Hands off; Eyes ON

In our wide-open land, or during an pandemic, monitoring patients remotely can save lives.

Jan Hallam reports.

Everyone wants innovation, but no one wants to change. That old chestnut has been doing the rounds for a couple of decades now. And it has largely been true, until now.

The coronavirus pandemic response is demanding faster, inclusive and accessible solutions and tech in Australia is no longer the crazy cousin in the room but a key to saving not only lives but livelihoods.

We explore some of the impacts of telehealth on the delivery of care in the primary health space on Page 24. What telehealth has given GPs and their patients is accessibility where there have been regulatory and psychological barriers.

But what happens to vulnerable patients once they hang up the phone or walk out the door? If the practitioner thought it desperate enough to know the answers to that question, it inevitably meant a return visit at best or a hospital admission at worst.

Not necessarily, anymore. Remote patient monitoring is the next frontier of health technology that is being given a seat at the models-of-care table.

At the recent *From the Frontlines* conference convened by the Australasian Institute of Digital Health, the chief technology officer of Wearable Health Tech, **Ben Magid**, offered some insight into the collaboration between his company and RPA Virtual Hospital (**rpa**virtual) in Sydney.

Remote Medicine

Oncology to COVID

The **rpa**virtual models of virtual care have expanded from a limited number of patient cohorts at launch to being able to monitor COVID-19 positive patients while they are self-isolating, as well as virtual models of antenatal, paediatric, drug and alcohol, mental health and geriatric care for patients in hotel quarantine.

TempTraq, an adhesive patch which continuously monitors body temperature, flagging dangerous spikes with the monitoring centre based at **rpa**virtual, is causing much excitement.

Ben spoke to *Medical Forum* about its introduction and the country's dawning realisation that technology is a help not a hindrance.

"COVID-19 has broken down a lot of barriers within health systems. Voices that may have been drowned out a few months ago, have been heard as decisionmakers look for solutions to the current crisis in real time," he said. "There has been a massive scaling up and it's the simple things, which have been done laboriously for such a long time, that are changing."

Remote patient monitoring, given the circumstances of the pandemic, is a no-brainer and Ben said that it had already been road-tested and worked effectively for oncology patients.

For cancer patients and their carers, having post-chemotherapy temperature constantly monitored in their own home was a comfort and a relief.

Evidence from US studies completed in April 2017 by University Hospital Seidman Cancer Center, in Cleveland, found that temperature rise, from a person's own individual baseline, was detected quicker and antibiotics started 2.5 hours sooner than for people whose temperature was taken manually every four hours.

US figures show that fever indicated infection in 53% of all hospitalised patients, and 78% of neutropenic patients. Every minute counts.

No time to waste

"For each hour that treatment is delayed during septic shock, there is an approximate 8% increase in mortality," Ben said. "So, having remote technology that can alert patients and hospitals, means proactive steps can be taken. It's a simple concept that has dramatic implications for patients."

The challenge now in Australia is the expansion of hospital capacity to treat and monitor COVID-19 positive patients at home.

"Countries around the world are going through the same problem-solving. There is enormous pressure to conserve hospital beds for seriously ill patients," Ben said.

"Broadly speaking, state health departments have traditionally had their own patient communication platforms that have stymied uniform information sharing. But in terms of remote patient monitoring for vital signs and physiological indicators, there wasn't so much guidance in that regard.

"It's been up to individual hospitals or hospital groups to identify what would work for them and then act on it quickly.

"RPA Virtual Hospital in Sydney has been using TempTraq to manage its high-risk COVID positive patients at home or in hotel quarantine through the virtual hospital rather than a physical hospital.

"The challenge for WH Tech has been sourcing the technology amid extreme worldwide demand. The manufacturers are typically in the US and Europe and have been overwhelmed with global demand.

"So, lead times have been pushed out but we were lucky that one of the groups we partnered with early

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on have been able to ramp up their manufacturing."

So, how does TempTraq work?

The flexible patch works continuously for three days, is put under the arm and feeds data back to the patient's mobile device and to a dashboard at the central monitoring point via Bluetooth and LTE.

Ben said if the patient goes out of communication range, temperatures are internally stored so no data is lost.

Vitals in real time

Being trialled elsewhere is the Lifetouch patch, which tracks heart rate and respiration rate, in combination with pulse oximetry and blood pressure; useful early warning detectors in COVID patients, though it also has indications post-surgery, for infectious diseases, oncology, ICU and HDU.

"Anywhere higher acuity patients are at greater risk of deterioration," Ben added.

"Given that each person has a very different normal, being able to provide minute-by-minute data throughout the day and night, the system makes it easy for staff to identify trends and potentially act before a critical incident.

"A nurses' satisfaction survey was done about six months ago and the vast majority of nursing staff wanted to be doing more complex tasks. So, taking out some of those repetitive but absolutely critical tasks enables them to spend more time on some of those additional complex tasks which they've been trained to do."

While this is a standard model of care in the US, in Australia it has just found a beachhead at **rpa**virtual. The system-wide cost saving in terms of avoided hospital admissions is obvious but Ben said that because of the way the health system is structured, the costs accrue to the individual innovative hospital.

"We need a system-wide program and solution, which is why I'm excited about the recent *National Health Reform Agreement* because there are strong indications that innovative models of care will be funded in a different way," he said.

"There's not a whole lot of detail around but in speaking with hospital peak bodies, my understanding is that if hospitals want to propose an innovative model of care, they can work with their state health department and the Independent Hospital Pricing Authority to do that. And that is a huge step in the right direction in terms of breaking down those system barriers and driving sustained adoption of innovative models of care." MF