical information system (CIS) and/or electronic health record (EHR). In finance and accounting, it lives beyond the reach of your enterprise resource planning (ERP) system.

But why is unstructured information an issue, and how does effectively managing it improve the end user experience? By its very nature, unstructured content annoys clinicians and staff. They have to find it. They have to wait for it. They have to worry about whether it's been lost or misplaced. Put simply, unstructured information impedes their ability to do their jobs effectively.

Manage your unstructured content with these five steps to make life easier for the people who rely on your CIS and ERP systems.

Step 1: Identify it

Before you can better manage your unstructured content, you first need to understand what it is. For each organisation, this content can be a wide assortment of documents and information in differenct departments across the enterprise.

For example, in care delivery, unstructured content can be everything from faxed orders and diagnostic images to the actual paper chart. In accounting departments, invoices and the information surrounding specific financial transactions often exist as unstructured content.

The key to understanding each department's various types of unstructured content is to talk to the people who work with it every day. Only then will you truly be able to identify the sources and get it under control.

Step 2: Get it out of the way

Odds are pretty good that paper and other physical content like faxes, ECGs, clinical images, photocopies and patient charts are in someone's way. Sifting through a stack of paper for one specific record creates frustration. It reduces the time spent caring for patients, finalising documentation, onboarding employees, etc. It also increases the likelihood that another piece of information may be lost or misfiled. Even if your organisation's paper content is safely stored in a central filing location, storage costs money and the space might be better allocated to patient care.

This is where enterprise content management (ECM) can help. An ECM solution captures the diverse range of information and content within your organisation – the paper, faxes, diagnostic and digital images, DICOM content, AP invoices, employee records and more. By electronically capturing this type of content, you eliminate the need for its physical storage and management. You also reduce frustrations of staff who no longer have to navigate a sea of paper to find what they need. And, improving productivity while saving on storage and filing costs demonstrates a true return on investment sure to please the more financially minded in your organisation.

Step 3: Put it somewhere safe

Capturing that unstructured content is only the beginning. You'll need somewhere safe to store it. An ideal ECM solution provides you with a single, secure repository to store your unstructured content electronically, reducing complexity in your IT environment by eliminating disparate, disconnected content silos.

Unstructured information poses a security risk. An ECM solution securely stores and structures your patient information, minimising the risk of violating patient privacy regulations while comprehensive audit trails prove compliance. This makes life easier for users and demonstrates the true value of your department and its portfolio of solutions.

Step 4: Make it easy to find

For this content to be useful, the people who need it should be able to find it easily and quickly. Integrated with your organisation's core applications, an ECM solution provides instant access to content from within those systems, often with a click of the mouse.

For clinicians, that means finding information once stored in paper charts within the CIS. For staff in accounting and financial services, it means finding transactional billing data within the billing system and invoice information within the ERP system.

Ideally, the end users of a well-integrated ECM solution don't even know they are in a different system. They simply find what they need within the applications they know and use every day, which extends the value of those existing applications.

Step 5: Send it where it needs to go

You've identified unstructured content, captured it, safely stored it and integrated it with your core systems. Now what? It's time to take the content that once frustrated staff and impeded efficient processes and use it to help gain efficiencies.

Using electronic workflows, an ECM solution directs content to the appropriate staff based on rules you define. For example, coders and analysts in health records receive electronic charts based on admit encounter type, complexity, facility or any other criteria uniquely suited to that department. In accounting and finance, invoices automatically route to the appropriate approval channels based on an amount or invoice type. In each case, workflows provide increased visibility to help departmental managers ensure an even distribution of workload among staff. These predictable parameters help users work more productively and remove bottlenecks so that processes run more smoothly.

Conclusion

Unstructured content, regardless of its form, leads to user frustration. It makes sense, really. Any time staff has difficulty finding what they need to work effectively, frustration is a natural consequence. ECM technology turns that source of annoyance into a point of efficiency. This creates happier end users who, in turn, develop a greater appreciation for the systems and services your IT department delivers and supports.

Learn more at **OnBase.com/AUS-HUB**

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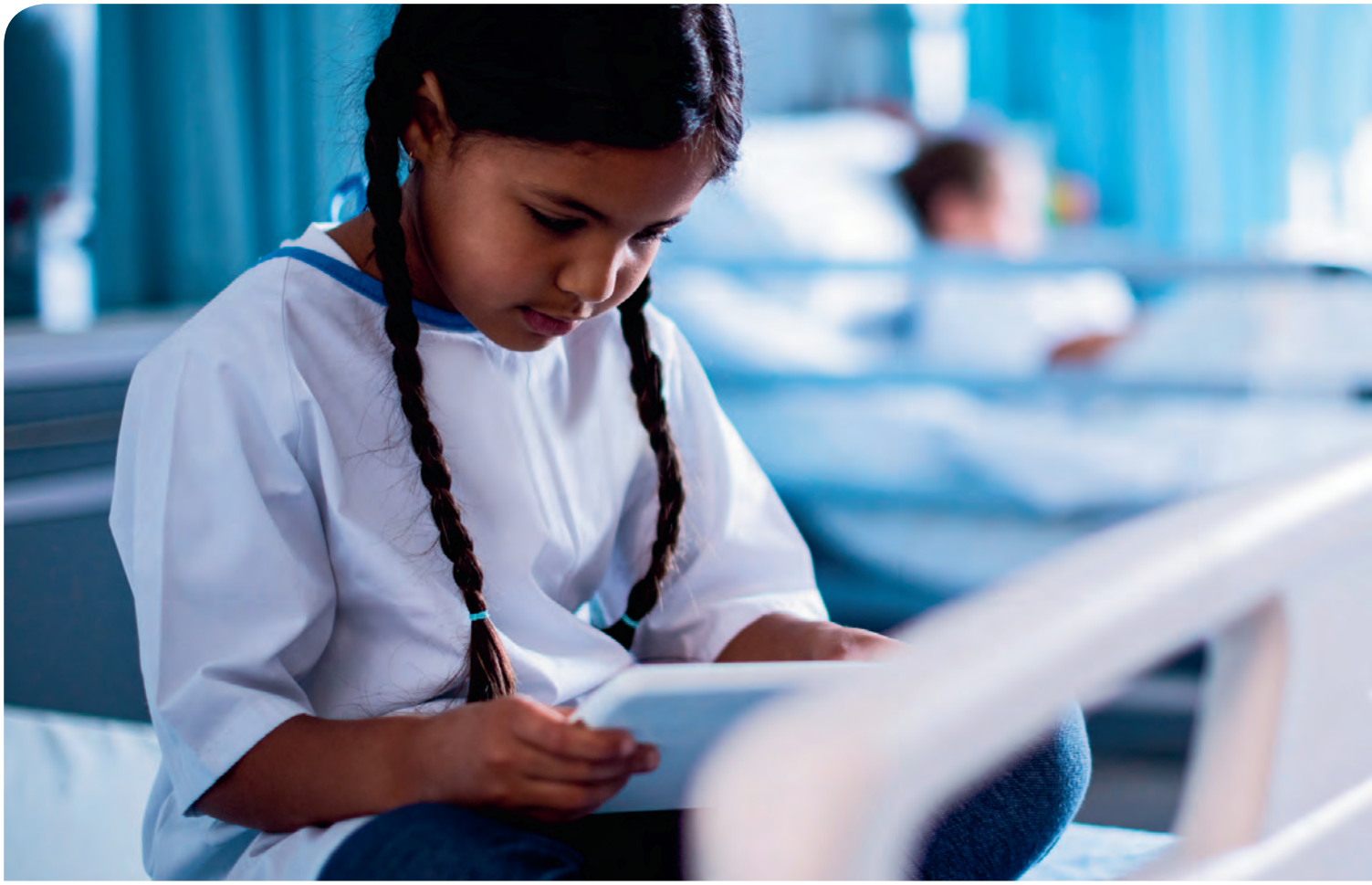
The humanity in health technology

Dr Victoria Atkinson



Innovative technology is integral to clinical medicine and yet healthcare has traditionally lagged in its adoption of technology into patient, operational and business intelligence spaces.

In some locations we have stubbornly continued to build 100-year-old hospitals with little in the way of technological nervous systems and we are left with staff and patients who use technology more effectively at home than they do in our hospitals. Inevitably then, healthcare workers are constrained in their ability to deliver safe, timely and consistent care and patients are unable to engage effectively with their own health journey.

One of our great strengths in healthcare is in our highly intelligent, educated and motivated workforce and so when the system fails to deliver technological solutions, our clinicians will initiate solutions of their own. The result is often a fragmented mix of non-integrated niche systems that dangerously complicate the patient journey.

Adding urgency to the conversation is the rapidly changing consumer population. Baby boomers traditionally presented to health providers to find a solution to their health challenges, but this model is evolving. The millennials are driving their own health outcomes from an early age, for instance, many are deciding how they will eat, exercise and work towards their health goals, and conversely, they are informed as to how they will proceed if illness strikes. This group seeks to partner with their providers and has clear expectations of maintaining control of all healthcare decisions, with advice from expert clinicians. This will significantly alter how they seek to connect with their physical health environment through technology.

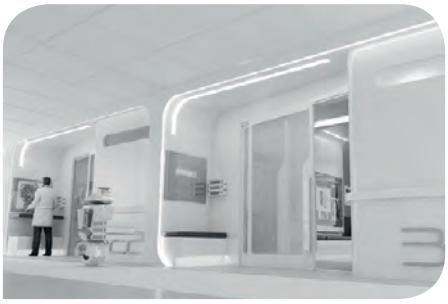
Younger patients are now demanding connectivity within the hospital on a par with what they experience outside. Electronic patient portals enable consumers to feel in control and informed with the ability to schedule appointments, complete patient education or interact with their health record.

To this point, the biggest piece of health technology with which patients have had to contend is the upside-down call button. An article by Dr Val Jones, MD, the president and CEO of Better Health, ranked the upside-down patient call button in the top 10 hospital

"Younger patients are now demanding connectivity within the hospital on a par with what they experience outside."

design features most disliked by patients[1]; few would disagree.

But as we integrate technology into hospital design, we must be mindful of maintaining the balance between the natural and comforting environment that evidence suggests is best for healing, with the more high-tech and potentially sterile environment that we sometimes see depicted as the hospital we will inhabit in 25 years.



Depiction of the 'Patient Room 2020' from design collaborative, NXT Health. Are consumers and clinicians really ready for this?

The classic and largely unpopular 'upside-down hospital call button'.

Clinician involvement

There has been an industry built advising on the topic of clinician engagement; how do we make clinicians care about great ideas and systems we have paternalistically designed for them? The answer lies within the question; clinical staff should co-design their own solutions and then the need to retrospectively engage dissipates. Yet too often clinicians and patients are an afterthought in the system design process as we build them a new database or radiology system; build it and they will adapt... they will whine, but they will adapt.

At times technology can lie uncomfortably with the art of medicine where decisions don't always follow neat algorithms. Many early clinical review and prescribing systems were unable to tolerate this intuitive dimension of medicine. Clinical technology must be programmed to accommodate flexibility and at times ambiguity in order to still deliver a human health experience.

More than just stakeholders need to be consulted; it is patients and clinicians who will inhabit and breathe life into a health system and will ensure its success or expensive failure. The decades of collective corporate intelligence held within staff allow for the avoidance of pitfalls and for the discovery of innovations not imagined by engineers. Clinicians must become co-creators of the design and the supporting models of care thereby ensuring the sense of engagement and ownership critical to integrating technology into the human side of healthcare.

Primarily, health technology must contribute to the healing of our patients and it must be intuitive and kind to our staff; it must facilitate the humanity of healthcare. If this is our primary objective and is facilitated through our staff and patients then other desired safety, reliability and efficiency gains will inevitably follow.

Dr Victoria Atkinson is a cardiothoracic surgeon and the Chief Medical Officer and Group General Manager Clinical Governance at St Vincent's Health Australia. Victoria also has EDAC certification in evidence-based design from the Center for Healthcare Design and is interested in the role of hospital design in influencing measurable clinical outcomes.

Reference

Jones V. The Ten Worst Hospital Design Features: A family member's perspective. July 21 2012. Better Health. http://getbetterhealth.com/the-ten-worst-hospital-design-features-a-family-members-perspective/2012.07.21

Introducing Sterilance

The Australian blood collection market is worth around $46 million and growing at a rate of 10% per annum. In just five years, Medicare recorded an increase in pathology services from 93 million (2010) to 113 million (2015). Medicare funds the majority of Australian pathology services, including standard newborn testing, phlebotomy in hospitals and clinics and at-home diabetes testing. While it is commonplace for blood testing products in hospitals and clinics to be managed via a tender process, the home-testing market is poised for significant growth, as around 280 Australians are diagnosed with diabetes each day.

Pathtech has been operating in the Australian diagnostic and research markets for over 30 years. The Science Division incorporates experts from a range of fields and with varying backgrounds — from working with major Australian diagnostic companies through to extensive laboratory experience in various pathology disciplines, including phlebotomy and blood collection. The team also enjoys sound relationships with major public and private pathology laboratories across Australia, as well as many medical facilities.

Based on the high-level expertise embedded within the business, solid customer relationships and a reputation for an outstanding product portfolio, Pathtech is now launching a new diagnostic product range in the Australian market.

While there are a number of lancet products currently on the market, many are packaged with blood glucose monitoring systems or other blood collection products. However, there is still some demand for high quality stand-alone blood collection lancets. Pathtech now offers the following stand-alone products from the SteriLance range:

- SteriLance (Press 2) pressure activated safety lancet
- SteriLance (Lite 2) button activated safety lancet
- SteriLance SteriHeel heel incision safety lancet

SteriLance (Press 2) pressure activated & (Lite 2) button activated safety lancets

Healthcare workers face the risk of accidental needle-stick injury while caring for patients, putting them at risk of contracting bloodborne viruses. The SteriLance (Press 2) pressure activated and (Lite 2) button activated safety lancets offer a convenient solution through two administration options, depending on user preference. Both offer superior patient safety and comfort, while ensuring good blood samples are collected.

The SteriLance (Press 2) pressure activated safety lancet offers increased safety for both healthcare professionals and patients, as the lancet needle is fully shielded before and after use. The device features a pressure-operated design and an easy-to-use, twist-off end cap.

The SteriLance (Lite 2) button activated safety lancet offers the same benefits as the pressure activated device, with the additional convenience of trigger operation. The trigger is located on the side of the device, meaning activation is fully independent of any additional downward pressure on the incision site.

Both are single use only devices, gamma irradiated to ensure sterility and feature an ultra-sharp tri-bevel needle with high-speed penetration. They are available in a range of configurations and depths to suit most capillary applications and diagnostic tests.

SteriHeel heel incision safety lancet

The SteriHeel heel incision safety lancet is a precision device for use in infant heel capillary sample collection. The controlled and rapid movement of the micro-blade and crescent glide-path motion are designed to optimise blood flow while reducing pain and tissue trauma. The device complies with NCCLS guidelines for neonatal heel puncture depth.

The fully shielded blade offers users improved safety and the activation button is secured by a safety catch. It is convenient to use, with a pre-loaded, wider button activated design for easy operation. The ultra-sharp blade and high speed action delivers greater patient comfort and promotes fast healing.

SteriHeel is available in five sizes: 1.0mm depth/2.5mm incision (yellow) for use with newborns or where short penetration depth and minimal tissue compression is required; 0.85mm depth/1.75mm incision length (orange) for use on premature babies with thinner dermal tissue; and 0.65mm depth/1.5mm incision length (green) for use with very premature babies. There is also a 1.25mm depth/2.5mm incision lancet available, along with 1.5mm depth/2.5mm incision available.

Pathtech

» For more information on the Sterilance range from Pathtech, visit **www2.pathtech.com.au/sterilance/** or contact the Pathtech Team on **1800 069 161.**

Sterilance Safety Lancets

A device so gentle, your patient will thank you.

Pressure Activated Safety Lancets, Button Activated Safety Lancets & Heel Incision Safety Lancets

The Sterilance Pressure Activated Safety Lancet and Button Activated Safety Lancet provide a safe, ergonomic lancet option, protecting from the risk of needle-stick injuries, and potential exposure to infectious diseases, such as HIV or Hepatitis. The SteriHeel Heel Incision Safety Lancet for use in infant heel capillary sample collection features a mini blade with high speed arc-shaped incision pathway designed to optimize blood flow whilst reducing pain and tissue trauma.

All of the Lancets within the Sterilance range offer:

User safety & comfort
Blade is fully shielded before and after use. Single use only Requires only a small amount of pressure to activate.

Convenience
Pre-loaded, pressure or button activated options, depending on user preference, both ensure good blood samples.

Patient safety & comfort
Single use devices. Gamma irradiated. Ultra-sharp tri-bevel needle, high speed penetration. Varying configurations and depths to suit most capillary applications.

Best Practice
All models adhere to NCCLS best practice guidelines.

For more information on the Sterilance range from Pathtech, visit www2.pathtech.com.au/Sterilance/ or contact the Pathtech Team on 1800 069 161

FREE SAMPLE

visit www2.pathtech.com.au/Sterilance/ to request a free sample of a Sterilance Lancet

Contact the Pathtech team
Phone 1800 069 161 | **Email** sterilance@pathtech.com.au

pathtech.com.au

Pathtech

Surgical precision, redefined by robotics

Dr Greg Malone

The pace of technological advancement is accelerating, and healthcare is not immune to this trend.

Twenty percent of GDP in the United States (the highest in the world) and 10% of GDP in Australia is being spent on health or health-related endeavours. It is unsurprising then to see medical and surgical technology front and centre in this expansion that is echoing across all aspects of healthcare.

With medical therapies, novel drugs are entering clinical practice on a regular basis, and we now have personalised pharmaceuticals and therapies.

It is at the point where these treatments are now being tailored to the disease profile of individual patients, down to a molecular level. Surgical therapies have also become increasingly complex.

Advancements in surgical technology allow surgeons to enter the human body and visualise anatomical and pathological detail never thought possible, and without a doubt, the most profound example of this has been through the utilisation of robotics.

The initial forays into robotic surgery were evident through the mid-1980s. However, it was pushed into the spotlight with the development of 'The da Vinci Surgical System'. This first entered clinical practice in 1999, and became a widely accepted technology over the ensuing 5 years. There are now approximately 4000 robotic surgical systems worldwide, and more than 25 systems in Australia.

The initial work in laparoscopic surgery was for gynaecological pathology, and progressively, these techniques were adapted to other surgical specialities and disease entities.

The da Vinci Surgical System facilitates the surgeon's ability to undertake complex keyhole surgery, above and beyond that of pure laparoscopy alone. Surgeons quickly began to realise that robotic surgery could improve their ability to undertake these procedures, with an added level of dexterity and vision.

The da Vinci robot has two major advantages over standard laparoscopy. Firstly — exceptional vision. Three-dimensional imaging is magnified approximately 10 times, compared to standard laparoscopy.

Secondly — dexterity. The robot's 'endo-wrists' are miniature instruments which have seven ranges of motion and improve access in certain circumstances. Importantly, the

Dr Greg Malone is consultant Urologist with the Brisbane Urology Clinic. In this time he has continued to develop his special interests of prostate cancer and pelvic uro-oncology, laparoscopy and prosthetic surgery, as well as continuing to undertake general urology.

Dr Malone is one of the founding surgeons of Queensland's first Robotic Surgery Unit at the Greenslopes Private Hospital. Dr Malone was a member of the surgical team involved in the first robotic radical prostatectomy undertaken in Queensland.

In 2009, Dr Malone was appointed as a Mentor to American Medical Systems to educate and instruct fellow urologists in the techniques and practice of surgical therapy for erectile restoration and male urinary incontinence.

da Vinci robot is a 'master-slave' device. This means that the surgeon controls the device at all times and autonomous actions are not possible. It is literally a 'drive-by-wire' modality.

Urological surgeons were the first surgical specialist group to utilise this technology and apply it to radical prostatectomies that entail both ablative and reconstructive components. Robotically assisted radical prostatectomy is now the most common form of radical prostate surgery undertaken in Australia.

"Robotically assisted radical prostatectomy is now the most common form of radical prostate surgery undertaken in Australia."

As experience with this device grows amongst urologists, the da Vinci robot is now also being applied to other urological disease processes, including bladder and kidney cancer and other specialities.

As with all technologies, the da Vinci robot continues to undergo improvements. Since its inception in 1999, four generations of this machine have been developed, with the most recent device, designated the Xi, allowing even greater dexterity and visual optimisation.

The utilisation of the surgical robot continues to push new frontiers, and without a doubt, even though it is now 18 years since these systems were first utilised in prostate cancer surgery, we are only at the beginning of the evolution of this technology and the burgeoning possibilities that it will allow in optimising patient care.

Putting patients at ease with smart and effective technology

When thinking about hospitals and the day-to-day technology that staff use to look after patients, it is easy to focus on larger equipment like an MRI or CT Scanner. These are essential tools when it comes to diagnosis and finding the best course of treatment for a condition — but treatment is only half the battle. To help patients heal, medical professionals also need to consider their mental wellbeing and keeping a patient positive is essential on the road to recovery.

If you find yourself in the emergency room as a patient, things have probably not gone your way in recent times. Chances are you would prefer to be anywhere else and so when it comes time to be admitted, the more effortless that process is, the better. This is where the Brother TD-2000 series label printers can assist in patient care by streamlining admissions — especially when it comes to Patient ID printing. In addition to speed, it also allows for higher reliability and can improve patient safety by utilising smarter and safer patient ID techniques and barcode medical administration system integration.

A brief prepared by the Centre for Health Systems and Safety Research in 2013 found that barcode point of care systems 'have the potential to reduce administration errors but are sometimes used incorrectly due to technology limitations and poor design e.g. faulty barcodes'. It is therefore essential that any barcode system be infallible, especially when relied upon for the wellbeing of a patient. The report conclusions stated that these systems rely on well-designed technology that is being used correctly by caregivers. The TD-2000 series is designed specifically to make the process simple and easy-to-use while maintaining high reliability and optimum functionality.

The TD-2000 series uses barcode point of care technology for real-time verification of crucial information like patient details, what medication they require and dosage as well as time and route. It is also compatible with TrustSense™ media from PDC Healthcare — a trusted leader in positive patient identification for more than 55 years which adds an extra level of reliability. This technology used in the printer series can provide automated alerts to caregivers in order to eliminate potential harmful errors before they occur, helping to protect patients, provide peace of mind for clinicians, and maintain compliance with important patient safety regulations.

With connectivity options that include mobile devices and configurations that include Lithium Ion rechargeable batteries, staff can work in virtually any area of a hospital. The Printer's transportable, wireless format empowers clinicians to administer care directly where it's needed most — with the patient at almost any point of care location whether from a workstation in admissions to a cart at patient bedside, and everywhere in between.

The Brother TD-2000 series excels as the backbone of any patient ID system. It is, after all, a label printer and can be used with a wide range of label types and across a wide range of uses in hospitals and other healthcare arenas. Labelling is an important part of the information communication process across a multitude of tasks outside of patient ID wristbands — like labelling medication dosage, giving patients instructions for prescriptions, patient records and more. A label printer, like those from the Brother TD-2000 series, can also be relied upon to create fast and accurate labels when preparing medical samples to be sent away to the laboratory for analysis. These need to be reliable and accurate as making a mistake can be extremely costly and inefficient. A simple error of incorrect printing and labelling just won't do as it can literally mean the difference between life and death.

This level of accuracy and precision must be present through each and every stage of patient care. From the moment a patient is checked-in, while they are being monitored and after they are sent home, the Brother TD-2000 series of industrial label printers are there for every step of the journey.

Brother TD-2120N

The Cerner Certified Brother TD-2120N is a perfect match for the healthcare industry as it is a robust and versatile solution that is highly customisable. It can be used as a desktop labeller, connected directly into a PC or it can be configured to be portable using the optional Lithium Ion battery attachment. Brother understands that every healthcare professional is different and that the needs of an environment can change over time. With the demands placed on care professionals, versatile and mobile tools are essential in maintaining accuracy with maximum efficiency.

The TD-2120N prints at 15.24 centimetres per second at a maximum resolution of 203 dots per inch. It has 32MB of RAM and 16MB of onboard flash and can accommodate rolls of up to 15.7cm in diameter, meaning less time wasted reloading media. It provides healthcare workers with the option of wirelessly printing a variety of barcode labels quickly and whenever needed in the laboratory, pharmacy, front desk or even at the patient's bedside. With support for the most common barcode protocols, it is ideally suited to any labelling task in healthcare.

Customisable to meet your labelling & record printing needs

As every healthcare professional has different needs, there are numerous optional extras available which allows for you to pick and choose in creating the TD to your unique requirement. As each printing application is different, you might choose to select different options at a later time, making it more cost efficient for you and your business.

The TD-2120N series has been created to be modular so depending on the needs of the user, it can be customised to fulfil a specific function. It can be configured to be a wristband printer for use when inducting new patients at triage, directly from a PC, or it can be easily converted into a portable solution using the battery base. It can be connected to mobile devices via Bluetooth using an adapter or connected to a network with the wireless printing module. If you prefer to create labels on the fly from the device itself, it can even be fitted with a touch panel and keyboard to remove the need of a computer or mobile device altogether. To improve efficiency, the TD-2120N can even be fitted with an automatic label peeler.

The TD-2120N is the one label printer that bridges your desktop and mobile printing needs. It offers the performance, features and media capacity of a desktop printer but is also capable of compact mobility and wireless printing. Whether it is at the front desk, in the laboratory or roaming, its compact size means it can fit anywhere to achieve widely varied tasks.

Easy to use and deploy

For deskop use, Brother has developed advanced label design tools and features included as a standard feature of TD-2120N. Supplied as standard, using P-Touch Editor 5 you can create your own custom labels with pixel precision. With features such as support for over 15 barcode protocols, advanced image dithering to print high quality greyscale images, and the ability to link to data contained in Excel™ spreadsheets for batch printing of labels, any label design is possible.

Depending on the requirements of the customer, the Brother team can also offer customised software solutions making label printing possible from many Microsoft® Windows™ applications as well. This service is typically developed for advanced users i.e. System Integrators and can give more control in customising label design as well as batch printing. With the ever increasing trend of mobile apps and the convenience it offers, the Mobile Software Development Kit (SDK) is a handy solution for developers to incorporate label and receipt printing into mobile apps. There are SDKs available for iOS™, Android™ and Windows Mobile™ for printing wirelessly from smartphones, tablets and PCs.

If a business is already running existing and legacy systems via ZPL® applications, the TD-2120N can connect easily and be adjusted with the built-in settings so you will be up and printing in no time.

Helping to find the perfect solution

Brother has a dedicated Corporate Solutions Team whose sole purpose is to work with companies to discuss complete technology packages tailored to the specific needs of a workspace. Headed by Luke Howard, Brother International Australia's Commercial Market Development Channel Manager, the team is dedicated to delivering top of the range products and solutions to assist customers in meeting their evolving business needs. The team will endeavour to better understand your print environment and come up with a suite of products to improve your workflow. In addition to meeting the label printing requirements of a healthcare business, the team can also create solutions that incorporate other Brother technologies and services to bring down the cost of ownership, maintenance and initial deployment.

brother
at your side

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For more information on the TD-2120N visit
http://www.brother.com.au/TDlabellingsolutions

Alternatively, contact the Brother Commercial Division on:
Phone: **1300 885 989** | Email: **corporatesales@brother.com.au**
Website: **http://corpsolutions.brother.com.au**

Hospital-wide networks are empowering staff and improving patient care

Mark Verbloot

"Forbes reported that by 2020, the healthcare Internet of Things (IoT) market segment is expected to hit $117 billion, globally."

Mark Verbloot, director of systems engineering, Aruba, joins us to reflect on an industry where physicians, nurses, administrators, patients, visitors and medical devices are all constantly requiring access to a dependable enterprise network and how mobility is redefining the healthcare space.

Visualise receiving turn-by-turn directions on a mobile device as you move through the hospital, leading straight to your patient's room. Upon entering, secure patient data becomes available, providing access to critical medical records required to treat your patient. These are the current capabilities of well-integrated healthcare providers.

Forbes reported that by 2020, the healthcare Internet of Things (IoT) market segment is expected to hit $117 billion, globally. IoT refers to the ability for 'things' to connect to the internet. By giving objects the ability to link to the web, rich information is gathered about how these things are used, so individuals can ensure optimum efficiency. For instance, IoT allows hospitals to monitor and keep track of the location of medical devices, personnel and patients. When a hospital utilises 'smart beds', for example, staff can detect when they are occupied and when a patient is attempting to get up.

With healthcare sites heavily reliant on technology, IoT will continue to shape the way machines cooperate to enhance the ability for medical staff to gather information quickly and make the right decisions when treating patients. Within the hospital setting, point-of-care devices, electronic medical records and telehealth diagnostics are just a few digital technologies requiring a secure connection to share and integrate information from multiple sources.

As a healthcare professional, security and privacy of patient data needs to be a top priority. The bring your own device (BYOD) trend, can be seen as a risk to a secure perimeter. However, technology is quickly being realised as the enabler to ensure the safekeeping of highly confidential data. A mobility network that is smart enough to classify and understand the behaviour of IoT devices automatically is fundamental in reducing the apprehension associated with BYOD.

Medical devices connected to a reliable network infrastructure ensure consistent transmission of information. Reliable, live monitoring of patients and hospital equipment, which can send alerts quickly to medical staff anywhere, allows healthcare professionals to be on top of any issues before they arise. Alerts and updates can be sent directly to a practitioner's mobile device, giving them real-time information needed to care for their patient.

With access to Wi-Fi an expected amenity, and the desire for connectivity a common request, it's not only important for staff and clinicians to have access to a network infrastructure, but patients and visitors too. An enterprise network that classifies all devices and defines smart policies based on device type, ownership status and or operating system will allow a healthcare site to prioritise critical-care systems, while ensuring that patients and guests enjoy a first-rate healthcare experience. By doing so, visitors and patients have access to entertainment and communication options throughout the facility, without interfering with medical devices.

A hospital-wide network that allows multiple devices to connect seamlessly, all at once, will empower medical staff, improve patient care and deliver a more meaningful and positive experience for all users.

Digital security in the cloud

for healthcare providers

Andrew Tucker

In the Summer issue of *AHHB* we featured the article 'Digital Disruption' in response to the wave of new technologies bringing us closer to the fully digital hospital. E-health and telemedicine are taking centre stage and bringing patient data into the spotlight. In this issue, Andrew Tucker, CEO of ITonCloud, joins us to discuss patient record security and whether the answer is in the cloud.

What are the implications of data breaches for hospitals and aged-care facilities?

No-one wants a data breach to happen but unfortunately it does. The implications for hospitals or aged-care facilities would be devastating if they have not taken the correct steps to ensure the security and privacy of their clients' data.

If there was a breach, there would be an investigation into how the breach took place, which could be human error or take the form of social engineering whereby a disgruntled employee has maliciously taken the data and made it available. It would also be considered whether the company in question has taken enough steps to protect its clients' data from being hacked from outside.

Unfortunately, whether your data is held on premise or in the cloud, it is always vulnerable to the outside world.

While the cloud promises reduced investment in hardware and personnel, why is it often perceived as being less secure than other forms of storage?

Your on-premise protection will never be as sophisticated or have the level of security of a reputable cloud provider. If there is a breach, it is quite often the user that is at fault without even knowing it. They have either not applied a high enough level password to their cloud storage or in many cases no password at all.

There is no one place that is 100% secure, but what I can tell you is that a reputable private cloud provider or the likes of the big three (Google, Microsoft and Amazon) have taken measures beyond the majority of businesses with on-premise storage to ensure that the data is safe.

Medical privacy in the cloud is protected by encryption. Can the data be compromised through human error?

Encryption is vital and if managed correctly in a private cloud then human error is a lot less likely. The system would automatically be doing the encryption without the need for human intervention.

Should you be saving your data into one of the commercial cloud storage offerings, then encrypting the data would be your responsibility prior to uploading the files. This is where data could be compromised through human error.

Again, there are a number of applications that one can use in a private cloud to send data between users in a secure encrypted format. This means that only the correct and authorised person is able to read the data and it remains secure at all times.

Questions to ask before investing in a cloud platform

Normal due diligence would be followed when choosing a cloud provider but here are some important points to bear in mind.

- **Reference checks.** Does the provider have other clients that have sensitive data?
- **Have more than one point of presence.** In other words, does the provider have more than one data centre? This speaks to their ability to ensure uptime and should there be a failure to triage restoration for non-disaster recovery customers.
- **Upfront set-up costs — there should not be any.** If money is needed for set-up then all you are doing is financing the purchase of equipment for the vendor. This is a no-go, as you want to be going into an environment that is up and running. Why? This mitigates the teething problems of building from scratch. In a pre-built environment everything is tried and tested.
- **Control panel.** This is not only for IT but also for the business as a whole. A smart, easy-to-use control panel means you have control of your users with a click of a button. This eradicates finger problems and improves the following: onboarding of new staff through a link to the HR system, spelling mistakes, errors and wrong groups.
- **Unlimited support.** If the cloud platform is tried and tested then support calls should be well and truly under control. Offering unlimited support should be a given.
- **NO contracts.** A cloud provider should show confidence in its offering and this is one way to ensure that they do. Do not sign long-term contracts.

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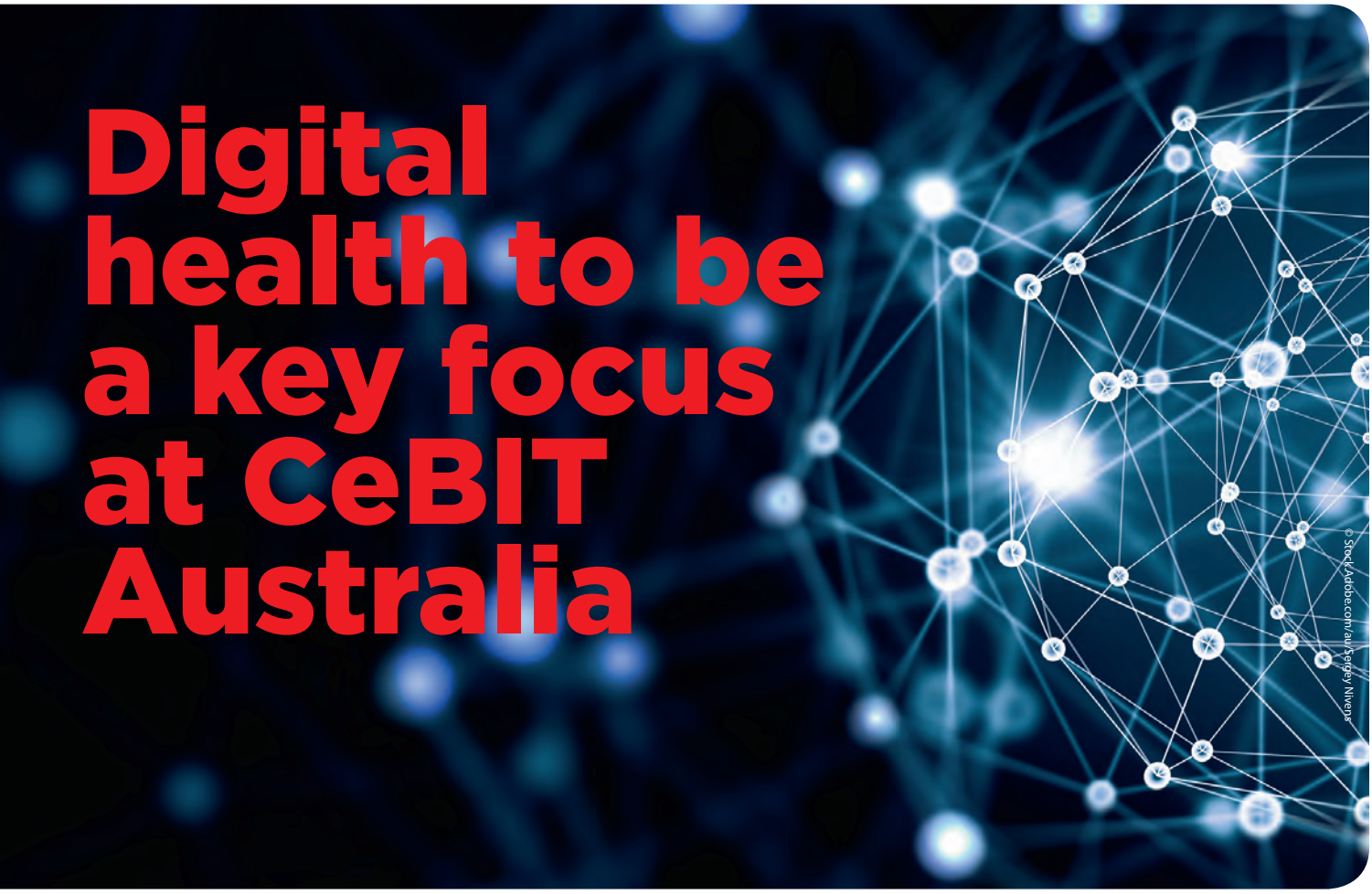
Critical applications and personal health records are the lifeblood of healthcare organisations. Any amount of downtime – losing access to those documents and applications— can have a devastating effect on the business and overall level of care. Zerto Virtual Replication provides peace of mind with a simple, cost-effective solution that allows continuous access to lifesaving information— enabling healthcare organisations to cut costs, meet rigorous compliance requirements and maintain optimal levels of care.

EXPERIENCE UNINTERRUPTED CARE

Digital health to be a key focus at CeBIT Australia



The application of robotics, artificial intelligence and big data in the health industry are to be discussed at Asia–Pacific's largest technology conference.

The latest strategic advancement in digital health designed to improve service delivery and health outcomes in Australia will be discussed at Asia–Pacific's largest and longest running business technology event, CeBIT Australia, to be held at the International Convention Centre Sydney, 23–25 May 2017.

With Australia's digital health industry set to reach a market value of $2.21 billion by 2020, an expected annual growth of 12.3%, according to Austrade Digital Health Report, CeBIT Australia's dedicated Digital Health conference provides a unique opportunity for industry professionals to hear from the leading experts who will share insights into the future of health innovation.

Healthdirect Australia Platforms and Operations Manager Chris Harwood recognises CeBIT Australia as an essential forum to discuss the future of technology in delivering healthcare services.

"As healthcare is a major growth industry in Australia's economy, CeBIT Australia is a pivotal forum for health professionals to learn about the digital advancements and emerging innovations that will transform health services and the current models of care delivery to better meet patient needs," said Harwood.

Across the conference over 25 international and local experts will explore topics from the latest insights into holistic and integrated approaches to digital health, to e-records and big data, artificial intelligence and robotic surgery.

Digital health highlights include:

Tim Kelsey, CEO at Australian Digital Health Agency, will outline holistic and integrated approaches to digital health — including opportunities for digital disruption in health and the need for interoperability between healthcare providers.

Christian Guttmann, Associate Professor, School of Science and Engineering, UNSW, Research fellow, The Karolinska Institute Sweden, will share insights into the advancements of artificial intelligence from around the world and how the intelligence of innovations in machine learning and predictive analytics can improve healthcare systems.

Dr Daniel Moon MBBS (Hon), FRACS, Urologist, Australian Urology Associates; Director of Robotic Surgery, Epworth Healthcare, will present 'Robotic surgery in Australia: Setting a new gold standard', sharing insights into the advances in robotic technology and trends and how robotics can improve patient outcomes.

Additional conference speakers include:

- Professor Trish Williams, Professor of Digital Health Systems at Digital Health Research Centre, Flinders University — Leveraging emerging ICT technologies to enable new health services and new models of care delivery
- Renea Collins, Clinical Director for eHealth, Metro South Health Service, Queensland Health — Integrated electronic medical record (ieMR) strategy and implementation
- Dr John Lambert — Leveraging big data in e-health
- Panel discussion: Panel of clinical experts: Applications for digital health — embedding telehealth in clinical practice
- Panel discussion: Creating innovative digital healthcare solutions

The CeBIT Digital Health conference will take place on day three of CeBIT Australia, Thursday, 25 May 2017 — offering industry leaders the opportunity to hear from the world's elite, and the ability to connect with thousands of visitors from Australia's top companies as well as over 350 exhibitors including 100 disruptive start-up innovators.

www.cebit.com.au | CeBIT Australia Digital Health conference program

Meeting Healthcare IT Requirements with Nutanix Enterprise Cloud Platform

Scalable Solution for Healthcare IT

Large hospitals and health systems
Single facility hospitals and clinics
Multi-location practices satellite and affiliate clinics

THE SCALABLE SOLUTION FOR HEALTHCARE IT

Security, compliance, mobility, EHR/EMR are high priorities for healthcare IT CIOs and their teams. Healthcare organisations across Australia are tasked to support a large number of caregivers and provide access to hundreds of healthcare applications. To address these and other challenges, healthcare organisations of all sizes are turning to the Nutanix Enterprise Cloud Platform. Nutanix delivers consistent high performance for healthcare environments with simplified management, proven security and the flexibility to address the unexpected.

Even as they work to deliver and improve patient care, healthcare providers are under constant and growing financial and regulatory pressures. Healthcare providers need to become more agile while maintaining lower costs in order to adapt to this rapidly changing landscape. Nutanix's next-generation datacentre technology aligns with the needs of healthcare systems — locally, regionally and at the national scale — by increasing flexibility, reducing complexity, and improving performance while lowering both initial and long-term costs.

VDI for total user mobility – The Nutanix Enterprise Cloud Platform is best suited for healthcare IT teams to deliver consistent user experience, security and anytime, anywhere access across all devices in all locations. As a result, desktop users, mobile users, follow-me desktops and clinician desktops gain immediate access to all applications at the point of care. Nutanix solutions are Citrix Ready and validated for XenDesktop/XenApp on Nutanix AHV, Microsoft Hyper-V and VMware ESXi. Nutanix joint reference architectures for VMware Horizon 7 and Horizon DaaS accelerate app and desktop virtualisation deployments for customers.

Unique performance architecture maximises resource availability – Converging server and solid state storage yields faster application response times and overall operational performance. Logins are faster and data access is accelerated. Nutanix appliances also deliver optional acceleration of graphics-intensive services for high speed delivery of PACS images and rendering of 3D imaging applications.

Out-of-the-box deployment for server virtualisation and private cloud – Ideal for distributed environments and branch or satellite facilities, Nutanix nodes deploy in 30 minutes or less, providing standardised — yet powerful — infrastructure for healthcare locations lacking onsite IT specialists. Nutanix is ideal for multi-site health systems with tens to thousands of sites.

Lower costs for operations and equipment – The Nutanix Enterprise Cloud Platform reduces the expense and management overhead from SAN and NAS arrays. Pay-as-you-grow — adding resources one node at a time — enables growth to match business demands, supports data retention requirements and eliminates major OPEX and CapEx hits. Standardised, non-proprietary hardware components assure ease of management and lower costs.

Superior disaster recovery capabilities – The Nutanix Enterprise Cloud Platform delivers exceptional disaster recovery (DR) and continuity of business capabilities via native backup and replication for any hosted VM. Patient data is 100% protected via full replication. All data is de-duplicated and transmitted with byte-level granularity for maximum efficiency and space savings. Regulations can be easily satisfied with Nutanix.

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The Nutanix Enterprise Cloud Platform leverages web-scale engineering and consumer-grade design to natively converge compute, virtualisation and storage into a resilient, software-defined solution with rich machine intelligence. With a simple scale-out architecture, Nutanix delivers cost savings and predictable scalability for even the most intensive workloads. Nutanix's advanced architecture delivers high availability across all system components so critical applications are always ready to use.

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Industry Comment — Virtual care at the cutting edge of digital health

Our *Industry Comment* guests for Autumn are HISA CEO Dr Louise Schaper and Nurse practitioner Matiu Bush, presenting at the Australian Telehealth Conference 2017 where they will be exploring trends and innovations in digital health technology.

Nurse practitioner Matiu Bush takes his passion for creative innovation to the next level — as a patient experience consultant co-designing with patients.

Matiu was the former nurse manager at Peter MacCallum Cancer Centre where he transformed the patient experience from waiting room through to consultation and rehab.

As the new Design Integration Lead at RSL Care, he is now revitalising service delivery for aged care patients across the country.

"To patients every smile, every small gesture counts, I lead my team in designing and delivering a healthcare experience that makes a difference."

Nurse practitioner Matiu Bush is a member of Better Care Victoria's Emerging Leaders Clinical Advisory Committee who advise on innovation and embedding cultural change in the health sector.

He is one of the new wave of clinicians looking beyond traditional models of care to virtual care and connected care models who will be appearing at the Australian Telehealth Conference 2017 to be held in Melbourne 27–28 April, organised by the non-profit peak body for digital health HISA.

Health Informatics Society of Australia (HISA) CEO Dr Louise Schaper said: "While many clinicians are starting off in the use of telehealth, others are already exploring virtual reality, patient user experience design, artificial intelligence, robotics and new models of care delivery.

"This year's conference caters for all clinicians, whatever your stage of knowledge.

"It is also focused strongly on how the clinical workforce is adapting and changing in response to digital health innovations.

"HISA is continually promoting digital health training and certification pathways for clinicians. And when health professionals come out and see firsthand how fast things are changing, it's a real eye-opener."

Dr Schaper said a workshop would be held at the conference to assist organisations seeking to introduce or redesign clinical services moving into a virtual care age.

Also, national and international clinicians, administrators and healthcare professionals will share their learnings in telehealth through experience and on-the-ground implementations.

Clinically focused presentations from practitioners with hands-on experience include:

- Developing telehealth services in a clinical setting: Jane Kealey, telehealth manager Northeast Health Wangaratta;
- Operationalising and embedding telehealth: Melissa Vernon, WA Country Health Service;
- Western NSW three-year telehealth strategy: David Wright and Sharyn Cowie, Western NSW Local health district;
- Demystifying the complex, practical importance of telehealth: Kim Casburn, Royal Far West.

From Victoria, Andrew Saunders Health Chief Information Officer, and Penelope Watson, Manager, Telehealth Strategy and Development, from the Department of Health and Human Services, will present on current telehealth projects, policies and funding.

View the full program at www.hisa.org.au/atc.

OFFER: Hospital and healthcare service, allied health and GP practice groups who register three delegates will receive a 50% discount on the third registration. C 2017 is presented by HISA, Australia's not-for-profit digital health community, in association with the RACGP, ACRRM, HIMAA, AHPA and the Australasian Telehealth Society.

TAKEO_2™ The Innovative Solution for enhanced Patient Safety and Cost Savings in Healthcare Facilities

Air Liquide *Healthcare* is proud to introduce TAKEO_2™, one of the world's first digital integrated cylinders. Australia is one of the first countries outside of Europe to implement this new technology.

About Air Liquide *Healthcare*

Air Liquide *Healthcare* is a world leader in medical gases, home healthcare, hygiene products and healthcare specialty ingredients. Air Liquide *Healthcare* aims to provide customers in the continuum of care from hospital to home with medical products, specialty ingredients and services that contribute to protecting vulnerable lives.

TAKEO_2™ is a major innovation in the Medical Oxygen field. This new generation cylinder combines a built-in pressure regulator, an ergonomic cap and a patented digital gauge, to provide healthcare professionals with the industry's safest and most cost-effective medical oxygen delivery system.

This new technology allows caregivers to better manage the administration of medical oxygen, by viewing the remaining time and volume available at a glance.

What does TAKEO_2™ mean for me?

This solution provides major benefits to healthcare providers:

Greater patient safety by reducing the risk of oxygen supply interruption:

- Staff can safely plan oxygen dependent transfers having immediate and accurate cylinder duration time.
- The permanent display of the remaining time and available volume as well as the safety alerts indicate when the cylinder needs to be replaced.
- The integrated valve with built-in pressure regulator provides a higher level of safety as it reduces the possibility of adiabatic compression associated with detachable pressure regulators.

Improved ease of use and faster oxygen set ups:

- With an ergonomic cap, a comfortable handle and a straightforward flow selector, patient care is significantly facilitated.
- The time-related data provides an unprecedented comfort level to caregivers who can better focus on their primary responsibility, the patient.

Cost efficiency through an effective use of the cylinder content and reduced equipment cost:

- With direct and exact information on remaining time, staff members are more confident to use most of the cylinder contents as they have a better control of the autonomy of the cylinder.
- Featuring an integrated valve, **TAKEO_2™** does not require a separate regulator to be attached. This eliminates the need to purchase regulators for medical oxygen cylinders, or to manage their maintenance and repair.

The use of the integrated **TAKEO_2™** cylinders reduces redundant and inefficient activities, enables caregivers to reallocate their time on the patients and delivers significant cost savings for the healthcare facilities.

How does it work?

When the cylinder is in use, the patented digital pressure gauge calculates and displays the time remaining in hours and minutes. No more estimations or calculations of the remaining content are required as **TAKEO_2™** cylinder provides direct intelligible information to medical staff with the remaining treatment time at the selected flow.

When the cylinder is not in use, it displays the available volume in litres. The device also features visual and audible warning alerts which indicate when critical levels are reached.

Safety messages are triggered:
- **When oxygen pressure is under 50 bars (¼ content)**
- **When the remaining contents fall below 15 minutes**

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HISA AUSTRALIA'S DIGITAL HEALTH COMMUNITY

Thinking like a chief information officer

How using a CIO approach could improve patient outcomes

David Camilleri

"Ultimately, the CIO is not just thinking about the day-to-day — but thinking ahead of the game..."

David Camilleri is Executive General Manager of mi-Clinic and a former CIO having led numerous, high-level infrastructure overhauls encompassing organisational, operational and technological change for companies including MedHealth, IBM and CPA Australia.

In hospitals and other large healthcare facilities, like most organisations, technology has become key to achieving organisational goals. These might include: better patient outcomes via better record keeping and fewer administrative distractions; e-health initiatives such as the tracking of surgical instruments or telehealth for rural patients; or improving cost efficiencies to enable investment in other areas.

The golden rule is: organisational outcomes first, operational buy-in second and technology third — a mindset that could also benefit senior health administrators; it's all about the result, not the tools used.

Ultimately, the CIO is not just thinking about the day-to-day — but thinking ahead of the game, to create the strategy that will best deliver the business's goals.

Many of the issues facing CIOs are similar to those in the health administration arena.

In health, like other industries, there are competing desires to standardise process for cost reasons, while simultaneously personalising messages based on information about a customer (or patient) age, interests and situation. With the help of data and automation, the two goals need not always be in conflict. For example, a post-discharge health promotion campaign could accurately target information appropriate to the demographic profile of each patient.

Large organisations inevitably build up layers and layers of complex direction as to correct processes and standards — and healthcare facilities are a prime example.

CIOs are not opposed to processes, but are opposed to unnecessary, or unnecessarily complex, processes. CIOs review processes, assessing why they exist, whether they serve the intended purpose and, if not, if they can be simplified or eliminated. In healthcare terminology, they are strongly 'evidence based'.

Good CIOs keep operational staff and requirements top of mind, knowing day-to-day business-as-usual needs to continue during technology development periods and that the operational staff will need to use the results of their work for it to be of any benefit.

Quality frameworks such as ISO certification can also help CIOs and other business leaders, including hospital executives, ensure their standards are achieving what they set out to do and that the organisation is focusing on priorities.

The increasing pace of change means the CIO must develop strategy for the short, medium and long term but cannot afford to set it in stone; strategy needs to be monitored and adjusted based on changes in rules, business priorities, new knowledge or market demands. In a healthcare setting, that might translate into new research changing practice, new policies or laws associated with a change in government or enterprise agreements with staff.

CIOs need to be across developments not just in their organisations but in their competitors' organisations and the industry more broadly.

However, good CIOs do not attempt to do everything themselves. They know their strengths, and build a team to fill the gaps — just as medical care is delivered by a team of professionals with complementary skills.

They also recognise some things are not the organisation's core strengths — and outsource if someone else can do a better or more efficient job. For businesses, that might mean outsourcing call centres. In a healthcare facility, it could apply to patient records storage, transcriptions, facilities management and bookings management — on the proviso that quality suppliers are available.

Ultimately, improving these processes could give hospital staff more time and focus to deliver better patient outcomes.

FAST FACTS

- Technology needs to facilitate organisational goals — the golden rule is outcomes first, operational buy-in second, technology third.
- Personalisation need not conflict with standardisation — automation can help.
- Fight unnecessary processes or unnecessarily complex processes when possible using an evidence-based approach. Ensure you have documentation, a governance framework and business sign-off early in any technology development.
- Data security needs constant attention.
- Outsourcing areas which are not core strengths can enable staff to focus on other areas which are more important to patient outcomes.

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As clean as it looks?

Using Flourescent marker audits to evaluate cleaning efficacy

Current Department of Health (UK) guidance states that surfaces in wards should be 'visually clean' and free of 'dirt, dust and debris', but when bacteria are nearly 600 times smaller than a grain of sand is this measure effective? Research has demonstrated that quantitative methods of assessing cleanliness are far superior to reliance on visual methods and are comparable with microbiological methods, which are considered to be the gold standard (Luick, Thompson et al. 2013). This study undertook simultaneous assessment of surfaces after environmental cleaning using an invisible fluorescent marker, ATP and visual checks and compared them with aerobic colony counts. Both ATP and the fluorescent marker provided a high positive predictive value (90%) and the visual check had a PPV of just 9%. This builds on work by Al-Hamad et al. in 2008, which reported that out of 82% of sites considered visually clean, only 30% were bacteriologically clean.

Fluorescent marking of surfaces is relatively new to many parts of the world, however a number of papers from the USA have been published that indicate the potential for this as a monitoring tool (Carling, Briggs et al. 2006). Surfaces are marked with an invisible water-soluble marker and then checked for residual dye once cleaning has taken place. A recent study by Rutala (Rutala, et al. 2013) claims that "fluorescent marker is a better tool than ATP in determining how thoroughly a surface is

wiped and mimics the microbiological data better than ATP". Carling, the pioneer of UV-based auditing in environmental hygiene, demonstrated the effectiveness in studies undertaken in high-risk clinical areas in which over 50% of surfaces were found not to have been cleaned despite two patients passing through single occupancy rooms, concluding that "the use of a fluorescent marker system in ICUs in multiple hospitals resulted in 40% more surfaces being cleaned effectively".

GAMA Healthcare, the manufacturer of Clinell, the most trusted infection control wipes in the UK, are proud to introduce the new Clinell EvaluClean system. The system comes with two fluorescent marker pens, fluorescent powder, an ultraviolet (UV) torch and our brand new EvaluClean audit software which can be used as both an educational tool and a way to evaluate and audit cleanliness.

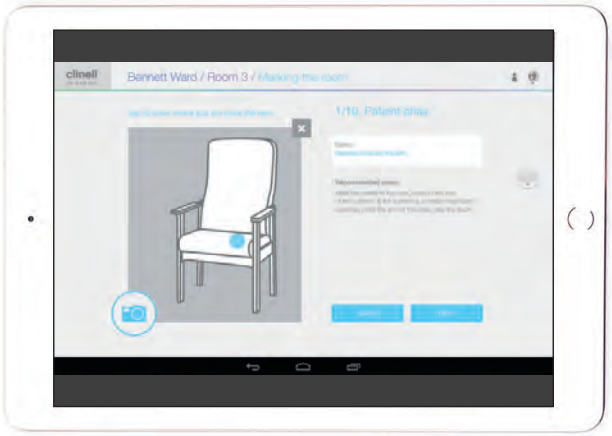
The Clinell EvaluClean system is simple. Use the fluorescent pens to discreetly mark equipment and surfaces within a room, record their exact location with the touch of a screen and after cleaning use the torch to assess whether the invisible fluorescent gel has been removed. The unique EvaluClean software quickly and easily records the efficiency of the cleaning and generates detailed reports immediately.

The Clinell EvaluClean fluorescent gel pens have been rigorously tested to ensure that they remain wipeable from all non-porous hospital surfaces. The powerful 28-LED torch has a specific UV wavelength that provides excellent mark visibility.

Our unique auditing software system is an app delivered on a tablet and is customisable and remarkably flexible to your needs. You can select the equipment and surfaces you wish to monitor from the existing database, or add and store new ones with the tablet camera. Record when and where you have marked the equipment or surface with the UV torch and then receive reminders when to check them. The app provides you with the opportunity to record the specific cleaners ID, the 'type of clean', the 'type of room' and even whether the mark has only been partially removed.

The Clinell EvaluClean software provides the user with the ability to instantly monitor hospital wide trends, compare performance against set benchmarks and generate bespoke, attractive and easy to understand reports. The powerful reporting software allows the user to filter results to specific wards, rooms, items, type of clean and room type if required.

The Clinell EvaluClean system is the most advanced and flexible method available to evaluate environmental cleanliness and it is available FREE to all Clinell users (subject to minimum spend).



Reprocessing of re-usable medical devices

Progress against the NSQHS Standard 3

Cleaning, disinfecting and sterilising re-usable medical devices and equipment provides an essential foundation for delivering safe and good-quality care. The National Safety and Quality Health Service (NSQHS) Standard 3, Preventing and Controlling Healthcare Associated Infections, requires health service organisations to comply with the requirements and demonstrate evidence of meeting the actions relating to reprocessing of re-usable medical devices.

The release of the Australian Standard and New Zealand Standard (AS/NZS) 4187:2014, Reprocessing of reusable medical devices in health service organisations, presented health service organisations with a number of challenges, including the cost, applicability and timeframe for implementing the recommendations in the standard. In response, the Australian Commission on Safety and Quality in Health Care issued an advisory to health service organisations and accrediting agencies. The advisory acknowledges the need for health service organisations to plan for the operational changes and capital investment that may be required to update or change sterilising equipment and meet water quality requirements. This advisory, A16/03, is available on the commission's website.

A number of resources to support organisations with implementation and assessment of compliance for reprocessing re-usable medical devices are being updated.

For many health service organisations, the reprocessing of re-usable medical devices is a core function that enables operating theatre and procedural services to continue. To ensure effective sterilising services, an organisation must plan for future service requirements and the resources necessary to meet AS/NZS 4187:2014.

In many health service organisations, there are no direct lines of reporting between sterilising services and the executive. Organisations might consider reviewing governance and reporting arrangements between the executive and the sterilising services to ensure that the requirements for safe patient care are being met and information flow is effective. It is the role of the governing body to assure itself that the education of the workforce providing, and relying on, reprocessing of re-usable medical devices is appropriate, and there is access to relevant standards, guides and reference materials.

There are governance and policy issues associated with reprocessing of re-usable medical devices that should be considered when implementing the recommendations in AS/NZS 4187:2014. These issues include how health service organisations can:

- work with sterilising managers to plan future requirements and to provide the scope of services needed to meet future demands
- support the development, review and approval of policies, procedures and protocols
- ensure that there is a quality management system that reports on the services provided for reprocessing re-usable medical equipment, instruments and devices
- have a system to allow for tracking of re-usable medical devices to identify the patient, procedure and items used when needed
- provide appropriate continuing education and professional development to ensure currency of knowledge for the workforce
- ensure the workforce has access to AS/NZS 4187:2014 and other relevant references and guides.

The reprocessing of re-usable medical devices is an essential activity in many organisations and requires planning, resourcing and an appropriately trained workforce to undertake this activity and to demonstrate compliance with the requirements of national and international standards.

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AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

Surgical Asset Management

Operating theatres are simultaneously the largest cost and revenue generator for any hospital.*

Many hospitals continue to struggle to maintain a well-run operating theatre due to the large number of stake holders involved.

The delay or cancellation of an operation not only has a financial and time impact (due to the rescheduling of theatre lists, staff rostering changes and other changes required), but also can have a detrimental impact on the patient experience and recovery.

The symbiotic relationship between the operating theatre and the CSSD means that any delay in CSSD process can directly cause operating theatre delays and cancellations.

Poor quality instruments, damaged, worn instruments, even the wrong types or too many instruments can impact the CSSD process.

At B. Braun, we are able to work with our hospital customers to ensure that an optimum fleet of instruments is available for continual use by offering the following:

Quickscan – A Surgical Asset Management Baseline Assessment

- A service provided free of charge which offers a snapshot view of your current processes and instrument quality during an agreed timeframe.

Inventory Analysis

- A process in which we audit existing stock and then provide a condition survey which includes an assessment of future requirements.

Instacount® Plus Instrument Management System

- A solution which provides closed loop instrument traceability and accountability.

CSSD Process Consulting

- A review of the complete department processes (including productivity and compliance assessment) then a written report is provided which includes recommendations and suggested strategies to improve efficiency, productivity, staff and patient safety and compliance with applicable national and international standards.

ATS – Aesculap Technical Services

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The energy and water use of hospital steam sterilisers

Forbes McGain

Years ago, it took Forbes McGain only a few days of working as a doctor to realise that the environmental footprint (energy, waste, water) of even a medium-sized hospital was a thousand times that of an average household. It took him much longer to embark on trying to reduce hospitals' large environmental footprint.

Life cycle assessment (LCA) ('cradle to grave' analysis) provides a scientific method of analysing the environmental effects of a process or item. These environmental effects include: energy use and CO_2 emissions, water use, fossil fuel and metal use, waste production etc. By gathering data about the resources used to manufacture and clean medical equipment one could begin to compare and contrast the environmental effects of different operations and processes.

With the assistance of Scott McAlister (a life cycle assessor) we began looking at the environmental and financial costs of common anaesthetic and ICU equipment, comparing re-usable and single-use items. We were finding that, contrary to the commonly held hospital staff belief, that re-usable equipment was considerably less expensive than single-use items (inclusive of the time to re-clean re-usable equipment by hospital staff), but that the environmental effects (particularly the carbon footprint) were similar in Australia between re-usable and single-use equipment.

The carbon footprint story is very different in Europe and the USA where a much greater

The Sunshine Hospital central sterilisation and supply department team.

"We were surprised; about 40% of all of the steam steriliser's electricity use and 20% of the water use for the year was used in 'standby'."

proportion of electricity (particularly new electricity) is sourced from renewables (wind, solar) and natural gas, rather than coal. When comparing equipment your location (and thus energy source) really does matter. Living in Australia gives the worst-case scenario for re-usable equipment, because the electricity for your washers and sterilisers for re-usables is sourced from coal, compared to the single-use equipment which generally is made overseas using electricity less reliant on coal.

Case study

We discovered that steam sterilisation was responsible for the majority of the environmental footprint of re-usable equipment. So we dug further. We hooked up electricity and water meters and a Wi-Fi device to a Sunshine Hospital steam steriliser (Atherton's Gorilla) and watched it for a year! We knew beforehand that each and every steriliser cycle used about the same electricity and twice as much water as an Australian 4-person household would use over 24 hours.

We were surprised; about 40% of all of the steam steriliser's electricity use and 20% of the water use for the year was used in 'standby' (idle, not off). Since the idle periods consumed considerable electricity and water, efforts to 'switch off' become more important. Further, these idle periods were often of many hours' duration, so switching off could still potentially avoid the pitfall of many steam steriliser 'stop-starts' ('on-offs'). We also quantified the long-term electricity and water use of a hospital steriliser which will provide useful input data for future life cycle assessments of all re-usable, steam-sterilised equipment. More than half of a steam steriliser's electricity and water use was required just to run a steriliser cycle, so unsurprisingly, large loads were more energy and water efficient than small loads.

The first simple steps we took to improve steriliser efficiency was to rotate off idle sterilisers and reduce the number of 'light' steriliser loads. This simple effort that cost nothing saved Western Health about $15,000 per annum, and 10 houses of electricity and water use. We also suggest that sterile supply department staff (so integral in all of our studies) found that their work became more efficient also as less time was required to be checking, performing test runs and loading the sterilisers. Importantly, there was no change to the number of operations performed per annum, nor was there any alteration in the hospital's infection prevention policies nor quality assurance concerns.

There is so much more to do!

There is more to do at our hospital to improve steam steriliser efficiencies, more hospital electricity could be sourced from renewables, more is actually happening at the Atherton manufacturing facility in Melbourne to build efficient sterilisers, and there are more ongoing efforts by Scancare Queensland to provide software for theatre staff about steriliser efficiency. Most importantly, other hospitals could use our methods to examine steam sterilisers and many other energy-intensive items of hospital equipment so that healthcare "walks lightly so we can all walk on".

Acknowledgements

I collaborated with Associate Professors Jim Black and Graham Moore of the University of Melbourne on these steam steriliser projects. We thank the staff of the Sunshine Hospital Sterile Supply Department, including Karen Tricker, Carlos Paciocco and Nancy Trujillo. We are grateful for collaboration with Scancare staff (Nathaniel Vann and Dion Purnell) and Atherton's staff (particularly Sean Boston, Martin Harrison and Scott Lipman).

Forbes McGain has been an anaesthetist and intensive care physician at Western Health this past decade. He has recently completed a PhD in the field of hospital environmental sustainability. He remains keenly involved in medical research and education.

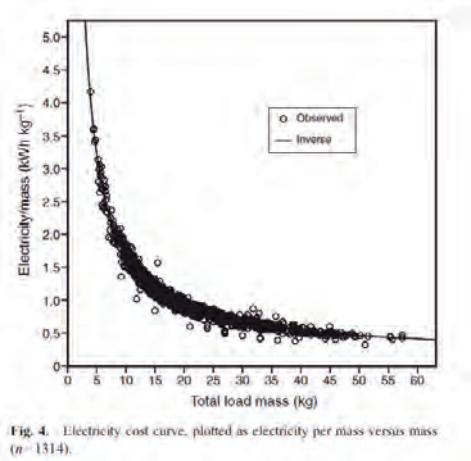

Fig. 4. Electricity cost curve, plotted as electricity per mass versus mass (n = 1314).

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Killing Environmental *C. difficile* spores

Clostridium difficile has emerged as a substantial antimicrobial-resistant threat to healthcare, with a mortality rate in Australia of 5%. Environmental disinfection using the right product, process and proof of compliance, is critical. Sporicide Plus™ is a novel disinfectant that finally addresses the age old dichotomy: choosing a powerful disinfectant that kills bacterial spores but has a good safety profile.

C. difficile is a Gram positive bacillus transmitted by the faecal-oral route. Healthy individuals become asymptomatic carriers. But after antibiotic administration, the vegetative *C. difficile* bacillus proliferates, forming spores. The patient then manifests symptomatic *C. difficile* infection (CDI) and sheds spores faecally.

The spores adhere to linen, fingertips and surfaces, from where they are transferred. Medical treatment of CDI involves another antibiotic, vancomycin, and surgical treatment is associated with poor outcomes. **Prevention is the best treatment.**

Disinfectants are designed to kill. Yet paradoxically they must be safe for surfaces and safe for users. Accelerated Hydrogen Peroxide (AHP) is the active ingredient in **Sporicide Plus™**, a new registered Hospital Grade Disinfectant that cleans surfaces and kills *C. difficile* spores in one-step.

Sporicide Plus™ does not bleach or degrade surfaces. It disinfects without creating destructive microcracks that harbour pathogens. Unlike quaternary ammonium (quat) chemicals, it does not leave a residual buildup on surfaces.

Sporicide Plus'™ active ingredient, hydrogen peroxide, biodegrades to just oxygen and water, leaving no residual active for *C. difficile* to interact with. This is important because prolonged exposure to low levels of disinfectant residue are thought to be necessary for organisms to develop resistance.

Sporicide Plus™ is an oxidiser. It interacts with micro-organisms through multiple modes of action. Even if a bacterium could develop resistance to one route of attack, it is unlikely that it could evolve resistance to multiple modes of attack simultaneously.

Some *C. difficile* strains are able to form a biofilm matrix that allows them to communicate and evolve. Bacteriae within biofilms are more resistant to high levels of vancomycin, giving them significant intractability. Biofilm occurs on surfaces that are constantly bathed in fluid (traditional biofilm in sinks and drains) and on cyclically wet and dry surfaces ("buildup biofilm" on endoscopes and ultrasound probes).[1] Thus choosing the right sporicide is critical. GE Healthcare recently approved AHP for ultrasound probes disinfection, illustrating its suitability on valuable surfaces.

Remember the **"3Ps" of disinfection:**

- The right **product**: Sporicide Plus™ kills *C. difficile* in 1 minute[2] without damaging surfaces
- The right **process**: Use Sporicide Plus™ liquid for general cleaning. Use **Sporicide Plus™ Wipes** on high-touch surfaces at the point of care
- **Proof:** Validate disinfection with a fluorescent ink audit tools such as **Vericlean™**.

45% of the people who enter a patient room are Nurses. 23% are visitors. The patient's bed rail is touched up to 256 times per day by different people.[3] Often it is disinfected only once. And in many cases, probably not at all. Thus we should not be surprised that high touch surfaces in the patient zone contribute to infection risk. It follows that more frequent disinfection at the point of care is important if we are to lower HAI rates and optimise patient outcomes.

About Diversey Care

We are the leading provider of smart, sustainable solutions for cleaning and hygiene. Through the integration of new technology-enabled services and systems, our solutions drive increased productivity, food safety and infection prevention to ultimately enhance the end-user experience.

References:

1. Alfa MJ, Howie R. *Modelling Microbial Survival in Buildup Biofilm for Complex Medical Devices.* BMC Infectious Diseases, 2009; 9: 56.
2. In clean conditions
3. Cohen, et al. *Frequency of patient contact with healthcare personnel and visitors: Implications for infection prevention.* Joint Commission Journal of Quality and Patient Safety, 2012; 38 (12): 560-565.

Ivan Obreza is an Infection Prevention Consultant and the Senior Clinical Advisor for Diversey Care, Australia. He has previously worked as a Cardiac Intensive Care Nurse, Intensive Care Ambulance Paramedic and Editor of the Institute of Ambulance Officers Journal.

1 wipe, 1 minute*

Sporicide Plus™ kills *C.diff* fast*!

Sporicide Plus™ is a new disinfectant proven to kill *C.difficile* spores in just 1 minute*

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Diversey

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

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

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

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

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

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

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»
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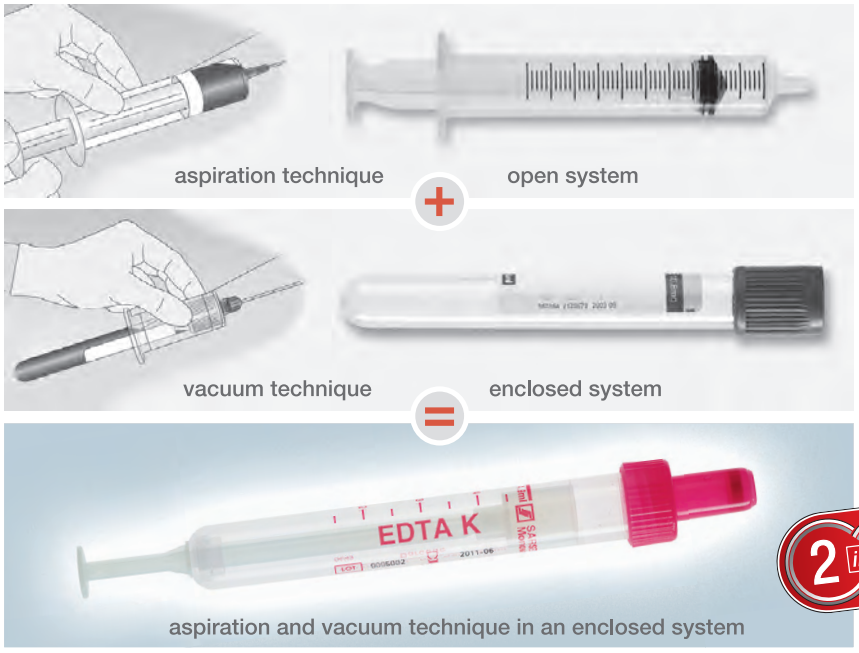
S-Monovette®

The Revolution in Blood Collection



One system - 2 techniques!

The S-Monovette® combines the advantages of both systems

- ✓ suited for all vein conditions
- ✓ optimal sample quality
- ✓ economical
- ✓ safe

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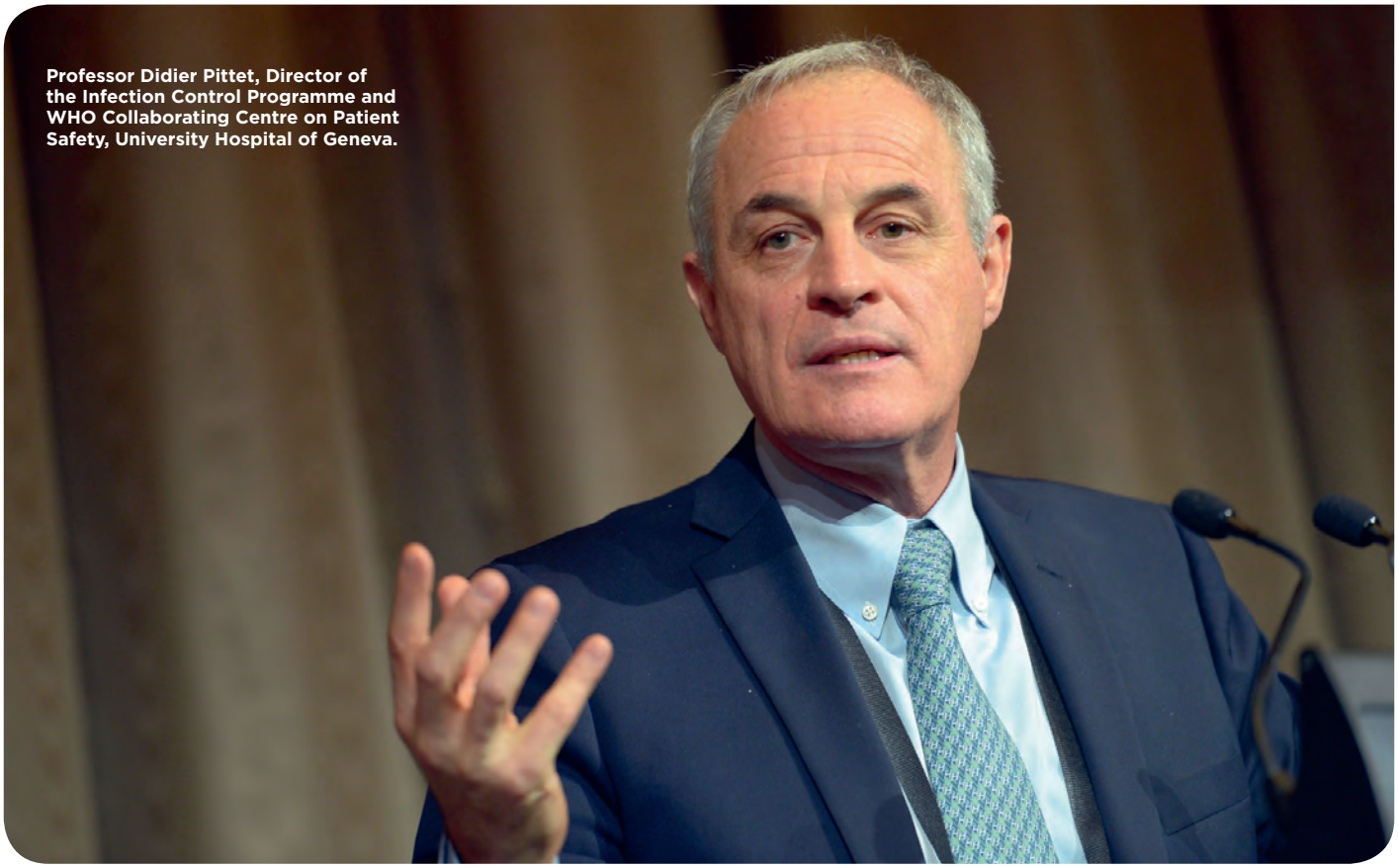
ACIPC showcases global innovations in infection prevention and control

The 5th Australasian College for Infection Prevention and Control (ACIPC) International Conference, Australasia's flagship educational event for infection prevention and control (ICP) professionals, was held at the Pullman Melbourne Albert Park, from 21–23 November 2016. The conference attracted over 580 delegates from both Australia and 14 overseas countries.

The highly engaging 3-day scientific program drew on the knowledge of over 50 international and national experts who shared their research, experience and observations on a vast array of ICP-related topics.

Professor Didier Pittet, director of the Infection Control Programme and WHO Collaborating Centre on Patient Safety, University Hospital of Geneva, Geneva, Switzerland, provided a comprehensive update for delegates on the latest global innovations in infection prevention and control. Professor Heather Loveday, director of the Richard Wells Research Centre at



Professor Didier Pittet, Director of the Infection Control Programme and WHO Collaborating Centre on Patient Safety, University Hospital of Geneva.

Professor Mary Dixon-Woods, RAND Professor of Health Services Research, Department of Public Health and Primary Care, the University of Cambridge.

Elizabeth Orr, Hand Hygiene Australia.

the University of West London, provided delegates with an interesting insight into approaches used to develop and sustain the Service User Research Forum (SURF), providing examples of how service users contribute their knowledge, experience and insights to benefit healthcare associated infections (HAI) research.

The conference concluded with a spirited debate regarding what the next national infection prevention and control project should be: surveillance, intravascular device management (IDM) or catheter related urinary tract infections. After the debate, the delegation participated in a live poll, with IDM delivered by Professor Lindsay Grayson just edging out the other projects.

Selected presentation slides and photos from ACIPC 2016 are now available via the 2016 conference website, 2016.acipcconference.com.au.

Complementing the scientific program was an extensive trade exhibition which showcased the world's leading support services and suppliers to the infection prevention and control industry. This collection of companies enabled delegates to learn more about the latest products and technologies available in the marketplace and their applications in healthcare settings.

Special mention and congratulations go to Glenys Harrington, recipient of the 2016 Claire Boardman Medal for Leadership in Infection Prevention and Control. This is the highest honour of the college and bestowed on an ACIPC member who demonstrates outstanding commitment to the leadership, profession and practice of infection prevention and control.

The conference also saw the inaugural ACIPC Foundations of Infection Prevention and Control course graduates presented with their awards by ACIPC President Professor Ramon Shaban and Medical Australia Chief Executive Officer Darryl Ellis.

The college invites all those working in infection prevention and related fields to join us in Canberra, 20–22 November 2017, National Convention Centre, for ACIPC International Conference 2017.

We're pleased to announce the participation of Associate Professor Deverick Andersen of the Duke Infection Control Outreach Network (DICON) and Professor Susan Huang of the University of California Irvine School of Medicine at the conference with more speakers to be announced as planning proceeds.

Be sure to check the website (www.acipcconference.com.au) regularly for the latest information and to register.

When it comes to formulation of ABHR

it is important to get the facts

Christine Claighen, Regulatory | Scientific Manager, GOJO Australasia

Across the market today there are various formulations of alcohol-based hand rubs (ABHR) with different alcohol concentrations and formats (gel, foam, rinse) and dispensing methods which can make the selection process difficult for your environment.

The three confusing elements when choosing an ABHR for your area are:

- Do all ABHR achieve the same efficacy?
- Does a higher alcohol concentration deliver greater efficacy?
- Is a gel better than a foam ABHR?

How are ABHR evaluated for antimicrobial efficacy?

There are two general types of testing performed to demonstrate that formulations are efficacious: the in vitro which are performed in the lab and the in vivo, typically performed on the hands of human subjects and are intended to measure the activity of products during actual use conditions. In vivo tests predict the reduction of organisms achieved by the use of hand sanitisers after handling contaminated objects.

In vivo tests are done using standard global protocols such as the European Norm EN 1500 and the American Society for Testing and Materials ASTM E1174 (health care personnel hand wash [HCPHW]). Both are recommended by the World Health Organization (WHO) and other Health organisations such as the Centers for Disease Control and Prevention (CDC).

Formulation of ABHR is critically important and matters

GOJO have conducted a study published in the *American Journal for Infection Control* (AJIC) (Edmonds et al., 2012) to understand better the relative influence of alcohol concentration, product format, and total product formulation on ABHR efficacy. Several ABHR formulations available in the market containing alcohol concentration ranging from 60–90% were compared using the in vivo ASTM1174 test.

Results showed that product formulation as a whole, not the alcohol concentration, is a more important factor for the antimicrobial efficacy. Two novel ABHRs based on 70% ethanol have (PURELL been XXX) performed better than ABHR with higher alcohol concentration. Varying the alcohol had very little influence on product efficacy. Formulation Matters and is more important than alcohol concentration alone.

In conclusion, these studies collectively demonstrate that PURELL Gel and Foam have the same efficacy that meets global efficacy standards when used at volumes (1.1 ml) that more accurately reflect use in clinical settings. Finally, product format and alcohol content (within the range of 60%–95% [vol/vol]) are not the key drivers of product efficacy.

nora rubber flooring for use in high-risk areas

For many years, hygiene departments in hospitals and nursing facilities have strongly focused on the control of infections caused by multi-resistant microbes. In addition to MRSA bacteria infecting wounds, the increase in Gram-negative bacteria such as *Klebsiella pneumoniae* and *Escherichia coli* have been a recent cause of problems for many institutes. The fight against multi-resistant pathogens includes extensive prophylactic and hygiene measures for patients and medical staff, and also extends to building materials due to their considerable effects on hygiene standards. After all, surfaces can be a veritable hotbed of bacteria.

As well as being easy to clean, nora rubber floor coverings can also be completely disinfected and are therefore suitable for use in high-risk areas that require regular disinfection. These findings were confirmed in a recent study at the Institute for Medical Microbiology and Hospital Hygiene at the University of Marburg, Germany. Professor Reinier Mutters, Director of Hospital Hygiene at the Institute, described the background to these tests:

"The especially high risks associated with infectious diseases, for instance in OTs and ICUs, must be countered by reliable disinfection of surfaces if all dangers to patients are to be eliminated. In OTs, for example, there must be no more than four microbes per cubic meter of air. Consequently, the floors must be easy to clean and disinfect. In general, all areas catering to patients should allow for disinfection. This also applies to the surfaces of floor coverings. Infections can break out at any time, so effective containment measures must be possible at short notice. Under simulated hospital conditions, we tested the full disinfectability of four rubber floorings with differing surface structures. This involved fixing samples of nora rubber floorings to a hardboard substrate, and arranging them edge to edge or sealing them with a nora compound. Then we contaminated the samples with four different microbes, and disinfected them with commercial agents after one to two hours. Following this, the samples were wiped, likewise with commercial microfiber cloths, once only from left to right. Each test was repeated five times.

The analyses of all four rubber floorings tested after surface disinfection showed a high log10 reduction in the applied microbes of 5.1 to 6.5. This applied to all installation types, both joint-sealed and edge-to-edge. All nora rubber floor coverings tested therefore comply with very high hygiene standards, making them suitable for use in high-risk areas. This also applies expressly to the rubber floorings with hammerblow and structured surfaces.

As a hygienist, I have a very high assessment of the edge-to-edge installation. This variant retains a high hygiene standard even after a very long period of time. Floorings that are not dimensionally stable may tear at the joints. The consequences are unhygienic cracks and greater contamination in the joints than on the flooring itself. These microbial hot-beds can be prevented with tight edge-to-edge installation."

Thanks to their extremely dense surface, nora rubber floor coverings do not need any coatings, varnishes, or joint sealing, eliminating additional sources of pathogens. As they do not contain plasticisers (phthalates), the material is immune to shrinkage, so the floor coverings retain their dimensions for decades. As well as minimizing the risk of microbial invasion, gap-free installation and the absence of coatings also saves time and costs associated with recoating and resealing, so all areas remain accessible around the clock, seven days a week. This means that nora floor coverings also present the most cost-effective solution for clinics over the long term.

SAFE AND HEALTHY ENVIRONMENTS WITH NORA RUBBER FLOORING

- Improved acoustic benefits, providing patients with the quiet needed for recovery
- Superb resilience and added comfort underfoot
- Exceptional stain resistance and resilience to scratching or gouging
- No waxing, no specialty coatings, no labor-intensive stripping and no re-coating
- Reduced, chemical-free maintenance saves time and money
- Dense surface helps repel dirt and bacteria
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Accelerated access to medicines

What is it and why is it important?

Jessica Pace, Narcyz Ghinea and Wendy Lipworth

Medicines play a vital role in the treatment of many diseases, and Australian patients generally have access to an excellent range of world-class therapies. However, in recent years, concerns have been raised about the time taken for Australian patients to access new medicines.

Many argue that current regulatory (Therapeutic Goods Administration/TGA) and reimbursement (Pharmaceutical Benefits Advisory Committee/PBAC) processes act as a 'roadblock' to access, as they are time-consuming and they demand high levels of evidence of safety, efficacy and cost-effectiveness prior to approval. Concerns about these processes have, in turn, led to calls from both patients and industry for more flexible and streamlined mechanisms for regulating and funding medicines; in other words, for accelerated access to medicines.

The Australian Government has responded to these demands with adjustments to both its regulatory and reimbursement systems. For example, following a recent review, the TGA is planning to introduce a system for expedited approval of medicines within the next two years. And a number of medicines (including those for non-small cell lung cancer and melanoma) have recently been listed on the Pharmaceutical Benefits Scheme (PBS) using the mechanism of 'managed entry'. This allows for a medicine to be subsidised despite significant uncertainty surrounding its clinical and/or cost-effectiveness. Further data is then collected to resolve this uncertainty and to enable a decision as to whether it will continue to be subsidised (and, if so, at what price).

Australia is not unique in its efforts to expedite access to medicines. Many jurisdictions (including the US, Europe and Japan) have introduced initiatives to streamline the regulatory approval of new medicines, either by increasing the efficiency of regulatory processes or allowing medicines to be approved on the basis of less data than is usually the case. There are also 'special funds' in place, both internationally and in Australia, to provide subsidy for medicines that do not meet traditional cost-effectiveness standards for reimbursement, such as UK's Cancer Drugs Fund and Australia's Life-Saving Drugs Program.

Providing patients with timely access to innovative therapies is obviously desirable — particularly for life-threatening illnesses or rare diseases for which there are no alternative treatment options. However, it is also important to bear in mind that there is always some degree of uncertainty about the safety and efficacy of new medicines, and this uncertainty is inevitably magnified when regulation and/or subsidisation are accelerated.

"... following a recent review, the TGA is planning to introduce a system for expedited approval of medicines within the next two years."

This increased uncertainty in turn increases the risk that patients will be exposed to treatments that later prove to be unsafe or ineffective. For example, in 2008 the anticancer agent bevacizumab (Avastin) was granted accelerated approval by the US Food and Drugs Administration (FDA) for the treatment of metastatic breast cancer. However, this approval was revoked in 2011 when further follow-up showed little benefit and several side effects.

While there are pharmacovigilance and post-marketing research processes in place internationally to identity adverse events once medicines are on the market, these systems have serious limitations because they rely on ad hoc adverse event reporting, industry compliance with post-marketing research requirements and the willingness of patients and clinicians to stop using medicines that they might believe to be beneficial. Accelerated access places even more pressure on these processes.

There are also impacts for healthcare resources. When access is accelerated, it is more likely that considerable resources will be devoted to funding medicines that later prove to be unsafe and ineffective and, simultaneously, to treating patients who may have suffered harm after using these. The associated expenses and opportunity costs can be considerable. For example, the UK's Cancer Drugs Fund exceeded its budget by 50% in 2014 and was converted to a managed entry scheme in 2016. Overall, more than $2 billion was spent to provide access to cancer therapies over the life of the fund. However, as no data was collected on the use of these medicines, we don't know what impact (if any) this had on patients survival or quality of life or if a larger benefit could have been obtained by spending this money differently.

None of this is to say that accelerated access is necessarily a bad thing. However, we must be alert to the relative lack of evidence available surrounding the safety, effectiveness and cost-effectiveness of medicines made available via such initiatives, and put in place adequate checks and balances to protect both patients and our healthcare system.

Wendy Lipworth is a bioethicist and health social scientist at the Centre for Values, Ethics and the Law in Medicine.

Narcyz Ghinea, researcher at the Centre for Values, Ethics and the Law in Medicine.

Jessica Pace, pharmacist and PhD candidate at the Centre for Values, Ethics and the Law in Medicine.

Miele Professional successfully launched Mobile CSSD

Miele Professional has ramped up its investment in Australia to bring its 50 years' experience in the medical field in Europe to Australian hospitals, offering now all aspects of instrument reprocessing including cleaning and disinfection, sterilisation, documentation and service as well as a mobile CSSD.

Miele Professional, European supplier of CSSD solutions, successfully introduced the first mobile CSSD in Australia during the WFHSS in Brisbane, addressing Australian hospitals that are planning to build, replace or refurbish their existing CSSD department. Allard van Beek, National Sales Manager from Miele Professional, said that the great interest and feedback of the WFHSS attendees confirmed that Australian hospitals were waiting for such a solution.

The solution is fast and simple. Miele can supply three fully equipped modules, which are combined on site in a few days, to give a fully functioning and operational CSSD offering the full setup for reprocessing instruments with separate areas for washing and disinfection, packaging and sterile supplies, all complying with the new version of AS/NZS 4187.

The key benefits of the Mobile CSSD is that the quality of reprocessing remains under hospital's control. Existing staff can also continue to do their job in a positive working environment, without exposure to the strains of a building site. Furthermore, the effort on the part of the hospital is less than for all other options as this approach avoids the

construction and dismantling of a provisional CSSD and is a more cost effective solution than outsourcing.

With Miele Professional as your partner, you will not only benefit from this cost effective, fast and simple solution, but you will be able to rely on a team with dedicated professionals with extensive experience in this field.

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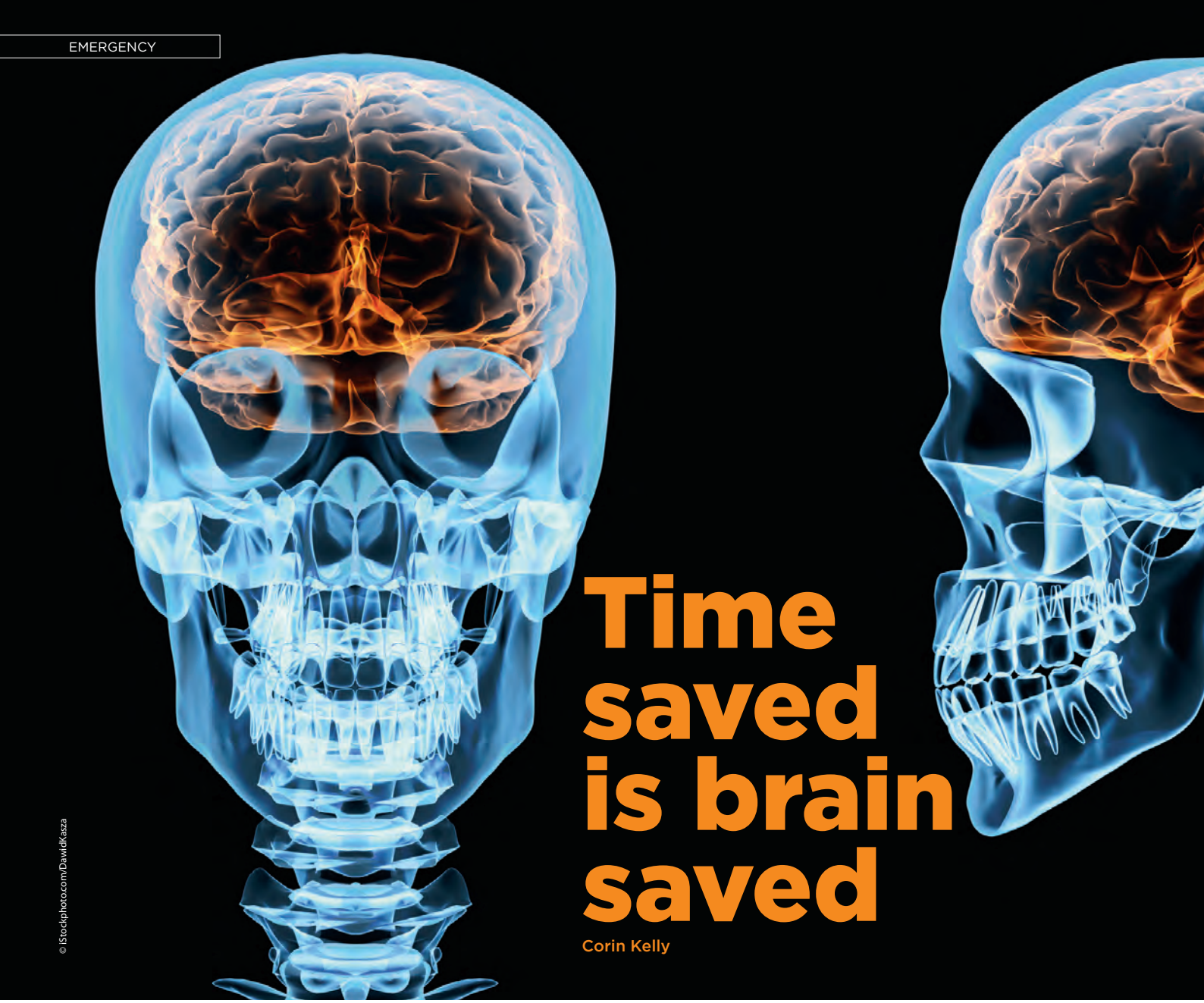
EMERGENCY

FEATURE

Courtesy of Ambulance Victoria



Time saved is brain saved

Corin Kelly

"Time saved is brain saved," said Sharon McGowan, Stroke Foundation CEO, who supports the Victorian Stroke Telemedicine (VST) Program and welcomes the $7.5 million, four-year commitment by the Victorian Government towards the Stroke Ambulance trial. These two initiatives are designed to provide rapid access to the time-critical diagnostics and medical treatment required to improve the outcome for stroke patients.

A new stroke occurs in Australia every 10 minutes — almost one thousand new strokes each week. Stroke is one of the leading causes of death and disability in Australia, and is estimated to cost the economy over $5 billion each year.

When someone suffers a stroke, every minute counts. The sooner treatment is provided, the better the chance of a good recovery.

The Victorian Stroke Telemedicine (VST) Program is providing, for the first time, ready access to stroke specialists for people living in rural and regional areas who present to local emergency departments. These specialists are able to consult with local clinicians and the patients using video technology and decide whether effective world-class stroke therapies, such as thrombolysis drugs and endovascular clot retrieval, could be used.

Rapid access to specialists and making treatment decisions quickly are important because 'Time is Brain'. Treatment delays reduce the likelihood of a good outcome for a stroke patient.

The Victorian Stroke Telemedicine (VST) Program

The VST Program is unique in Australia and facilitates rapid clinical decision-making and treatment of stroke by seamlessly connecting rural and regional emergency departments to a roster of Melbourne-based neurologists. The neurologists are accessible every day, all day (24/7/365) via a single 1300 telephone number. Through new 'state-of-the-art' mobile computing technology and software, the neurologist can remotely examine patients at the bedside, review brain imaging and provide rapid diagnosis and treatment advice, irrespective of their geographic location.

The aims of the VST program are to:

- increase equity of stroke care in rural and regional hospitals;
- reduce delays in diagnosis and treatment; and
- improve access to stroke thrombolysis and endovascular clot retrieval, which are proven to lead to better patient outcomes.

"Rapid access to specialists and making treatment decisions quickly are important because 'Time is Brain'."

Sharon McGowan, Chief Executive Officer, Stroke Foundation.

Chris Bladin, Clinical Program Lead, Victorian Stroke Telemedicine Program.

To date, over 1200 patients in regional Victoria have been treated by VST, with many successfully transferred into the Royal Melbourne Hospital for endovascular clot retrieval.

The VST program is based at the Florey Institute of Neuroscience and Mental Health and is led by Prof Chris Bladin and A/Prof Dominique Cadilhac. VST first commenced in 2010 and over the years has received funding from the Commonwealth Department of Health – Health and Hospitals Fund, the Victorian Department of Health (Victorian Stroke Clinical Network), Monash University, amongst others.

Deployed through the VST program is new, fully integrated telemedicine technology, designed for healthcare in the emergency departments of the 16 participating hospitals in regional Victoria. Importantly, there is extensive data collection to monitor clinical and patient outcomes. This data collection is facilitated by the use of the Australian Stroke Clinical Registry (AuSCR), and a full clinical and health economic evaluation of VST program is being undertaken.

Expert stroke neurologists are available 24/7/365 and use telemedicine to treat patients with acute stroke in Emergency Depts. Image supplied by The Florey Institute of Neuroscience & Mental Health.

Professor Stephen Davis, Director of the Melbourne Brain Centre at The Royal Melbourne Hospital.

Mobile Stroke Unit trial — Stroke Ambulance

Australia's first ever dedicated stroke ambulance, or mobile stroke unit (MSU), will hit Melbourne streets this year to provide the quickest possible diagnosis and treatment for patients suffering a life-threatening stroke.

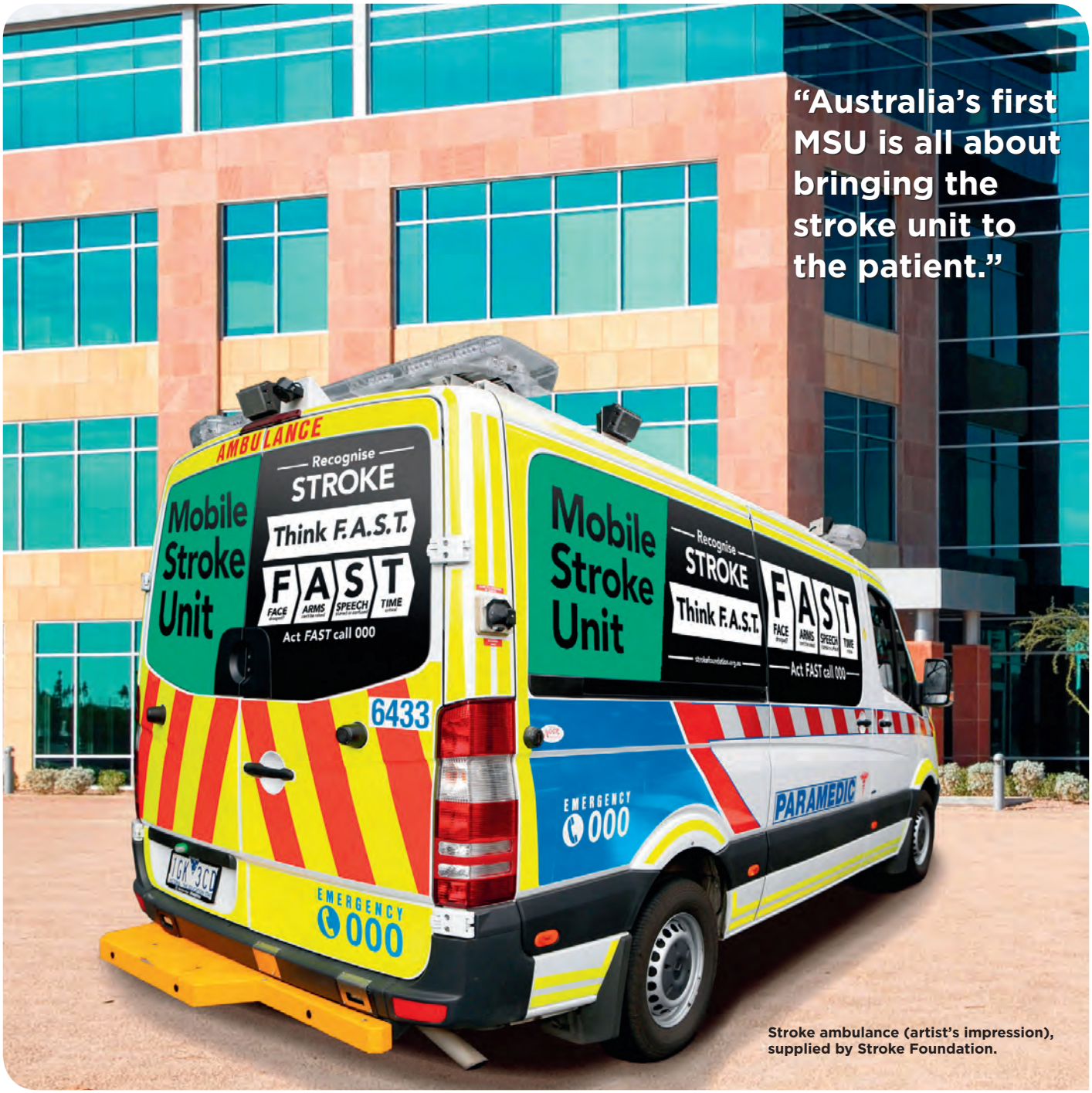
Director of the Melbourne Brain Centre at The Royal Melbourne Hospital, Professor Stephen Davis, said Australia's first mobile stroke unit (MSU) was all about bringing the stroke unit to the patient.

"Incorporating a CT brain scanner in the ambulance allows brain imaging and diagnosis at the patient's home, and facilitates the potential use of urgent therapies, such as clot-dissolving treatment of stroke. This will allow many more patients to be treated in the golden hour after stroke onset, giving our patients the best chance of a good recovery," Professor Davis said.

With a CT scanner on board and a dedicated MSU team comprising a stroke nurse, radiographer, stroke neurologist and Ambulance Victoria paramedics, diagnosis and interventions, such as clot-busting thrombolysis, can begin immediately in the field rather than waiting until the patient has arrived at hospital.

Thanks to leading Melbourne business donors, the Victorian Government, the Stroke Foundation, Ambulance Victoria, the Royal Melbourne Hospital and The Florey Institute, the vision of having a mobile stroke unit will soon be a reality.

"Australia's first MSU is all about bringing the stroke unit to the patient."



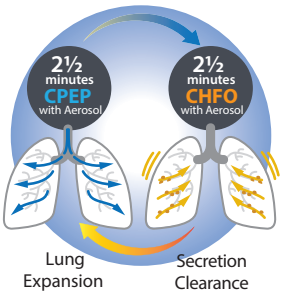
Stroke ambulance (artist's impression), supplied by Stroke Foundation.

Breathe Easy

Introducing the MetaNeb™ System

Lung Expansion, Secretion Clearance and Aerosol Delivery in a Single Therapy Cycle

A common complication after trauma is trouble breathing. From pneumonia to lung collapse, respiratory complications are common, serious and costly. Effective respiratory treatments may help patients breathe easy so they can recover quicker.



Lung expansion therapy, like the MetaNeb® System, has been shown to reduce pulmonary complications by **UP TO 50%** with safe, simple and easy to use treatments that take **10 MINUTES**.*

A shorter stay in Hospital and the ICU

Respiratory complications can increase the length of stay in hospital. The MetaNeb® System results in a **shorter length of stay** in both the ICU△ and the hospital† overall.

MetaTherapy Treatment is an effective treatment in the following conditions:

- **Chest wall trauma**
- Chronic Obstructive Pulmonary Disease (COPD)
- Post-operative airway management
- Bronchiectasis
- Neuromuscular disorders
- Cystic fibrosis
- Asthma
- Emphysema
- Reversal of atelectasis

* Therapy times may differ depending upon patient ordered therapies.
△ Nyland, et al. AARC Abstract Volume Exp Protocol to Reduce Resp Comp. 2015

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The truth about Teleradiology

There are many myths spread about teleradiology. As the medical world evolves rapidly and the need for this vital lifeline continues to grow, the truth has never been more important.
These facts demonstrate how Everlight provides its high-quality services.

FACT – Teleradiology provides 24-hour access to FRANZCR consultant radiologists

All Everlight radiologists are FRANZCR, registered with AHPRA, and fully indemnified, as well as being credentialed for each hospital for which they report.

FACT – Teleradiology complements on-site radiologists

Everlight supports our clients' existing radiologists in the following ways:

- Complements Registrars after hours by reporting 'overflow' urgent cases +/- provides support for clinically complex cases
- Supports staff radiologists' after-hours roster when shortages make after-hours requirements difficult to fulfil.
- Provides additional capacity when volumes +/- temporal shortages make it difficult for on-site Radiologists to manage demand.

FACT – Teleradiology can be a cost-effective solution

Everlight's 'fee for service' model can be more cost effective than on-call/after-hours rostered shifts, when considering:

- The opportunity costs of lost or lower (due to fatigue) day-time capacity; or consultant validation of registrar reports
- Penalty rates for on-call shifts/after-hours rostered shifts
- The diminished supervision of Registrars working overnight

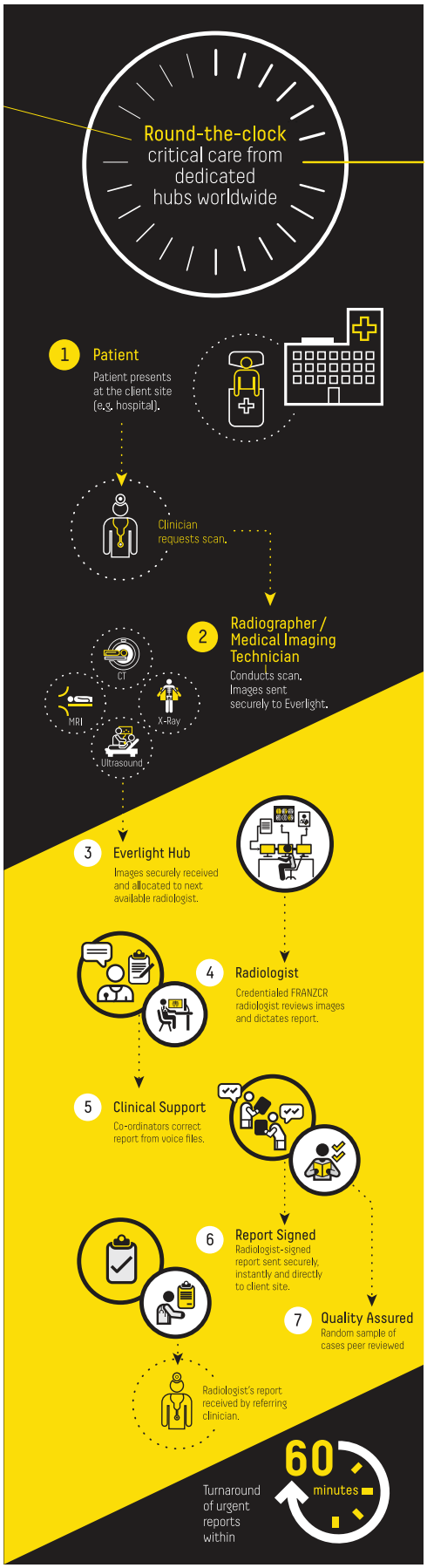
FACT – Leading teleradiology providers are accredited against Information Security standards, protecting patient data

Everlight Radiology has strict compliance with data security and is ISO27001 accredited. This means we use secure networks for data transmission and securely manage and handle patient information.

FACT – Teleradiology is a service focused on quality

Everlight has an unwavering focus on quality, managed by the Medical Leadership Council (MLC). Our quality processes include the following:

- Auditing – peer review minimum 2% (4% YTD) of all reported cases. To ensure quality, all new radiologists' first 100 cases are peer reviewed and all Trauma CTs (MVA multi-region) are second read.
- Management of Discrepancies focused on Education – client feedback on reports are encouraged. All discrepancies are analysed for key learning points and shared for group learning at Webinars.



Integrated valve regulator simplifies oxygen therapy

Coregas Integrated Valve Regulator (IVR) conveniently combines cylinder, regulator, flow meter and valve in a robust, lightweight and ready-to-use package. Coregas IVR, accessing medical oxygen quicker, easier and removes the operating costs of external regulators and flow meters. Simply attach your tubing or equipment to the unit and continue caring for your patient.

Features and benefits

Regulator and flow meter are integrated into the valve

- No regulators or flow meters required
- Saves time with no equipment changeovers
- All standard flow settings are provided (1-15 lpm)
- No maintenance costs, as product is maintained by Coregas

Dual oxygen outlets

- Users can attach tubing to the firtree outlet and/or equipment to the D.I.O.
- Simple, versatile functionality makes it convenient to use.

Contents gauge

- Clearly displays gas contents in real time with no need to touch the open/close valve
- High capacity cylinder
- Increased gas capacity of 0.639 m^3 (639 litres) saves time with less cylinder changeovers
- Potentially lower stock holdings
- User-friendly design
- Two ergonomic carry handles
- Tamper proof seal provides quality assurance
- Lightweight cylinder package makes handling easier
- Plastic coating makes it easy to clean
- Staff training in 6 easy steps
- Sleek, professional appearance ensures patient confidence

Specifications

Product code	202178 Gas Medical oxygen
Gas content	0.639 m^3 (~639 litres) at 15°C and 101kPa
Cylinder fill pressure	20 000 kPa at 15°C
Diameter	115 mm
Height	524 mm
Weight (empty)	3.5 kg
Weight (full)	4.4 kg
Outlets – Firtree	Tubing diameter: 6-8 mm
(Therapy tubing connection)	Flow rates: 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 15 lpm
– Diameter index outlet (D.I.O.)	Maximum outlet pressure (g): 400 kPa
Also referred to as sleeve index system (S.I.S)	Flow rates: up to 300 lpm as per AS 2902-2005

coregas

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New therapy for treating infants with bronchiolitis

After more than 10 years of research, Australian medical researchers are set to change the way we treat infants with respiratory illness, with Queensland emergency departments already adopting the new therapy.

The Fisher & Paykel Optiflow Junior.

Respiratory illness, specifically bronchiolitis, is the leading cause of paediatric hospital admissions in Australia. Annually, nearly 9000 children under the age of one year are admitted to hospital with the illness, and 10–20% require breathing support via a mask or intubation in a paediatric intensive care unit (PICU).

However, the number of PICU admissions could be almost halved thanks to pioneering research by a Brisbane-based team, which is championing the use of high-flow nasal cannulation (HFNC) to treat bronchiolitic infants in the emergency department.

HFNC provides a supply of warm, humidified oxygen via a thin nasal tube and, because it's easy to use and comfortable for the patient, infants don't require sedation.

Research co-lead, Lady Cilento Children's Hospital Paediatric Intensive Care Staff Specialist, Associate Professor Andreas Schibler said he was initially sceptical about the value of HFNC.

"The first time I saw a high-flow device I didn't think it would make any difference and there was certainly a lack of evidence to support its use in paediatrics," said A/Prof Schibler.

However, the PICU nurses he was working with were convinced that infants were responding better when treated with high-flow (and they were right).

A/Prof Schibler and the team first had to show that HFNC was safe to use in infants in PICU. They did, and found that it also led to a 33% drop in the use of invasive ventilation in the PICU.

Next, the team wanted to see if it could extend the use of HFNC to reduce the number of bronchiolitic infants ending up in PICU. With a grant from the Emergency Medicine Foundation (EMF) — funded by Queensland Health — A/Prof Schibler and Emergency Medicine Staff Specialist Dr Christa Bell ran a pilot study using high-flow in emergency departments. Their research led to a NHMRC-funded multicentre, randomised clinical trial, which recruited 1400 infants from 17 hospitals across Australia and New Zealand.

While the trial data won't be published until later this year, Queensland has already adopted new guidelines for the use of HFNC in the emergency department and paediatric wards.

From preliminary data, A/Prof Schibler suspects that when high-flow is used early in bronchiolitis infants, it has the potential to reduce PICU admissions by 40% and healthcare costs associated with treating infants with bronchiolitis by up to half. It could also allow infants in rural and regional areas to be treated closer to home.

"High-flow nasal cannulation is a game changer, there's no question about it."

Further research into HFNC

EMF, with Queensland Health funding, has awarded grants to two further pilot trials run by A/Prof Schibler and the team to assess the value of HFNC to treat children and adults presenting to the emergency department with respiratory illness. Lady Cilento Children's Hospital Emergency Department Staff Specialist Dr Fiona Thomson is leading the trial in children, while Ipswich Hospital Emergency Department Staff Specialist Dr Kylie Baker is leading the trial in adults. An additional study, led by the Gold Coast University Hospital Emergency Department's Dr Shane George, is assessing the benefit of using HFNC when intubating critically ill children.

Associate Professor Andreas Schibler, research co-lead, Lady Cilento Children's Hospital, paediatric intensive care staff specialist.

Dr Schibler has received grants from the Children's Hospital Foundation, EMF/Queensland Health, the NHMRC and the Thrasher Foundation for his research into HFNC as well as in-kind support from Fisher & Paykel.

A Day in the Life

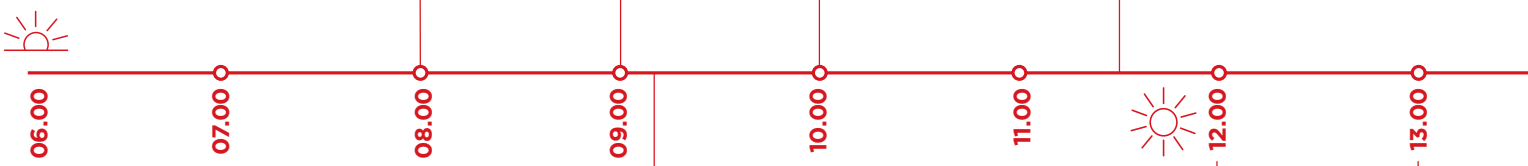
Adult Retrieval Victoria (ARV) is part of Ambulance Victoria and provides clinical coordination, retrieval and critical care services. ARV specialises in transferring patients who require a higher level of care, from one clinical setting to another or providing critical care advice prior to the transfer. Retrieval supports the health system by providing a safety net for people in remote and regional Australia where smaller hospitals may not have access to higher levels of care. Dr Simon Hendel is a retrieval consultant and critical care coordinator with ARV and a consultant anaesthetist.

08:00 I arrive at base and meet up with one of the new registrars, Dr Luke Smith, an experienced emergency medicine trainee who is with ARV to receive retrieval and pre-hospital medicine training. We run through equipment and kit checks.

09:00 We grab a quick coffee and head into the morning briefing with the critical care co-ordinator and the rest of the ARV team rostered for the day including patient transport officers, critical care registered nurse, retrieval administration support officer, management and administration staff.

10:00 Paperwork and quality assurance processes are an important part of the job. I look over job sheets and review clinical practices while Luke makes follow-up phone calls to check on patients and receive feedback on our service to improve our standard of care.

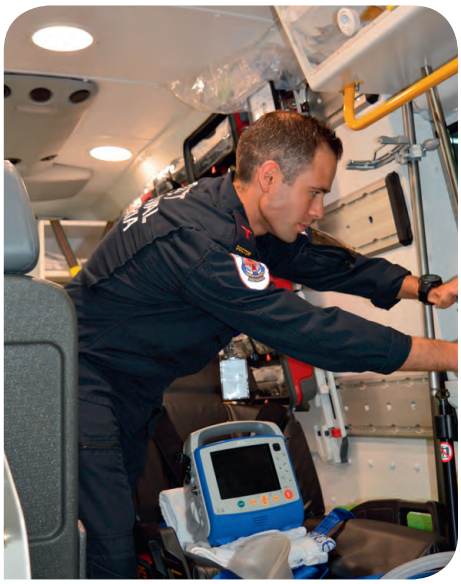
11:30 A referral comes through to the ARV co-ordinator to retrieve an elderly man who has developed kidney failure from a severe infection. The patient needs to be intubated and requires advanced medications to treat severe hypotension and transfer to an ICU. Luke is qualified and prepared to take this as a solo assignment. Before he leaves, Luke and I review the case. He grabs a kit and joins ARV's critical care nurse in the dedicated ambulance and begins the job.



09:10 We run through some airway management drills and advanced life support training. This morning we focus on cardiac conditions and sepsis.

12:00 Luke calls in from the referral hospital to discuss a few clinical details with the co-ordinator prior to heading to the receiving ICU. I grab some lunch and answer some emails.

13:00 By now the co-ordination centre is getting busy. I provide support to the co-ordinator by taking some of the calls to reduce the workload. One of the other new registrars, Dr Frank Parker, arrives for his afternoon shift.



"The helicopter is able to land on the roof of the neurosurgical centre and the patient is transferred directly to the operating theatre for life-saving surgery."

15:00 I grab another coffee before the morning registrar returns from his solo transfer.

15:30 Luke and I debrief then clean, check and refurbish the gear, making sure it's ready for the next job. Luke completes his paperwork and heads home for the day.

16:30 The co-ordinator receives a referral from a rural Victorian emergency department about a teenager who has been punched several times in the head while trying to break up a fight. Initially he was OK but then his headache worsened and he became confused. A CT scan shows a large extradural haematoma. He needs to be transferred for neurosurgery to drain the blood or he'll die.

The ARV co-ordinator reviews the patient's scans and teleconferences with neurosurgeons at the trauma centre. He determines the crew mix and the required clinical expertise and directs a medical retrieval team to proceed to the site via helicopter.

This case is time critical so ARV's patient transport officer drives the retrieval team with lights and sirens in ARV's dedicated single response vehicle to the airfield. This is Frank's first week and so this mission is a chance to ride-along on an air retrieval.

17:00 30 minutes from when we received the referral we have launched in the new HEMS 5 helicopter with a MICA (mobile intensive care ambulance) flight paramedic, on our way to the rural hospital. The flight will take one hour. During the flight we run through our plan on arrival.

18:00 We arrive at the airfield where an ambulance is waiting for us. Within 15 minutes we are at the hospital providing critical care at the bedside combining the skill set of the MICA flight paramedic and myself, the retrieval physician. We learn that during our flight, the patient's conscious state deteriorated and he will now need to be intubated for safe transfer.

18:45 Within 40 minutes the patient is intubated, prepared for transport and transferred to the helicopter for the hour long flight back to the city. In mid-flight we try to minimise interventions and procedures only to those absolutely necessary, so prior to departure the team double checks everything and ensures the patient is safe to be transferred.

19:45 The helicopter is able to land on the roof of the neurosurgical centre and the patient is transferred directly to the operating theatre for life-saving surgery. We hand over to the anaesthetic and surgical teams.

20:30 ARV transport officer drives Frank and myself back to the ARV base while the flight MICA paramedic flies back to the airfield. We don't get back to base until 21:00 — an hour after our shift is supposed to end — tired and hungry — but sometimes that's just the way it goes.

14.00 15.00 16.00 17.00 18.00 19.00 20.00 21.00

A Day in the Life is a regular column opening the door into the life of a person working in their field of healthcare. If you would like to share a day in your working life, please drop me an email: **ckelly@wfmedia.com.au**.

The thunderstorm asthma event

and the role of the hospital pharmacist

Kristin Michaels

©iStockphoto.com/Allen Johnson

On the evening of 21 November 2016, after a wild and windy thunderstorm, the city of Melbourne was plunged into a 'thunderstorm asthma' epidemic, triggering asthma attacks on a scale not seen before in Victoria and tragically claiming nine lives.

A complete surprise to most Melburnians, the phenomena of thunderstorm asthma is believed to occur when a windy thunderstorm enables pollen grains to absorb moisture and burst into smaller fragments which enter the lungs. Many of the thunderstorm asthma sufferers had not been diagnosed with asthma previously or had not experienced an asthma attack in many years.

Beginning in late afternoon and reaching a peak in the evening, the thunderstorm asthma surge occurred after community pharmacies had closed making it difficult for people to obtain over-the-counter medicine and spacer devices. Many late night pharmacies were quickly emptied of stock so people were referred onto major hospitals. This resulted in an inundation of emergency departments (EDs) that suddenly received hundreds of respiratory patients, estimated at 4000 across Melbourne and Geelong. Demand for ambulances and calls to emergency services were also unprecedented.

Hospital EDs are well trained to deal with a sudden swell of patients, with strong procedures ensuring medical and nursing staff availability and timely treatment for the most unwell patients. However, the thunderstorm asthma event was unique resulting in the need for many patients to quickly access a specific medicine to avoid escalation. Easier access to stocks of asthma medicines and spacer devices would have enabled some hospitals to more efficiently manage and treat patients, preventing subsequent capacity issues.

Many large EDs now have specialist pharmacists as part of their team whilst others have on-call pharmacists available after hours. Pharmacists working in EDs during the event reported an extremely high demand for their services as they reviewed patients, took medication histories, counselled patients on medication and technique, coordinated discharges to free inpatient beds and contacted wholesalers to request emergency deliveries.

Overall, Melbourne's hospitals responded well to the unexpected epidemic of asthma. However SHPA's submission to the Inspector-General for Emergency Management flagged key lessons for future emergencies:

- Clear processes for obtaining asthma medicines in an emergency, both for obtaining stock from within pharmacy sites in hospital and from wholesalers, are imperative. One major teaching hospital waited five hours before additional life-saving stock was delivered.
- A greater utilisation of the hospital pharmacy workforce in the ED at times of medicine-focused emergencies might provide increased support for medical and nursing staff and prevent excessive waiting times for patients.
- An activation to direct hospital pharmacists to return to work at time of emergencies could be useful to enable efficient discharge of inpatients when beds are required urgently.
- Extended after-hours services provided by hospital pharmacies can greatly assist an effective hospital emergency response.

The lessons of this thunderstorm asthma event will be instrumental for the development of future plans for responding to public health emergencies. As healthcare professionals with core expertise in medicines and their use, hospital pharmacists are already playing important roles alongside clinicians and allied health practitioners in multidisciplinary teams. At times of public health emergency, hospital pharmacists represent an additional resource currently untapped for hospital management looking for innovative and responsive models of patient care.

Kristin Michaels is the Chief Executive Officer of The Society of Hospital Pharmacists of Australia, with a keen interest and experience in health system design. She is a seasoned Board Director in primary, acute and aged-care sectors. Kristin holds qualifications in Arts, Organisational Leadership, Governance and Health Service Management. She is a Fellow of the Australian Institute of Company Directors and is accredited as an International Partnership Broker.

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- Easy to read gauge instantly provides a clear indication of gas level at all times
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- Ergonomic carry handle is designed to provide a balanced and safe carry point
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- Ease of use simplifies training

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- The high gas capacity (630 litres) of the INHALO means less cylinder changes saving you time
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- The 'plug & go' functionality make the INHALO versatile & easy to use
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Registration

- Medical device, AUST R 135358, 187646
- Medical oxygen AUST R 34468

Inhalo specifications

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Empty weight	3.5 kg
Full weight	4.4 kg
Height	555mm
Diameter	105mm
Outlets	400 kPa outlet pressure (g)
- Firtree	Also known as 'barbed tail' Tubing diameters 6-8 mm Flow rates 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 15 lpm
- Diameter Indexed Outlet (D.I.O)	Also known as Sleeve Index System (S.I.S.) refer AS2896 300 ipm (max)

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DESIGN IN HEALTH

FEATURE

The Herston Biofabrication Institute will advance knowledge and technology in 3D scanning, modelling and printing of bone, cartilage and other human tissue to repair tissue that is lost or damaged. (Image supplied by QUT)

Biofabrication Institute to revolutionise modern medicine

"This is the first time a biofabrication centre has been located at a Queensland hospital."

An Australian-first research institute that will ultimately manufacture human organs, bones and tissue using advanced technology including 3D printing and robotics will be established in Brisbane this year.

Metro North Hospital and Health Service and Queensland University of Technology (QUT) have partnered to create the new Biofabrication Institute on the world-class Herston Health Precinct.

Biofabrication offers the opportunity to print or manufacture implantable or graftable human tissue, bone and solid organs on demand, making future healthcare more personalised.

Metro North HHS Executive Director, Operations Shaun Drummond said the Herston Biofabrication Institute would open in the latter half of 2017 and occupy two floors of Building 7 on the Herston Health Precinct.

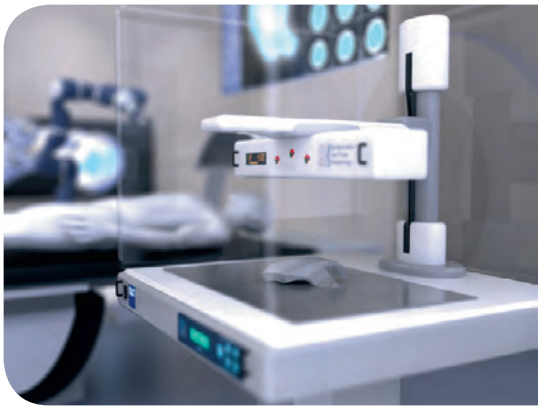
"The Biofabrication Institute will be located at the junction of the precinct's clinical and research zones, sitting alongside the Royal Brisbane and Women's Hospital, Queensland Institute of Medical Research Berghofer and Herston Imaging Research Facility," Drummond said.

"This is the first time a biofabrication centre has been located at a Queensland hospital. It will provide a direct link between the scientists and biomedical engineers in the lab and the doctors at the hospital."

The location also provides immediate opportunities for scientists and clinicians to be employed in cutting-edge research, which will attract significant private sector and philanthropic investment.

Associate Professor Mia Woodruff, leader of QUT's Biofabrication and Tissue Morphology Group, said the Biofabrication Institute will initially bring together around 50–60 researchers, clinicians, industry and entrepreneurs at one of the largest health,

"The research team is already well advanced in developing 3D tissue replacements..."



Advances in biofabrication research led by the Herston Biofabrication Institute will transform the way we provide healthcare by producing innovative personalised and automated treatments. (Image supplied by QUT)

teaching and research precincts in Australia to develop technologies and practices to really impact patient quality of life.

"The research team is already well advanced in developing 3D tissue replacements and we are excited to engage with clinicians and industry alike to translate these to the clinics," A/Prof Woodruff said.

"International collaboration will be at the forefront of the Herston Biofabrication Institute building upon our strong links with world-renowned research and education centres."

Drummond said that as well as significant benefits for patients, the institute will bring economic benefits including the creation of a new industry around advanced manufacturing of medical devices and tissues.

Metro North and QUT received funding last year from MTP Connect to investigate setting up the Biofabrication Institute.

Negotiations with major industry and philanthropic funding sources to support the fit-out and research are also underway.

It's expected that within five years, the Herston Biofabrication Institute will be attracting several million dollars per year in research grants, and philanthropic and industry support.

The Biofabrication Institute will also enhance the Herston Health Precinct's global reputation as a leader in medical innovation, research, technology and education by complementing the nearby $1.1 billion Herston Quarter Redevelopment, which will include a 132-bed Specialist Rehabilitation and Ambulatory Care Centre.

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Hospital design challenges:

now and into the future

Harm Hollander

Lady Cilento Children's Hospital, QLD. An example of thinking beyond clinical relationships as a basis of design.

Lady Cilento Children's Hospital, Qld. Demonstrating intuitive wayfinding with a non-clinical image.

Who can predict the nature of the health service which is housed inside a hospital in 20, 30, 40 years from now?

Health service delivery plans would do well to accurately forecast 15 years into the future. With the inevitable changes to demographics, technology and political policy, a hospital's legacy tends to become a driver of what health services can be accommodated there as time progresses. This can steer the building's potential away from the ideal: being an ongoing accommodation for the best possible health service. The problem is only becoming more intense with the accelerating rate of change anticipated in the health field.

There is a tendency to design hospital facilities on a 'problem-based-functional-solution' methodology. That is, an immediate need is identified, a brief is developed and a design response is provided. Say, for instance, there is an identified need for an emergency service to be expanded. A location and definition is given to the project and a design is commissioned to respond to that need. Another example might be that there is a modernisation of beds in a hospital with more single-bed rooms to reflect best practice. Again, logistics are identified, a brief is presented and a design is commissioned to respond to that need.

This problem-based-solution approach can easily slip into individual considerations which address the immediate needs only. Over time, these individual solutions aggregate into the many hospitals as we know them (constrained places not known for their quality environments). In order to remain true to the essential objectives of a hospital, the best practice of procurement should, instead, endeavour to incorporate these following processes to avoid the designs merely responding to incremental problems:

- Question delivery options to health services as they change and grow.
- Strategise an overview, free from departmental silos. Work to a well-considered masterplan.
- Think beyond functional solutions to particular problems; define a brief including those things important to the staff, patients, hospital and the overall system.
- Define the issues in the brief to designers: the room-by-room schedule is not a brief but is merely one solution. It is preconceived and not always the best design.
- Test designers' drivers and credentials to lead the process, prior to the commission.
- Include an opportunity to further reflect and review the brief as design options emerge; design is a heuristic process and will present new benefits in solutions if the process encourages this.
- Include reporting to demonstrate how a design solution will fit into the future (even assuming that the current focus will one day be redundant).
- Evaluate through peer experts, not through persons who qualify by previous participation (experience reflects on past systems; expertise can also vision best practices).
- Measure success against clinical outcomes, efficiency (including value), satisfaction, wellbeing and the ability to address the future.

As can be seen in these points, a successful hospital design relies on an integrated vision and process across the whole procurement team. This is the challenge, to produce overall hospitals which serve the essential purpose of the health service.

"... a successful hospital design relies on an integrated vision and process across the whole procurement team."

Harm Hollander is a Project Principal with Conrad Gargett with extensive experience in the areas of Health and Defence. A Fellow of the AIA, Harm has lectured in Construction/Technology, Professional Studies and Design at both the University of Queensland and Queensland University of Technology. Harm has developed comprehensive skills in leading large projects and working meticulously through brief, design and delivery challenges. In the health sector, Harm's industry-leading knowledge in both strategic and practical health requirements has seen him lead the health planning on major projects such as the Princess Alexandra Hospital Redevelopment and the Lady Cilento Children's Hospital, as well as speaking engagements at a number of conferences. As a Doctor of Creative Industries candidate, Harm remains the student in seeking further improvement in collaborations towards better design outcomes.

Staff mindfulness sessions well received at John Hunter Hospital

Dr Susannah Ward, Dr Sue Outram

Hospital initiatives designed to promote employee health and wellbeing can positively contribute to the development of a hospital culture where staff feel valued and role model health behaviour to the community. Such interventions may reduce rates of employee mental illness, absenteeism, burnout and turnover while improving workforce morale, job satisfaction and resilience.

Mindfulness-based interventions (MBI) are increasingly recognised as well-accepted and cost-effective tool for creating optimal wellbeing. Mindfulness has been shown to reduce rates of anxiety, stress, burnout and mental illness, and improve quality of life and other health outcomes. In hospitals, MBI has been shown to: improve employee wellbeing; reduce work errors; increase work engagement; increase stress resiliency; improve relationships in the workplace; encourage smoking cessation; increase job satisfaction; promote self-compassion; and improve participant sleep quality and quantity.

In order to promote staff health and wellbeing, each Monday during the month of May, free guided mindfulness sessions were held for staff at John Hunter Hospital (JHH), NSW. The sessions were advertised via internal email, flyers were distributed and the sessions held on-site within working hours. Sessions ran for 20 minutes. A brief welcome, explanation of mindfulness and review of its benefits was provided in the first five minutes, a mindfulness of breathing practice was guided over 10 minutes and the remaining five minutes were left for questions and feedback. Three volunteers, experienced in mindfulness practice, shared the facilitation. Participants were instructed in using a focus on the breath to try and let go of distraction, noticing thoughts that arose and turning their attention back to the breath.

Ninety-three different staff attended, from a broad range of clinical and non-clinical areas. Feedback from attendees revealed that for the majority mindfulness was perceived as relevant and helpful to their working and/or home life. They reported it helped with stress, work focus and work productivity. Participants expressed gratitude for the sessions. Given the popularity of the sessions they continued on to the end of the year. To ensure sustainability, the hospital has employed one person for an hour per week to organise and facilitate weekly sessions in 2017.

We conclude that free on-site staff-guided mindfulness sessions held within work hours is a popular and accepted means to promote employee health and wellbeing in hospitals. We hope interventions like this are considered at other sites with the view to promote a workplace culture that values and nurtures employee health and promotes positive health behaviours to the community.

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St Vincent's Health is looking to a sustainable future with major solar power rollout

St Vincent's Health Australia (SVHA) has embarked on its National Energy Action Program (NEAP), an ambitious program to reduce total electricity use and carbon emissions. A major component of the program will be the installation of a 2.708 MW rooftop solar system across 16 of its hospitals and aged-care facilities in New South Wales, Victoria and Queensland.

NEAP aims to reduce SVHA's annual electricity consumption by around 40 GWh (gigawatt hours) by mid-2018. This represents a 35–40% reduction of current consumption and will deliver a cost saving of approximately $6.5 million annually while reducing greenhouse gas emissions by 40,000 tonnes per annum.

NEAP has three main components: the rollout of solar panels across 16 sites; implementing a wireless system for energy management and appliance control across facilities; and retrofitting more than 40,000 existing incandescent and fluorescent lighting with LED alternatives.

New solar panels in place at St Vincent's Health Australia's aged-care facility in Toowoomba, part of NEAP.

Image courtesy Todae Solar.

"SVHA as an organisation currently consumes approximately 113 gigawatts of electricity annually — equivalent to the domestic consumption of a town of 50,000 people."

Solar rollout

The solar rollout SVHA is undertaking is claimed to be the largest commercial installation of its kind in Australia. It is expected to be completed by the end of 2017. An estimated 9180 solar panels will be mounted by Todae Solar and will annually produce approximately 4 GWh of electricity.

Once completed, the system will have a daily average production of over 11 MWh of electricity, which is enough to power approximately 662 homes. It will also feature cutting-edge monitoring technology that will provide real-time data on the system's performance.

St Vincent's Health General Manager, People and Culture David Bryant described the system as an important way for the organisation to deliver more sustainable health and aged care.

"With the increasingly clear link between environmental degradation, climate change and related health impacts, addressing environmental issues is showing care and compassion for people as well as the earth. We take this responsibility seriously," said Bryant.

"Health and aged care generally, and hospitals in particular, are very energy-intensive. Hospitals can be up to 4.5 times more energy-intensive, on a metre-squared basis, than the equivalent office space. At the same time, price rises for both gas and electricity in Australia have seen the cost of energy grow substantially," he explained.

"SVHA as an organisation currently consumes approximately 113 gigawatts of electricity annually — equivalent to the domestic consumption of a town of 50,000 people. We produce greenhouse gas emission of 125,000 tonnes annually," he said.

"St Vincent's Health's NEAP will result in sizeable reductions in total electricity and gas use, which will translate into sizeable reductions in direct costs and heavily reduce the organisation's carbon footprint.

"As for the wireless system for energy management and appliance control, we're working with Plugwise Australia to install 25,000 modules across facilities which prevent unnecessary energy consumption by intelligently switching off lighting or appliances when they're not required.

"The modules will also measure the energy consumption on a device level and provide detailed information on how often a piece of equipment is used," Bryant said.

David Bryant, St Vincent's Health's General Manager, People and Culture.

Procurement technology boosts efficiency

Rob Cook, Marketing Manager, TenderLink

The recent creation of Primary Health Networks (PHNs), scoped with increasing the efficiency and effectiveness of medical services, has raised performance expectations throughout organisations and given administrators the chance to review processes and, where applicable, adopt new ways of doing things.

Procurement — the structured and systematic purchasing of supplies and services — is one area that has come under scrutiny, and a number of PHNs have embraced technology to improve their performance. E-procurement solutions such as those from TenderLink are enabling PHNs to streamline their tender process, which is extremely valuable for organisations in transition, needing to engage with large numbers of new suppliers. These tools replace cumbersome manual processes with electronic toolsets for a range of procurement needs — from creating requests for proposals to evaluating tenders.

Importantly, e-procurement saves time and money, and allows even the smallest medical facility to embrace leading-edge procurement practice without the need for an army of skilled professional 'buyers'.

While health administrators may be extremely qualified in service delivery, they may not have the specific knowledge or the experience to run an end-to-end procurement exercise — and they certainly can't run a number of them simultaneously, while also juggling all their other duties.

E-procurement tools can increase the volume of procurement activity which can be undertaken by an organisation, but they can also improve the quality of the activity. Technology can be employed to evaluate tender submissions with levels of transparency and reliability that are hard to achieve 'manually'. The use of technology also provides a level of objectivity for tender evaluations that can be hard to replicate unless adopting the most robust scoring system. This is particularly important in the spotlight of scrutiny which often surrounds public and not-for-profit spending, and is crucial when dealing with unsuccessful tenderers whose co-operation may be required in the future.

Those PHNs fortunate enough to have some procurement expertise also benefit from the application of technology because it frees up resources. By automating the mundane tasks, technology allows procurement professionals to focus on areas where they can best add value — establishing procurement policies and processes and stakeholder engagement. Ultimately, this translates into savings, which further enable PHNs to provide patients with the right care, in the right place, at the right time — and at the right cost.

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Technology and innovation in Australia's aged care

Sean Rooney

Australia's aged-care workforce needs to meet the challenges of increased demand, consumer choice, a rapidly changing marketplace and the integration of new technologies.

The existing workforce needs to be renewed as the latest statistics tell us that an estimated 60% of the existing workforce will reach retirement age over the next 15 years. These workers not only need to be replaced, but our aged-care workforce needs to rapidly increase to meet the growing demand for different types of services. By 2050 it is estimated that we will need up to 1.3 million workers in the industry.

The workforce will need to be responsive, knowing that we have a new cohort of older Australians with broader expectations of how, where and by whom their care is delivered.

"Effective use of technology can enable self-confidence that in turn sustains independence."

Workers will also need to be adaptive, with technology likely to significantly impact on the type of care and services that are delivered and the training and skills required of the workforce.

We have to reimagine the types of work that will be carried out by our aged-care workforce because our future workers will be delivering more than just personal care — they will need to engage with smart technologies and innovations in the provision of care, and be able work across residential-, home- and community-based settings.

The future of our aged-care workforce has been the focus of a long-running Senate Inquiry that kicked off before the July federal election and is due to hand down its report on 28 April 2017. LASA made a submission to the Inquiry early last year and gave evidence at the Future Aged Care Workforce Inquiry in Canberra at the start of November.

In our presentation to the Inquiry we highlighted innovation as being one of the key workforce challenges to our LASA members. Innovation in terms of new technologies, models of care and new service offerings.

The technological capacity to create myriad devices and applications that enable independence already exists. The challenge is to identify how the technology can be applied in a way that is user friendly, develops self-awareness and therefore self-management of chronic disease and complements the input of skilled professionals.

People prefer independence to dependence. We have increasing incidence of chronic disease; those who suffer most from chronic disease and are most compromised in relation to their capacity to retain independence are older Australians.

Effective use of technology can enable self-confidence that in turn sustains independence. Independence in this context means independence in any living environment from the family home to supported environments.

Technology can help to track health and wellbeing through personal electronic health records that can be selectively accessible to family and health professionals. Non-invasive wearable devices can be used to monitor basic health indicators such as blood pressure, body temperature, respirations, pulse and wellness indicators such as activity and social connectedness.

Already, new research is building our understanding of cognitive decline leading to new approaches in aged care and reducing current dependence on residential service solutions. Smart houses with voice activation, monitoring systems, automation for lighting and electricity, and fall detection alarms will enable home-based, dementia-friendly environments.

Our aged-care workforce, and the regulations that support it, will need to be much more flexible if aged-care providers are going to be able to deliver the changing models and delivery of care Australians expect.

Sean Rooney joined LASA as its inaugural national CEO in June 2016. He has held several Chief Executive/Senior Executive roles in public, private and not-for-profit sector organisations including the CSIRO, Medicare Local Alliance and in the ACT Government.

SPC ProVital expands portfolio to help those with dietary deficiencies

Over the next several decades, population ageing is projected to have major implications for Australia, including health and well-being. The need for products and services that promote healthy living and positive ageing is becoming increasingly important. Australian food manufacturer SPC Ardmona, manufacturer of SPC ProVital, is committed to providing delicious, nutritious and expertly formulated products designed to address specific health requirements and support Australia's ageing population.

The unfortunate reality is that many older Australians often don't get enough fibre in their diet irrespective of whether they live at home, are a resident of an aged-care facility, or a patient in a hospital environment.

"Individuals need 25–30 g of fibre in their diet a day, and it's concerning to see just how many people are not getting their recommended daily dose of fibre," said Denise Burbidge, Accredited Practising Dietitian & Nutritionist, The Food Clinic.

"I see so many people who are struggling to eat their core foods — like fruits, vegetables and wholegrains. If people aren't eating the right fibre rich foods, their body will experience a range of health complications."

The new SPC ProVital Fibre Right range offers a way for patients to get a sufficient amount of nutrients into their diet without compromising on taste and flavour. SPC ProVital Fibre Right is a delicious and nutritious meal accompaniment or snack and it is available from April 2017 in Apple and Prune flavour, with further flavour combinations to be introduced later in the year.

SPC ProVital Fibre Right is specifically formulated to provide a good source of fibre, with at least 5 g in each serve. Available in Apple & Prune smooth fruit puree, Fibre Right is suitable for Texture C diets, and the easy-open portion controlled packaging also assists those with mobility issues.

Dijana Dragicevich, Senior Speech Pathologist at the Royal North Shore Hospital said, "It's so important that modifications to textures and flavours are made to products, especially for those with eating, speaking and mobility issues like dysphagia."

A recent study of 400 patients conducted at Royal North Shore Hospital in Sydney revealed 7 out of 10 patients stated that the SPC ProVital fibre right fruit range taste and texture was either very good or excellent.

SPC believes that positive nutritional food choices support the health and longevity of patients and it allows them to receive the most out of their meals. As the next evolution of the easy-open portion control fruit range, SPC ProVital Fibre Right makes it easy and delicious for patients to meet their daily fibre intake. SPC ProVital is determined to give Australia's ageing population choice, taste and nutrition every day, every meal occasion.

Key features of SPC's ProVital Fibre Right range include:

- Delicious apple & prune smooth fruit puree
- Suitable for Texture C Diets
- Available in portion control 120 g cup and bulk 2.95 kg can
- Easy-open portion control packaging
- Made in Australia
- At least 5 g of fibre per serve

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The National Aged Care Quality Indicator Program

Helping combat unplanned weight loss

Valentina Giannelli

The National Aged Care Quality Indicator Program (QI Program) is a federal government initiative in which aged-care facilities report on three quality indicators for clinical care.

The voluntary program supports continuous quality improvement in aged-care facilities by providing a framework, tools and information to help improve clinical care as well as national figures to use as a benchmark for reporting purposes. The program also helps potential residents compare the quality of care provided when choosing aged-care facilities.

There are currently three quality-of-care indicators that measure clinical areas.

1. Pressure injuries.
2. Use of physical restraint.
3. Unplanned weight loss.

These indicators have been chosen after a similar system was implemented successfully in Victoria.

Quality indicator — unplanned weight loss

Unplanned weight loss is defined as "weight loss that occurs involuntarily over a period of time, that is, weight loss that occurs as a result of circumstances beyond the voluntary control of the individual"[1].

Unintentional weight loss over a period of time is the strongest indicator of nutrition risk and malnutrition for older adults. Residents experiencing weight loss have an increased risk of falls, fractures and pressure injuries


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related to muscle mass loss. Malnutrition is associated with poor health outcomes such as poor wound healing, frequent infections and a decline in mental and physical function, severely impacting a resident's quality of life.

It is well recognised that residents of aged-care facilities are at high risk of weight loss, with the prevalence of malnutrition in the residential aged-care setting ranging from 40–70%[2]. Dementia, swallowing difficulties, poor dental health and polypharmacy are among the most common causes of unintentional weight loss for residential aged-care patients.

Other factors also play an important role, such as the quality of food provided, the dining environment and the assistance provided by staff. Monitoring prevalence of unplanned weight loss gives some indication of how providers are managing these important aspects. It also gives aged-care facilities useful information about how their processes are working and can highlight areas that require improvement.

It is important to regularly monitor residents' weight, and to take early action if unintentional weight loss is identified. Weight loss may be the result of circumstances beyond the control of an aged-care facility, such as a period of illness or a hospital admission. However, having systems and processes in place, such as those outlined in the QI Program, enables early identification and rectification. This ultimately improves the quality of care and quality of life.

FAST FACTS

- Unintentional weight loss over a period of time is the strongest indicator of nutrition risk and malnutrition for older adults.
- Malnutrition is associated with a range of poor health outcomes.
- The prevalence of malnutrition in the residential aged-care setting ranges from 40–70%[2].
- The QI program enables early identification and rectification of unintentional weight loss.

How an Accredited Practising Dietitian (APD) can help

APDs have in-depth knowledge of clinical nutrition and food services, making them well placed to support aged-care facilities in implementing systems for proactively managing weight loss and improving patient care and satisfaction.

APDs can participate in the screening process or provide a management plan once unintentional weight loss is identified. If appropriate, APDs can provide dietary advice directly with the resident and cooperate in multidisciplinary team care with GPs, nurses, care staff and other allied health professionals.

Working with staff, APDs can design nutrition strategies and action plans. These may include the review or development of food policies and procedures or implementation of nutrition processes such as weight monitoring, nutrition risk screening and APD referral pathways. APDs can undertake menu reviews and help facilities to create a dining environment that promotes good nutrition and adequate fluid consumption.

APDs can be involved in educating staff on nutrition topics such as nutrition risk screening, accurate weight measurement, oral intake monitoring and correct mealtime assistance technique, to ensure that everyone involved can provide optimal quality of care to residents.

An APD can support residential care facilities to deliver high-quality nutrition services incorporating the new quality indicator for unplanned weight loss. To find an APD in your area, visit www.daa.asn.au and look under 'Find an Accredited Practising Dietitian'.

Valentina Giannelli is an Accredited Practising Dietitian and works as Consultant Dietitian at Leading Nutrition, the largest private practice of professional aged-care dietitians in Australia. Valentina conducts individual consultations, completes menu reviews, provides staff nutrition training and education and co-presents aged-care nutrition and food service seminars. She also has experience in the private practice sector, particularly in the nutritional manager of cardiovascular disease and diabetes. Valentina is passionate about providing high-quality nutritional services to improve the nutrition and the quality of life of residents of aged-care facilities.

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Solutions that fit

From a brand you can trust and one that your staff, patients and visitors know and love, Nestlé Professional has a beverage solution to fit. Technologically advanced, easy to use, operate and clean, our range of beverage systems are perfectly designed to deliver for staff rooms, visitor waiting areas and wards. As your trusted partner in healthcare, we can offer customer solutions tailored for your specific needs, to meet the demands of hospital and aged care environments.

Most times, those waiting or working in hospitals and medical facilities don't have the luxury of time to head out to their local coffee shop. In moments of anxiety, a great tasting hot beverage can bring comfort in a stressful situation. Nestlé Professional offers personalised coffee solutions that will allow your hospital or aged care site to provide fast, great-tasting coffee, not only for those in waiting rooms, but also for doctors, nurses, administrative and support staff.

Staff providing care in hospital and aged care are highly focused on their jobs, looking after patient needs. When short on time, it's reassuring to know that there is a coffee solution on hand to have a quick cup of coffee that can help get through a busy shift. NESCAFÉ Milano coffee is crafted with 100% Arabica whole roasted coffee beans, where every cup is rich with unique intense flavours, to deliver staff barista-quality coffee experiences at the touch of a button.

When there is a need to serve high volumes of black coffee fast, such as functions or kitchen plating lines, the user-friendly NESCAFÉ ALEGRIA V-Café will deliver great-tasting hot coffee on demand. It has the capability to dispense hot coffee by the cup or even by the jug.

Variety in menu choice is just as important to meet your patient and visitor needs, and NESCAFÉ ALEGRIA allows you to provide just that, with delicious café-style menu selections simply at the touch of a button. Choices include long black, flat white, cappuccino, espresso, latte, mocha, and everyone's favourite comforting treat, hot chocolate.

At Nestlé Professional we pride ourselves on being at the industry forefront and changing with our customer needs over time. Bringing operational efficiency, functionality and variety to suit the needs of patients and those in the business of caring has been the driving force behind our latest Mobile Cart innovation.

Whether you want to offer patients a stimulating start to the day with their breakfast meal, a refreshing recharge at lunchtime, later in the day as an afternoon snack accompaniment, or to give comfort and relaxation towards the end of the day, the Mobile Cart is the perfect choice to serve patients hot beverages at their bedside.

The Mobile Cart is fully autonomous, with no need for power and water connections. To operate, simply recharge and refill as required. Compact and efficient design allows staff to conveniently provide bedridden patients with fresh, made-to-order hot beverages from the full range of café-style menu choices.

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Our extensive range of healthy food and tasty beverage products can integrate seamlessly and are suited for all menu occasions right through the day — from breakfast to lunch, dinner and mid meal snacks.

Nestlé Professional will be participating in upcoming key industry events:

- Australian Healthcare Week, 8th – 10th March 2017, ICC Sydney
- Aged Care Procurement Conference, 29th & 30th March 2017, Rosehill Gardens, Sydney

We look forward to meeting with you to discuss your beverage needs, and for you to try our coffee and talk to our friendly team about how we can help you to serve up great-tasting, healthy food and beverages that can be tailored to exactly fit your staff, patient, resident and visitor needs.

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In Conversation

Corin Kelly

In Conversation provides a glimpse into the life of an 'outlier' — an exceptional person going above and beyond to innovate in their field and improve patient outcomes. In this issue our guest is Ron Bartsch, President of the Asia-Pacific RPAS (Remotely Piloted Aircraft Systems) Consortium and aviation law expert. Ron will be heading up the Angel Drone trial due to commence in rural New South Wales later this year.

You are heading up the Angel Drone trial, delivering vital medical supplies to remote communities in rural New South Wales. Can you tell me what brought you to be interested in drone technology?

I've been in the aviation industry for 35 years. I was originally a commercial pilot in the industry then head of safety with Qantas and worked for 12 years with the safety regulator — the Civil Aviation Safety Authority. About five years ago I became interested in unmanned aircraft, which led to me undertaking a PhD at Sydney University on the legal aspects of integrating drones into civilian usage. My supervisor on that project, Associate Professor KC Wong, is a world leader in drone technology, and together we started to look at the medical applications for drones.

My current role is CEO of Innovating Australia and an important project I am managing as President of the Asia-Pacific RPAS (Remotely Piloted Aircraft Systems) Consortium, ARC, has been to bring together the key people and stakeholders who can contribute to the Angel Drone trials with the view to achieving regulation for medical applications of drones in Australia and the Asia–Pacific region.

Dr Charles Teo, a household name in neurosurgery, has thrown his weight behind this project as the ambassador for the Angel Drone project.

Yes, as a world leader in medical innovation and technology, Charlie could see that medical drones have the potential to save time, which means saving lives. He supports Angel Drone as a positive and more beneficial use of this technology for society than perhaps drones delivering beers or pizza.

Organ transfer, natural disaster and transporting doctors and medical specialists for roadside trauma relief have been flagged as opportunities for medical drones. What is the Angel Drone trial in NSW all about?

These are all potential applications for drone technology. Some are more ambitious and require further research and more approvals than others. In the NSW Angel Drone trial we will be trialling drones to deliver supplies such as blood and organs by unmanned aerial vehicles to hard-to-reach areas. We are also working with CareFlight with the view of commencing Angel Drone trials in outback Northern Territory. Regulatory approval is the key to everything so we are working closely with CASA to demonstrate that this can be done safely and responsibly.

Due to the lifesaving potential of medical drones, we are keen to work with innovative healthcare companies and all going well with the trial, those in remote communities could expect some of these medi-drone services to be operating within 12 months.

Safety is a concern often expressed about drones flying in our airspace. How are you addressing this?

Safety is paramount — ensuring the drone operates safely and the pathology samples or blood products remain uncontaminated.

We're fortunate that Australia was the first country in the world to have civilian

"In the NSW Angel Drone trial we will be trialling drones to deliver supplies such as blood and organs..."

regulation for drones, which means that our local civilian drone industry is quite sophisticated. We are working very closely with CASA to demonstrate that drones won't pose a safety threat to people or property. For example, we need to demonstrate that a drone will still be able to operate with the loss of an engine, or if the data link is lost that the drone will return to a predetermined place or hover in its existing location. We are also only working with professional drone operators that have been certified and audited to international standards.

Medical practitioners and companies like CareFlight, who are experienced in aero-medical operations — including the transportation of pathology products — will ensure the integrity of the blood, plasma or biopsy samples.

Where do you see unmanned aircraft taking us in the future?

I think we could see a network of passenger carrying drones, carefully coordinated through an operations control centre that can deliver a first response paramedic or doctor to a road trauma site in a fraction of the time. I also see the delivery and transportation of human organs in jet drones travelling at beyond the speed of sound — both within Australia and internationally. Many people think I'm dreaming and I remind those people that it is almost half a century ago we landed a man on the moon and that we were flying over 100 passengers at twice the speed of sound in the Concorde. Drones' lifesaving potential motivates me to make it happen — I haven't the time to dream.

This sounds like an alarming idea to some people but it's important to remember that drones have a pilot — they are just not on board — that's why they are referred to as 'remotely piloted aircraft systems' or RPAS. Drones are already being used for industries such as mining and, unfortunately, war, so it's about time we utilised that technology for the betterment of mankind and the greater societal good.

Medi-drone. Image from Aerolens — RPAS operator for Angel Drone trials.

Climate change — the risks and opportunities for healthcare

David McEwen

David McEwen, author of the new book *Navigating the Adaptive Economy,* shares his views on the challenges climate changes poses to healthcare and outlines the key opportunities that exist to reduce the impact.

We are already starting to experience the impacts of climate change and the healthcare sector will be right in the firing line, requiring adaptation to assist with prevention and care.

2014, 2015 and likely 2016 each set new global average temperature records.[1] While there is still natural variability in the climate system, the long-term warming trend is clear.[2] Here are some of the likely impacts:

Heat-related illnesses and deaths from exposure to extreme temperatures will increase. This will particularly impact on people who are more susceptible to heat stress and dehydration.

Heatwaves are already a leading cause of death compared to other types of natural disasters. For example, the 2009 Victorian bushfires resulted in half the number of fatalities as the excess mortality associated with the heatwave that led up to it.[3]

A warming climate leads to other forms of extreme weather including storms, drought and flooding. Water supply contamination during extreme precipitation and flood events is a growing risk. The Brisbane floods in 2011 led to the temporary closure of one of the main water treatment plants as the incoming water was too muddy to be treated.[4]

More generally, a rise in the frequency and/or intensity of extreme weather events may result in greater injuries/illnesses and demand for emergency services.

Tropical, insect-borne diseases will spread to areas in higher altitudes and higher latitudes as it becomes warmer. Insect carriers of such diseases thrive in the tropics because it is warm overnight and all year round, meaning no die-off in cooler months as is common in temperate climates.

Additional health risks will arise from the greater expected incidence of bushfires[5] (and lightning strikes[6]). For example, during the summer of 2010 an estimated 55,000 people died in Russia from a combination of a severe heatwave and smoke inhalation from a resultant series of major bushfires.[7]

Given these challenges, public healthcare is likely to experience significant stress. However, opportunities abound for private suppliers. Key opportunities to reduce these impacts include:

- Prevention: Training and education of at-risk groups; risk assessments; preventative pharmaceuticals and related interventions; water purification; wastewater infrastructure; specialist clothing; air filtration and cooling systems; personal monitoring technologies; and other hazard reduction.
- Relief: Increasing demand for existing and new drugs and forms of treatment for conditions related to heat, water contamination, tropical diseases and other exposures.
- Health infrastructure: Increasing demand for health professionals and emergency workers; associated infrastructure, hospital beds and education. Hospitals located in regions exposed to extreme weather will need to be made more resilient.
- Sustainability: Sustainable medical procurement; medical waste recycling; energy and water efficiency improvements in medical practice; other technologies and innovations to reduce the environmental impact of healthcare.

Transitioning the world's energy system from coal, oil and gas to renewable sources such as wind and solar will help reduce ground-level air pollution, which should lead to a decline in some respiratory illnesses.

Meanwhile, the electrification of the transportation sector will be accompanied by the rise of autonomous (self-driving) private and commercial vehicles. In time, this is likely to have a beneficial impact on rates of road fatalities and injuries, reducing pressure on emergency services, care and rehabilitation.

David McEwen is a Director at Adaptive Capability, providing strategic advice to help businesses create and preserve value in the face of climate change. He is also the author of the new book 'Navigating the Adaptive Economy'.

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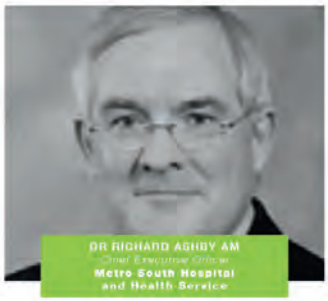

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