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rpavirtual: A new way of caring

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rpavirtual

introduction

The RPA Virtual Hospital, known as **rpa**virtual, is a new model of care which combines Sydney Local Health District's (SLHD) integrated hospital and community care with the latest digital solutions. **rpa**virtual was launched in early 2020 as an alternative, sustainable solution to increasing demand for healthcare in Sydney, where it acts as a bridge between hospital specialist services and patient care in the community.

A purpose-built Virtual Care Centre was established on the Royal Prince Alfred Hospital campus and equipped with 'Care Pods' that include videoconferencing technology and the ability to remotely monitor patients with wearables. Initial cohorts included community palliative care patients, patients at risk of readmission for wound care and patients with cystic fibrosis.

In response to the pandemic, **rpa**virtual was able to rapidly scale-up to provide virtual care for over 2,000 COVID-19 patients in quarantine. In addition, **rpa**virtual has also implemented the following models of care;

- care for patients in health hotel quarantine,
- medication monitoring for immune-supressed patients,
- mental health medication monitoring and wellbeing surveys,
- residential aged care facilities triage line and ambulance board monitoring, and
- a virtual fracture clinic.

Over 3,500 unique patients have been cared for in the first seven months of operation, with high reported patient satisfaction. As of 7 September 2020, 375 patients have provided feedback on their experience of virtual care. Of these patients, 87% rated their care as very good or good, 92% said they felt confident knowing that their symptoms were being monitored virtually, and 83% said the technologies used by **rpa**virtual improved their access to care.

When asked about the best part of their care, one patient said,

> *"The outstanding communication. Understanding when to call 000 and the oxygen detection device giving peace of mind. The nurses were exceptional in every interaction."* Another patient said, *"I really appreciated having happy, friendly staff call me each day. I was surprised at the level of care and attention I received. Well done and thank you."*

prior to the pandemic

Virtual models of care have been identified as reducing demand on 'bricks and mortar' hospital inpatient care and outpatient clinics. Virtual care can increase patient and carer satisfaction by supporting patients to remain in their own home rather than in hospital (Moore et al., 2020).

While there are examples of long-established virtual care services in NSW, these are largely hospital in-reach models rather than direct virtual care delivery to patients.

The SLHD population of 700,000 is projected to increase by 43% by 2036. Combined with increasing rates of chronic disease and a rapidly ageing population, an 84% increase in emergency department presentations is predicted by 2026. Analysis of population projections and service demand was a key driver in considering new, integrated and sustainable models of outpatient and community care.

SLHD commenced planning for a virtual model of care in late 2019. The initial emphasis was on developing the necessary infrastructure and governance for virtual care delivery and consulting extensively to inform the initial model of care. The collaboration work focussed on identifying opportunities with clinical specialties and primary care. An executive leadership was established including a General Manager, Clinical Director and Director of Nursing.

SLHD established **rpa**virtual in February 2020 as a twelve-month pilot program providing in-home and virtual nursing services for patients with chronic conditions.

On March 5 2020, **rpa**virtual began a rapid redesign to provide virtual health care to stable patients with COVID-19 in the community using remote monitoring.

A nurse manager's experience of establishing the first virtual hospital in NSW

"Establishing the first virtual hospital in NSW was an exciting challenge and opportunity to build on the legacy of our community nursing service. As a leadership team, we worked intensely with our key stakeholders to ensure the implementation of robust clinical models of care supported by the latest digital solutions.

Coming from a well-established career in 'traditional' nursing, I found myself catapulted into an entire new way of working with technology to provide excellent clinical care centred on the patient and their families and carers.

*I am so proud of **rpa**virtual and what we have achieved as a team. I hope that **rpa**virtual will continue to inspire future generations of nurses to embrace all opportunities and all technologies that benefit our patients".*

– Cassandra Dearing, Director of Nursing, RPA Virtual Hospital

rapid scale up

One of the most remarkable features of **rpa**virtual is the Hospital's ability to pivot and rapidly scale to meet demand safely, delivering hospital type monitoring in the community using digital innovations underpinned by robust clinical models of care.

This was first demonstrated in the rapid stand-up of **rpa**virtual and was further realised through its central role in the District's COVID-19 pandemic response. Prior to the advent of COVID-19, **rpa**virtual was in its first few weeks of operation and had not yet realised the full potential of the models of care and associated digital

solutions that it was capable of providing. The hospital had not trialled a large-scale clinical model of virtual care with remote wearable devices, although plans were in place to do so.

When the COVID-19 pandemic hit NSW, SLHD faced the critical necessity to respond, in a flexible, timely manner to COVID-19 and provide safe, high quality services; the pandemic was the driving force required to initiate immediate change within the organisation.

Expanding on existing digital infrastructure and workforce, **rpa**virtual implemented its COVID-19 model of care in just six days, with the first COVID-19 patient virtually monitored on 11 March.

For COVID-19 positive patients, wireless, Bluetooth-enabled devices include a disposable temperature patch to continuously monitor and record temperature and a pulse oximeter to monitor pulse and blood oxygen levels. The data is continuously uploaded to a web-based dashboard monitored remotely by the hospital's Virtual Care Centre. The nurses also gather information on respiratory rate and general wellbeing through video consults. Clinicians are able to quickly detect any patient deterioration and dispatch an ambulance if required.

Within 7 months our workforce grew from six nurses to a multidisciplinary service of fifty-one, including nurses, medical officers, psychologists, social workers, physiotherapists and midwives. Patient numbers increased in the same period from 69 to 3,002. We have provided virtual clinical care to patients from all Australian states and territories as well as more than 100 transiting passengers from overseas.

rpavirtual's position as a leader in virtual healthcare has been demonstrated by the overwhelming national interest in the clinical model and digital infrastructure. State level organisations, such as eHealth NSW and the NSW Agency for Clinical Innovation, have drawn influence from **rpa**virtual in the development of virtual care patient reported measures, virtual care strategy and COVID-19 models of care (eHealth NSW, 2020).

complex models of care

The **rpa**virtual COVID-19 clinical care model was quickly adapted and extended to domestic and international returning travellers, expatriates, and otherwise displaced NSW residents affected by NSW Public Health Orders and accommodated in SLHD Special Health Accommodation (SHA). The introduction of the first SHA in Australia in March was critical to enacting the requirements of the NSW Public Health Orders whilst prioritising the overall care of patients and families.

Video consults, remote monitoring technologies, escalation pathways and patient access to the Virtual Care Centre 24/7 has enabled timely identification of patient deterioration.

As of October 2020, only 5.7% of **rpa**virtual COVID-19 positive patients have required hospital admission, compared to the data on NSW wide hospitalisation rates which indicates 9.8% (O'Brien, 2020).

Over 1,300 COVID-19 negative patients in quarantine have needed complex clinical care. In the absence of **rpa**virtual, these patients would have required hospital presentation and admission.

rpavirtual patient cohorts have been selected under the categories of:

- hospital avoidance,
- ED avoidance,
- health maintenance, and
- pandemic response.

Specialist pathways available for patients in SHA (regardless of COVID-19 status) include:

- antenatal and obstetrics,
- paediatrics,
- drug and alcohol,
- mental health,
- aged care and geriatric medicine, and
- allied health.

Case study 1

'Mr D' a 35 year old man who arrived in Australia via cruise ship. Mr D was COVID-19 positive and was later also diagnosed with community acquired pneumonia and tuberculosis. Due to his conditions, Mr D was in health hotel quarantine for 67 days under the care of rpavirtual.

*The patient was referred to **rpa**virtual, after 10 days in ICU, for remote monitoring. Mr D received twice daily consults with a nurse, which included an overall assessment and observations of heart rate, temperature and oxygen saturation, any laboured breathing or psychosocial issues. The **rpa**virtual Care Centre was available to Mr D 24 hours a day, 7 days per week.*

*During his quarantine, Mr D had a further four hospital presentations. The **rpa**virtual clinical protocol enabled early identification of deterioration and appropriate hospital escalation. Mr D was discharged 67 days after being registered to rpavirtual. Upon his return home, Mr D sent the following email to **rpa**virtual;*

> *"Dear RPA Virtual Team,*
>
> *Good day! …We would like to extend our appreciation to all the staff nurses for monitoring us in the morning and evening, providing our meals and assisting our other requests. To the nurses who had joined the zoom meeting with us every day - we appreciate you for listening,*

answering our questions and being friendly. Because of your effort our condition improved and we recovered.

We are all with our family now. Yehey!!! Again, we are so grateful and overwhelmed for everything. Keep safe and God bless you all".

Case study 2

Ms T' is a 33 year old woman who arrived in Sydney from interstate and was diagnosed as COVID-19 positive. Ms T also had mental health concerns and sadly experienced an ectopic pregnancy.

*Ms T was registered to rpavirtual for remote monitoring of COVID-19 and for care during health hotel quarantine. Ms T had an ectopic pregnancy, and had a recent hospital admission for suicidal ideation. Through **rpa**virtual, Ms T was able to have virtual consults with a psychologist, social worker, and obstetrics registrar. **rpa**virtual was also able to prescribe and deliver medication.*

lessons learnt

SLHD's rapid establishment of the first virtual hospital in NSW, and its COVID-19 response has revealed key learnings from both an organisational and frontline perspective. These include:

- Virtual models are an essential component of future health infrastructure that have the ability to quickly adapt to the continuously evolving healthcare environment.
- The partnership between clinical and Information and Communication Technology services is critical in human centred design that focuses on the technology as an enabler of care.
- The majority of patients with COVID-19 will recover quickly and well, however this is unpredictable. A robust clinical protocol, that appropriately assess patient risk, is required for early detection of deterioration.
- A pandemic response has been the 'burning platform' required to affect cultural change and wide acceptance of virtual care as a modality of care.

The final lesson learnt is derived from the patient experience; the true indicator of the success of a program. The patient experience data demonstrates that clinician assessment, monitoring and treatment within the hospital context can be delivered safely via technology in the community environment; and, patients accept and respond well to comprehensive, supportive care delivered through virtual technologies.

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