eHealth NSW news

A YEAR IN REVIEW

DECEMBER 2020

NSW GOVERNMENT | eHealth

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Chief Executive's message

What a year 2020 has been. From bushfires to the COVID-19 pandemic, never before has our health system experienced such challenges. We've changed the way we do business, the way we work together, and even the way we live our daily lives. The uptake of virtual care has accelerated, as too has the use of our virtual conferencing and collaboration tools. As healthcare services become more reliant on Information and Communications Technology (ICT) and digital, the pivotal role of eHealth NSW in leading this digital transformation has become front and centre.

In this edition of eHealth News, we'll look back at some of those digital initiatives and recent achievements in the year that was. Together with our health agency and industry partners, eHealth NSW has achieved so much.

From the successful roll out of myVirtualCare to the launch of Telestroke services at four regional hospitals, and the establishment of the Virtual Care Accelerator, virtual care has played a huge role this year. Our industry peers recognised the infrastructure work underpinning the speed of these initiatives, with the Statewide Wi-Fi Network, picking up a gong in the health category as part of the 2020 Internet of Things (IoT) Awards.

Despite the pressures of the pandemic, we continued innovating, launching a new tool to support the detection of Sepsis via the eMR platform, and the introduction of state-of-the-art cameras in Intensive Care Units (ICUs) to improve the treatment of patients in remote locations.

We successfully transitioned the Cancer Institute NSW, NSW Ambulance Service and the NSW Health Professional Councils Authority across to eHealth NSW ICT services and continue to discuss how we can support other agencies and Local Health Districts with their technology requirements.

Our focus on enhancing cloud technologies and improving system resilience particularly around cyber-security continued, and we successfully launched three pilot sites for the Health Grade Enterprise Network at 1 Reserve Road, Coffs Harbour and Westmead. Both Nepean Blue Mountains and Western Sydney Local Health Districts also benefitted from the first deployment of the new digital medical imaging system, RIS-PACS.

Many of our foundational programs were also completed moving into phase two and further enhancements. After four years, the Electronic Record for Intensive Care (eRIC) is now available across 21 hospitals and has supported almost 65,000 patients. The new incident management system (ims+) has just surpassed 100,000 trained users, and NSW Health Pathology has a new, integrated billing system, delivered by eHealth NSW.

We've been recognised for the good things we do too, with eHealth NSW winning the first ever Community Program Award as part of the CIO50 Awards. In large part, this was a recognition of our partnerships with Local Health Districts, Specialty Health Networks, Ministry of Health, Pillars and Statewide Services, which have enabled us to work together as one health system to keep people safe and continue delivering world-class health services in spite of the challenges of COVID-19.

This edition, however, isn't just about the year that was. We'll also look to the future, highlighting our plans for next year including progressing the Single Digital Patient Record (SDPR) beyond this year's expressions of interest procurement activity, Real Time Prescription Monitoring and Patient Reported Measures. We'll focus our efforts on technology strategies, services and products that enhance person-centred care, support risk-based intervention, enable expanded healthcare settings, and assist our NSW Health colleagues to continue delivering excellent healthcare for our communities.

As we head into the break, and some time for a much-needed rest, I would like to wish you all a safe holiday period, and a happy new year. To all of you – I look forward to continuing in 2021 our transformation of a public health system which cares for NSW citizens from Albury in the south to Yamba in the north.

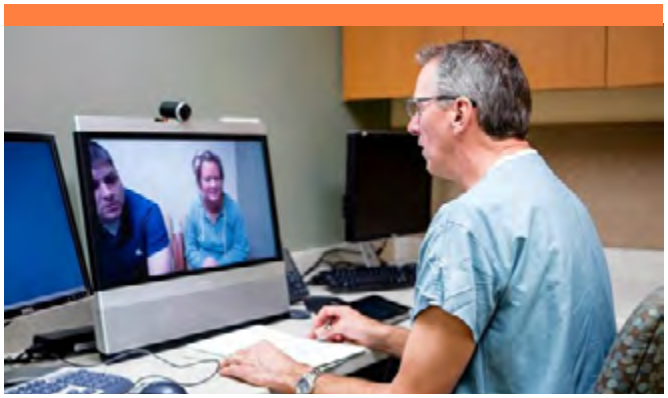
Happy new year, everyone.

Dr Zoran Bolevich

Chief Executive, eHealth NSW
Chief Information Officer, NSW Health

1. Virtual Care takes off

Accelerating virtual care across NSW Health



eHealth NSW and its key partners are accelerating and optimising the use of virtual care across NSW to safely connect patients with health professionals, delivering care when and where it's needed.

The Virtual Care Accelerator is a new multi-agency and clinically-focused unit established to ensure patients have full access to the best that telehealth-enabled models of care and remote monitoring have to offer – both during the acute response to COVID-19 and beyond.

Telehealth, video conferencing, remote monitoring and store and forward telemedicine (collecting clinical records and digitally sending them for review by senior medical practitioners at another site) are examples of virtual care.

According to Dr Shannon Nott, Clinical Director of the Virtual Care Accelerator, virtual care is designed to complement existing services by using technology to connect patients with clinical expertise.

"Healthcare professionals have been using technology to deliver care to patients for decades. Now, with advances in technology, the support for health professionals and benefits for patients are even greater," he said.

"Virtual care enhances access to health services, particularly specialist services, and provides patients with more choice about how and where they receive that care."

According to Program Director, Ian Schrader, the Virtual Care Accelerator has achieved a lot in a short time, and is now laying the foundation for the next five years.

Some of these achievements include:

- Developed a COVID-19 response strategy
- Rapidly upgraded the data centre capacity for the huge video and telehealth uptake
- Procured and distributed iPads for use in virtual care activities, in particular ensuring isolated patients stay connected, especially during COVID-19
- Implemented myVirtualCare a clinical waiting room and video-consultation platform
- Consulted and commenced rollout of the new critical care cameras and network providing clinicians with access 24/7 to specialist critical care advice
- Consulted broadly with NSW Health LHDs/SHNs on their virtual care needs, and offered support via a successful Expression of Interest process
- Consulted industry for remote patient monitoring platform capabilities to deliver a panel of suitable patient remote monitoring solutions
- Consulted and commenced the write up of virtual care exemplar models of care that will be shared across the state.

"During COVID-19 we saw unprecedented demand for virtual care services. We want to ensure that this significant investment benefits clinicians, patients, their families and the community for years to come," Mr Schrader said.

A computerised tomography (CT) scan combines a series of X-ray images taken from different angles.

Telestroke service provides best possible stroke treatments for patients

The NSW Telestroke service is bridging distances to deliver world-class stroke assessment, treatment and management – irrespective of location.

The $21.7 million service – an initiative of eHealth NSW, the Ministry of Health and the Agency for Clinical Innovation – connects expert stroke clinicians with local emergency physicians to quickly determine the best possible treatment plan for a patient.

Delivered via a statewide virtual hospital that specialises in stroke assessment and treatment, a referring hospital's emergency staff can consult with a specialist stroke neurologist via the statewide unified communications platform.

Centralised multi-modal imaging is accessible for all sites via the statewide Enterprise Imaging Repository (EIR), which allows specialists to review and assess a patient's brain scans in a secure environment – anywhere and anytime.

"Centralised imaging is a critical component of the NSW Telestroke service. Diagnostic and treatment decisions are based on acute stroke images," Professor Ken Butcher, Medical Director, NSW Telestroke Service Prince of Wales Hospital, said.

> "Regional Australians are 19 percent more likely to suffer a stroke than their metropolitan counterparts. Telestroke is a major step in the right direction."
>
> **Kate Jackson**
>
> Stroke Network Manager
> NSW Agency for
> Clinical Innovation

"Rapid access to the actual brain images, including advanced processed blood flow maps, is an essential part of the clinical workflow. The centralised approach has the additional advantage of access to historical images in patients presenting with an acute stroke."

Agency for Clinical Innovation Stroke Network Manager Kate Jackson recognised the importance of all NSW citizens having access to best-practice treatment.

"Regional Australians are 19 percent more likely to suffer a stroke than their metropolitan counterparts," she said. "Telestroke is a major step in the right direction."

A stroke is a medical emergency. Immediate treatment can save lives and reduce disability and the appropriate treatment depends on the type and severity of the stroke.

A CT scan is performed to determine whether the patient is experiencing an ischemic or haemorrhagic stroke.

Using the Telestroke model of care, the stroke specialist will decide if the patient is a candidate for clot busting drugs (thrombolysis) and/or surgery (endovascular clot removal).

A recent case in point involved Margaret Christian from Port Macquarie, NSW.

Around 9.45pm one evening Margaret noticed that the tingling sensation she had felt earlier in her arm had progressed to weakness and numbness of the arm and side of her face, and problems with her vision. Margaret was having a stroke.

An ambulance was called and by 10.30pm Margaret was in Port Macquarie Hospital. A call was made to the Telestroke service, who then contacted Dr James Evans, a Neurologist specialising in stroke and neurovascular imaging, 315km away at Gosford Hospital.

Using Telestroke, Dr Evans shared screens with Port Macquarie Hospital via the EIR system to view Margaret's scans. Once Dr Evans had assessed the scans, he prescribed thrombolytic therapy for Margaret.

After Margaret underwent thrombolytic therapy, she was transferred by fixed-wing aircraft to John Hunter Hospital in Newcastle where a surgical procedure to remove the clot blocking her brain artery was performed by Dr Ferdinand Miteff, a Neurointerventionist.

Two days after the successful procedure, Margaret was transferred back to Port Macquarie Hospital where she was subsequently discharged three days later.

Margaret had a good outcome due to a stroke specialist having immediate access to the EIR system to view her brain scans. Today, Margaret continues to live an active lifestyle and walks every day.

The Telestroke service is now live at Prince of Wales Hospital (which hosts the service) and at four regional hospitals, Coffs Harbour, Port Macquarie, Lismore and Orange. Deployments to Dubbo and Bathurst hospitals will also be completed before the end of 2020.

This month the service assessed its 200th stroke patient since going live in March. A total of 23 regional hospitals will receive the service over the next two years.

Interpreting service leading the way with myVirtualCare

COVID-19 is a rapidly evolving pandemic and is shaping a new form of delivering healthcare across health systems worldwide. The pandemic spurred a push for interpreting services to become more accessible to patients with limited English proficiency and patients who are deaf.

eHealth NSW and the Agency for Clinical Innovation (ACI) in partnership with Local Health Districts (LHDs) have developed a new Telehealth platform - myVirtualCare (myVC) - which enables remote delivery of care. The Health Care Interpreter Service (HCIS) in Western Sydney Local Health District (WSLHD) is an early adopter of myVC for video interpreting purposes.

Traditionally, interpreting in health has been delivered face to face with very limited phone delivery. As the pandemic unfolded, the HCIS in WSLHD embraced the new technology and started with remote delivery of interpreter services. The results have been incredibly positive.

"What would have taken us years to develop, took us just two months. From a single video interpreting session in January, we are now delivering over 300 sessions per month," Manager of the HCIS in Western Sydney, Gordana Vasic, said. "And we are expecting further exponential growth in this area. Video interpreting is here to stay and possibly become the predominant and safest mode of interpreting in the future."

WSLHD HCIS provides services in 130 languages thanks to 52 staff and 360 sessional interpreters. In order to deliver onsite services to distant hospitals, interpreters previously had to travel, increasing the cost of interpreting services.

Working closely with ACI and eHealth NSW, WSLHD HCIS participated in the development of Interpreter Virtual Waiting Room in myVC and commenced the pilot project with Blacktown Women's Health Clinic in March 2020. Over the next three months the trial resulted in savings of $30K for the District with 100 clinics using the video interpreting services by July.

The benefits of myVC are immense. Patients and carers can now connect from the comfort of their homes, and HCIS can run an unlimited number of concurrent sessions. Video interpreting is integrated into clinical telehealth care; connecting seamlessly with clinics which are also using myVC. Not only can HCIS now provide more timely services, myVC has reduced their unmet rate significantly.

"Historically, patients come to the hospital and our video interpreting model was built around the fact that patients and clinicians would be together. Then comes the COVID-19 pandemic and everyone moves to telehealth, so we had to adjust our services to support clinicians who see their patients remotely," Western Sydney HCIS Video Interpreting Lead, Tingting Chen, said. "We had to act fast and train as many interpreters as possible to adopt the new technology. We now have over 100 interpreters in 58 languages who are trained to use myVirtualCare".

The team says patients and clinicians have embraced this new avenue of service delivery.

"Patients find it convenient because there is no travel or waiting at the clinics. They also like seeing the interpreter on the screen and say it is like face-to-face interpreting," Tingting said.

Interpreters do not need to travel either and are very satisfied with the new technology.

"Visual cues are key for interpreters to understand the communication. Ability to observe what is happening in the consultation room, particularly when there are a lot of people involved, enables them to manage the interaction without intruding," Tingting said.

Telehealth services are shaping the future of health and improving care for all including people with hearing difficulties and limited English.

"Video interpreting is here to stay and possibly become the predominant and safest mode of interpreting in the future."

Gordana Vasic

Manager, Health Care Interpreter Service, Western Sydney Local Health District

The new RIS-PACS platform will store millions of medical images annually, including X-rays, CT scans, MRIs, nuclear medicine scans and ultrasounds

2. Clinical and Integrated Care - putting patients at the centre

Patients at the centre of safer, smarter and more streamlined medical imaging system

Six NSW hospitals are the first to benefit from a new medical imaging system that will provide a centralised solution aimed at increasing patient safety through critical results management and radiation dose tracking.

The new radiology information system and picture archiving and communication system (RIS-PACS) will also give clinicians instant access to previous images to assist with diagnosis. It also integrates with other NSW Health medical systems to provide a complete picture of a patient's health status.

Patient images will be accessible no matter the location, with people no longer having to store and carry films for their doctor, ensuring nothing gets lost along the way. All images will be stored on a secure and fully auditable system.

"Involving radiologists, ICT specialists and medical imaging users in the design helped us to shape how they will use it to deliver better patient care now and into the future," eHealth NSW's RIS-PACS Program Director David Cernjul said.

More than 1.8 million medical imaging studies are captured, used and archived annually across NSW Health, including X-rays, CT scans, MRIs, nuclear medicine scans and ultrasounds. Around one billion existing images will also be migrated to the new system.

Developed by eHealth NSW, RIS-PACS will provide a way for these images to be stored safely and for them to be readily accessible for clinicians, particularly those who work in rural or remote locations.

The patient-centred, state-of-the-art solution will closely integrate with other core clinical systems, including the electronic medical record (eMR), patient administration system (PAS) and enterprise imaging repository (EIR).

Once deployed at a total of 55 hospitals statewide by 2023, the system will give patients access to their own images and results via an online portal, as well as SMS reminders of appointments.

The treatment of patients with diabetes has taken a major leap forward thanks to the development of a Diabetes Dashboard.

Health data transforming diabetes care for NSW patients

The treatment of patients with diabetes has taken a major leap forward thanks to a recent eHealth NSW project, piloted in the South Eastern Sydney Local Health District (SESLHD), in conjunction with the Business Intelligence and Efficiency Unit (BIEU).

With up to 20 percent of patients in hospitals suffering from diabetes, including many with worse cases, that result in longer lengths of stay and a rate of re-admission up to 2.5 times higher than other illnesses, the Diabetes Dashboard provides an optimal solution.

Working with eHealth NSW throughout the process, the project has created a system that provides for multiple datasets from different clinical systems within the dashboard, vastly improving patient management.

Dr Sue Mei Lau from SESLHD says that the project was born from a diabetes forum identifying ways treatments and patient outcomes could be improved.

"This led to the development of a Diabetes Dashboard which identifies all admitted patients with diabetes in real time and places them into risk categories based on their glucose levels."

The Diabetes Dashboard leverages the recent transition to eHealth NSW's Electronic Medical Record (eMR2) and Electronic Medication Management (eMeds) projects, which capture these key diabetic data points electronically.

This allows for patient information to be updated automatically every 24 hours.

The pilot study at St George Hospital, led by Professor Tony O'Sullivan, demonstrated an 18 percent reduction in early unplanned re-admission after implementation of a nurse-led diabetes management team reviewing patients identified by the Diabetes Dashboard.

Since 2019, data has been collected to help inform the next stage of the project.

"With this data, we can understand which patients should be identified as high risk by the tool, test the effectiveness of the intervention and, in the next stages, identify patients who need it the most," Dr Lau said.

The next stage of the project will commence in 2021, allowing for continued understanding of the statistics and improved data management, which will lead to better health outcomes for patients.

Supporting end-of-life care with digital tools

Palliative-care patients will benefit from more coordinated, tailored and holistic support following improvements to how a person's end-of-life-care wishes, monitoring and assessments are recorded in NSW Health's electronic medical record (eMR).

Being piloted at community and inpatient services in northern Sydney and the mid north coast ahead of a statewide roll-out, the eMR End of Life Care solution features a dynamic, multi-disciplinary workflow that streamlines the specialist palliative-care referral and consultation process.

The digital solution replaces paper-based processes previously used to record a patient's preferences for medical care at the end of their life.

Regardless of where a patient is being treated or by whom, this integrated and comprehensive solution will assist clinicians in specialist and non-specialist palliative-care settings to respect and uphold a patient's care preferences at a time when they may be unable to communicate them.

"This will help all clinicians to support patients, carers and families at the most difficult of times, ensuring their needs are met with the respect and compassion they deserve," said Associate Professor Amanda Walker, a specialist in palliative medicine.

Working with specialists such as A/Professor Walker and technologists, the state's digital health agency, eHealth NSW developed an eMR End of Life Care solution to help people with life-limiting conditions to maximise their quality of life and ensure comfort for those facing a terminal illness.

The eMR End of Life Care solution is "a monumental step" in digitising paper-based processes, said Professor Katy Clark, Clinical Director of Palliative Care at Northern Sydney Local Health District's Cancer and Palliative Care Network.

"A person's preferences for medical care at the end of their life must be respected and upheld, especially in the distressing situation when people with progressive disease are unable to communicate those wishes," Professor Clark said.

In developing the enhancement, a Design Working Group co-chaired by Professor Clark explored how the eMR could better support patients and their clinical and non-clinical palliative-care teams.

"We have a responsibility to the patients in our care to ensure their needs are met, no matter who is providing the care and where this care is being delivered," Professor Clark said.

The eMR End of Life Care solution is being piloted at Coffs Harbour Health Campus, Bellinger River District Hospital, Macksville District Hospital, Dorrigo Health Campus, Port Macquarie Base Hospital, Kempsey District Hospital and Wauchope District Memorial Hospital.

A second pilot took place in Northern Sydney LHD in August, after which the results of both pilots will be evaluated ahead of a wider roll-out across NSW Health.

Adult Electronic Record for Intensive Care (eRIC) program phase one formally closed

The Electronic Record for Intensive Care (eRIC) is a state-of-the-art clinical information system which improves the safety and quality of care offered to critically ill patients in Intensive Care Units (ICUs).

eRIC integrates patient data every minute from multiple systems and devices, supporting better clinical decision-making, with the system now fully operational.

"Phase one of the Adult eRIC program is now complete and we're thrilled with the outcomes we've accomplished for intensive care patients and clinicians across NSW," said Chris Edwards, Program Director.

"We've digitised some complex processes and reduced the time clinicians spend documenting data, enabling a greater focus on patient care. It's been a long but worthwhile road to delivering improved patient safety."

Today, eRIC is available at nine LHDs in 21 hospitals with 442 ICU beds across NSW. It's also on standby to support the COVID-19 response – the Clinical Applications Support team quickly ramped up the system capacity to support around 582 additional beds.

Receiving eRIC in winter 2019, Dr Priya Nair, ICU Director at St Vincent's Hospital in inner-Sydney explained the benefits she saw for clinicians. "eRIC gives us the ability to view and complete parts of the ward round away from the bedside, enabling medical teams to focus completely on patient examination and communication at the bedside, rather than focusing on flowcharts or monitors."

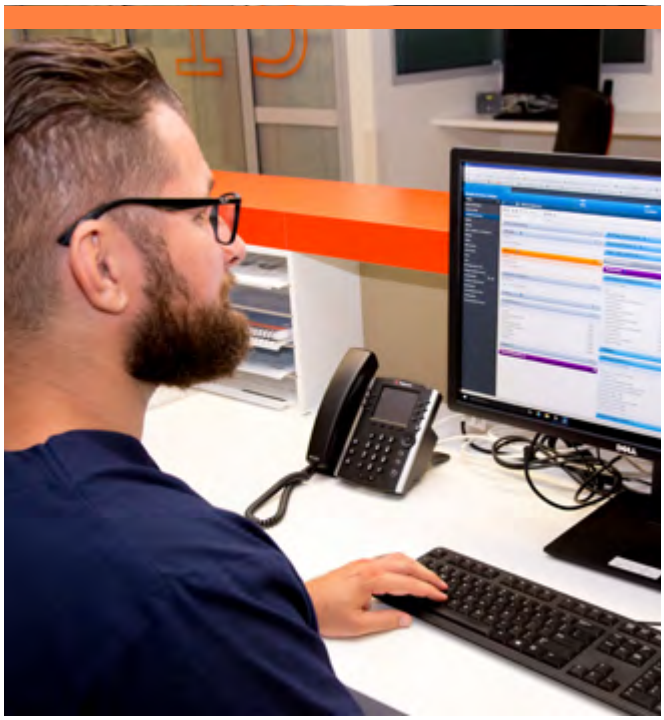
eHealth NSW CE, Dr Zoran Bolevich formally closed the program in December, thanking the team for their hard work, and sharing some memories.

"The thing that convinced me of how successful eRIC could be was seeing the number of clinicians involved throughout eRIC's development," he said.

More than 170 clinicians were involved in the design and build phases of the program. More than 20,000 clinicians have been trained on eRIC. And so far, almost 65,000 patients have benefitted from better quality, safer care.

Over the next few years, the integrated transitions of care (iTOC) project will connect ICU and general ward systems, making it faster and safer for clinicians to transcribe medications.

The team will also be customising eRIC for the unique needs of the Neonatal and Paediatric ICU environments, and the learnings from the initial program will be implemented as eHealth NSW strives to provide better, more patient-centred care across our system.



Adult Sepsis Pathway tool enters trial phase at Prince of Wales Hospital

As many as one in five deaths worldwide are related to sepsis, a time-critical medical emergency in which the body responds so severely to an infection that it starts to attack and injure its own tissues and organs.

To combat this, a new tool designed to enhance patient safety is being piloted at Prince of Wales Hospital. The Adult Sepsis Pathway will provide clinical decision support to improve the early detection of suspected cases. It assists with escalation, diagnosis, and the provision of guided treatment options.

The 10-week pilot is the result of a partnership between eHealth NSW and the Clinical Excellence Commission (CEC), with the Prince of Wales Hospital Emergency and Inpatient services the first to use the new single module package within the NSW Health eMR (electronic medical record) system.

The new Sepsis Project Team L-R: Phillip Shipton, Malcolm Green, Natasha Mc Brearty, Nikita Donnelly, Michael Breeze, Wendy Cotter, Jacqueline Ben-Haim, Marcus Rummler, Kerry Kalantzi, Danica Furtula, Janice Munday & Simon Pullen. Prudence Shaw & Emma Kilsby (absent).

In developing the solution, a governance group (Sepsis Expert Advisory Group) with representatives from the Clinical Excellence Commission (CEC), Local Health Districts (LHDs) and eHealth NSW was formed to guide the design and make decisions regarding the Sepsis Pathway.

To meet the demands of the rollout, the eHealth NSW project team implemented the solution into the pilot domain at South East Sydney LHD, as well as providing hands-on support for pre-pilot and pilot onsite to assist the LHD team.

With a successful pilot implementation in place thanks to the hard work and dedication of all those involved, the team is now awaiting the pilot evaluation and benefits, with the aim of a roll-out of the Adult Sepsis Pathway across all NSW LHDs.

When it is rolled out, the Adult Sepsis Pathway will provide improvements in patient safety, quality and clinical care, including early assessment, escalation and treatment of patients with suspected sepsis.

It will also reduce clinical variation in assessment and treatment of sepsis, improve reporting functions and other key measures, and provide visibility of the patient management plan on transfer of care.

Improved clinician experience through the use of guided ordering, based on the CEC's Adult Sepsis Pathway and the Therapeutic Guidelines for Sepsis and Septic Shock, will also be provided.

According to a report published in medical journal The Lancet, there are three times as many cases of sepsis – and almost twice as many Australians dying from it each year – than previously thought.

The Global Burden of Disease study used data from 109 million death records and 8.6 million hospital records in 195 countries and territories to estimate the burden of sepsis around the world.

It found there were 49 million sepsis cases and 11 million deaths in 2017 – double previous estimates – with as many as one in five deaths worldwide related to sepsis.

Patient safety enhanced with data-driven innovation

Every day is World Patient Safety Day for eHealth NSW with much of our work focused on minimising patient harm in our health system. In collaboration with the Clinical Excellence Commission (CEC) and the Ministry of Health, eHealth NSW has recently completed a 10-month trial of the Pascal Metrics Risk Trigger Monitoring (RTM) tool at both Prince of Wales and Blacktown Hospitals.

eHealth NSW provided the tool to help clinicians capture real-time combinations of incidents (events) within the electronic medical record (eMR) that may indicate patient harm. Traditionally, this has been particularly difficult for clinicians because paper-based systems are time-consuming with many indicators only discovered after patient discharge.

The Pascal Metrics RTM tool however allows clinicians to track up to 75 identified triggers and analyse them in real-time allowing far earlier detection of patient harm and much quicker intervention.

According to the World Health Organisation (WHO) 80% of incidents involving patient harm are considered avoidable. The Pascal Metrics RTM tool is proactive in the measurement of patient harm and claims to, pending evaluation, capture ten times more incidents than current reporting measures.

Dr James Mackie, Medical Director, Patient Safety at the CEC says that trigger tools are a powerful method for detecting harm yet are usually quite limited by being labour intensive and often a late indicator with the patient having already left the hospital.

“Pascal Metrics, however, facilitates real-time monitoring of triggers, enabling early improvement interventions to minimise or prevent harm.”

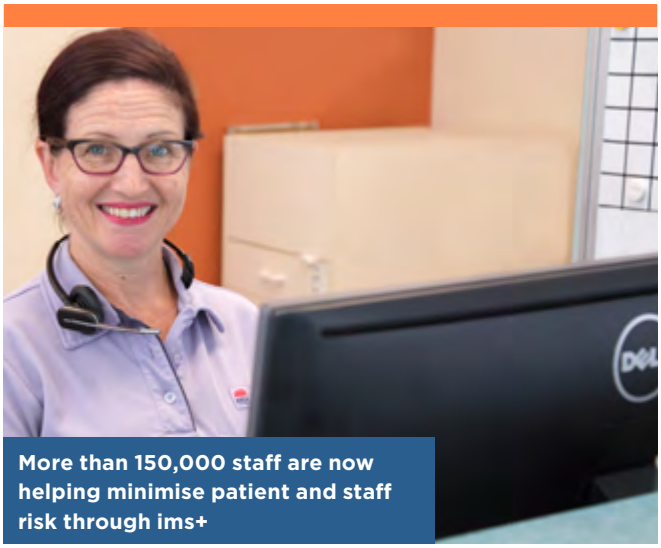
As well as providing frontline staff with real-time data to support their decision making, the tool enables local teams to see the most prevalent as well as the most severe patient safety issues. This helps them to focus on improving areas with the highest patient benefits.

Two different implementation methods were tested at the pilot hospitals. One opting for a tried and tested approach with the other adapting to internal resource limitations. Blacktown hospital used a standard control tower method where a single, dedicated Patient Safety Officer reviewed all triggers and information available through the eMR. The Prince of Wales Hospital team opted to use existing hospital resources, with monitoring undertaken by a Clinical Nurse Consultant who already knew the patients. This enabled quicker review of trigger indicators which were then later authenticated by a Patient Safety Officer.

The trial is currently undergoing evaluation by Macquarie University with further pilots dependent on the study’s findings.

3. Corporate and Business Services - supporting our colleagues

ims+ hits significant milestone with all NSW Health organisations now live on the new system



More than 150,000 staff are now helping minimise patient and staff risk through ims+

Improved care and increased patient and staff safety at NSW hospitals and medical facilities is at the forefront of a new incident management system. ims+ is now live in all Local Health Districts, Specialty Service Networks and Pillars, and across NSW Ambulance.

At its heart, the aim of ims+ is to improve the quality of care for NSW residents, with the software providing incident notifications and simple to use management processes. The benefit is the data which is being used for improvements to clinical care, staff safety and wellbeing, and to map incident trends and location issues.

To date that's meant as many as 100,000 incidents reported on the new system. "It shows that there has really been a great uptake of the platform, and that will only help to improve patient safety in the long run," ims+ Program Manager Pranay Mehta said.

"A culture of reporting incidents is what we want to promote within NSW Health, which will lead to more investigations and learnings and hence improvements in safety and quality of care, which is what ims+ is all about."

The cloud-based ims+ solution is now fully operational, replacing paper-based reporting and an outdated electronic system, with a single, fit-for-purpose setup.

Staff who are already using the new system say it's quicker and easier to use, and can be easily accessed, anywhere and anytime. Those adding incidents into the platform can also request feedback once the incident has been finalised.

"We have had a large number of compliments as well via ims+, something that the previous system did not cater for. It's great to appreciate the hard work of health care staff and workers," Pranay added.

The ims+ incident management system has been named as a finalist in the 2021 iTNews Australia Benchmark Awards for the health category.

Cloud systems at the heart of improved patient care

Having systems in the cloud rather than on-premise is a pivotal part of the digital transformation of NSW Health. Shifting ICT services to the cloud offers greater scalability and flexibility as well the ability to build once and reuse common digital platforms, architecture and services across the organisation.

"We've listened to our customers and we're now drawing on cloud computing solutions to bring greater agility and unlock further innovation," said Farhoud Salimi, Executive Director, Service Delivery, eHealth NSW.

In keeping with the NSW Government's Cloud Strategy and eHealth NSW's Infrastructure Refresh Project, the move to the cloud is enabling us to modernise legacy systems to support essential healthcare services, and take advantage of new cloud capabilities such as artificial intelligence (AI), machine learning and data analytics. These cloud-based services have enabled NSW Health to fast-track the delivery of multiple projects, including critical initiatives that formed part of the State's COVID-19 pandemic response.

The State Health Emergency Operations Centre (SHEOC) Quarantine Exemption Unit operates a cloud-based call centre, which eHealth NSW set up in just 10 days, for people seeking information on such things as mandatory hotel quarantine.

A range of functional tools and applications integrated into the NSW Health electronic medical record (eMR) platform, the State's core medical management system, are also cloud-based, providing an anywhere, anytime solution for our hospitals and specialist medical services.

Cloud-based solutions have also helped improve NSW Health's financial reporting, through the Oracle Enterprise Performance Management tool, as well as providing email archiving tools to support NSW Health staff statewide.

The eHealth NSW-managed Clinical Information Access Portal (CIAP), which provides information and resources to clinicians to support evidence-based practice at the point-of-care, is also the first server-less workload transformation completed as part of the eHealth NSW workload refresh strategy.

"We're empowering health entities to leverage these capabilities in partnership with us," said Adam Stanzione, Cloud Services Manager, eHealth NSW.

"We've built basic guardrails into these products to help reliability and security. With a few clicks via the Service Catalogue within SARA, our customers can now be set up with their own virtual data centre in just one business day."

To date, the Ministry of Health, NSW Health Pathology, North Sydney, Central Coast and Hunter New England Local Health Districts have all been onboarded to NSW Health's statewide cloud platform. This brings the number of NSW Health cloud instances to over 200 which is a significant achievement towards meeting the NSW Government Cloud Adoption targets.

> "Our customers can now be set up with their own virtual data centre in just one business day."
>
> **Adam Stanzione**
>
> Cloud Services Manager,
> eHealth NSW

Delivering whole-of-government PPE warehousing

As Australians stocked up on masks and household items and the shelves in supermarkets were stripped bare, hospitals and other health facilities were furiously placing orders for personal protective equipment (PPE) to keep NSW Health staff safe in the fight against COVID-19.

"HealthShare NSW was inundated with PPE orders and turned to eHealth NSW to request a new PPE tracking system. Instead, the team delivered a whole-of-government PPE warehousing model built within StaffLink (NSW Health's human resources system) in less than a week," says Ryan Jehn, Director, Corporate Applications.

Working in partnership with HealthShare's Supply Chain group, the team measured current PPE inventory across the state enabling them to forecast future demand. This led to the design and implementation of a whole-of-government warehouse model in StaffLink. This new model allows NSW Health to receive and manage stock from vendors, into warehouses and out across health services and other government departments. This includes determining how best to distribute PPE and being able to track usage in order to forecast when the next order needs to be placed.

"eHealth NSW provided us with the warehousing model we needed," says Sharen Ozcan, Associate Director, Supply Chain Operations, HealthShare NSW.

Normally a project of this scale would take months, but by pulling in additional resources and fast-tracking approvals, the team configured this system in under a week. With this success in hand, the team then went on to partner with PwC to further improve data and analytics capabilities around PPE.

The system can now also:

- transfer the PPE inventory data into reporting for the State Health Emergency Operations Centre (SHEOC) and the Public Health Emergency Operations Centre (PHEOC)
- produce reporting dashboards to show LHD PPE purchasing patterns (HealthShare vs external vendors) to improve demand management
- provide an indication of how fast LHDs use PPE

4. Infrastructure - providing the foundations for digital transformation

Health Grade Enterprise Network pilots deliver results

Patient Wi-Fi, digital imaging for radiology, and critical clinical systems such as electronic medical records. Each of these helps provide the best possible healthcare to the people of NSW.

Designed to improve the experience of patients, families and staff, all of these innovative systems rely heavily on IT infrastructure to function at their optimum.

To ensure this can be achieved, eHealth NSW piloted three Health Grade Enterprise Network (HGEN) projects over the past two years, aiming to reduce IT complexity in hospitals.

Developed in partnership with global IT service provider Nippon Telegraph & Telecommunications (NTT), Local Health Districts (LHDs) and NSW Health, the projects were a test case for the timely integration and delivery of new statewide IT projects.

Westmead Health Precinct, Coffs Harbour Health Campus and 1 Reserve Rd, St Leonards have been home to the pilot projects, and featured both wireless and wired network infrastructure.

The choice of locations has provided opportunity to improve services across complex environments, with the Westmead Health Precinct covering multiple key sites.

These included the new multi-tenanted Central Acute Services Building (CASB), the University of Sydney, and the Sydney Children's Hospital, where the medical centre is now part of HGEN.

It is a significant milestone for the Sydney Children's Hospital Network and the HGEN initiative.

The first major elements of the Coffs Harbour HGEN pilot have also been completed ahead of schedule, with wireless and wired networks now operating in the existing hospital building.

They are also ready to integrate at the new clinical services building currently under construction.

Coffs Harbour is the first regional facility to adopt the HGEN approach and will operate a full as-a-service model, managed by Mid-North Coast LHD in partnership with eHealth NSW and the service provider, Optus.

The fast tracking of activity at Coffs Harbour has been supported by the clinical teams who saw an immediate lift in performance, reliability and consistency with HGEN.

The final pilot, the new metro services building at 1 Reserve Road, St Leonards, was HGEN-ready when ten NSW Health agencies began relocating to the building in July.

An independent evaluation of the pilot by KPMG Consulting found that each pilot site successfully delivered the forecast efficiencies and benefits.

Award winning Statewide Wi-Fi network provides outstanding healthcare for NSW

One of the largest wireless network investments in NSW is giving clinicians anytime, anywhere access to digital health records, supporting excellence in healthcare for the people of NSW.

More than 150,000 NSW Health staff now have the ability to connect seamlessly via Wi-Fi across more than 530 sites, with the wireless network a key enabler in the delivery of modern healthcare.

It supports an automatic and uniform wireless experience for people travelling between NSW Health facilities, making it possible for clinical and non-clinical staff to communicate more easily, collaborate, and consult in real time.

NSW Health clinicians and staff work across multiple hospitals. Today, whether you work at Prince of Wales or Westmead Hospital, or in regional NSW, you have wireless access to the statewide network.

This enables staff to communicate and collaborate using Skype for Business or Microsoft Teams, and supports efforts to deliver free Patient Wi-Fi. Telehealth use cases involving partner organisations are also supported through the network.

On any given week, up to five terabytes of network traffic traverses the secure wireless network, providing access to statewide services and supporting the clinical needs of hospitals, health organisations and facilities across NSW Health.

The statewide wireless network has provided a foundation for the Internet of Things and is enabling a massive scale-up of telehealth initiatives including Telestroke for 23 regional and rural hospitals, and virtual care iPads for isolated and palliative care patients.

Patient Wi-Fi allows patients to remain in contact with family, friends and for children to continue with their education, with the MyFoodChoice system also providing patients with a way to order their food at their bedside on iPads.

The wireless network is helping to deliver eHealth NSW's vision for a digitally-enabled and integrated health system, providing patient-centred experiences and quality health outcomes.

By design, the statewide wireless network leverages other eHealth NSW infrastructure including the Health Wide Area Network (HWAN). The system offers high-speed performance and built-in resilience, with back up connections automatically activated.

It plays an essential enabling role as a high-speed backbone for the delivery of clinical systems such as the electronic medical record (eMR), electronic medication management (eMeds), medical imaging and pathology reporting solutions.

Delivered in partnership with a cohort of third-party providers, the platform has achieved significant time savings as well, with application implementation processes reduced from an average of 600 hours to just 12 hours.

There have been flow-on benefits too, with reductions in food wastage costs and increased patient satisfaction levels as a result of access to MyFoodChoice. Free or low-cost Patient Wi-Fi is also delivering better patient outcomes by enabling social digital connections.

This has led to improved patient social wellbeing, reduced social isolation during COVID-19 visiting restrictions, improved access to public health information, and the ability to continue studying while being in a hospital school.

Access to online entertainment has reduced boredom while in hospital as well.

The multiyear project has also been recognised by the Internet of Things Association of Australia, recently winning an IoT Award in the health category.

Parenting classes go digital in the Hunter region

Pregnant couples across the Newcastle and Hunter regions are benefitting from a switch to Skype for Business by John Hunter Hospital (JHH) Parenting Education.

When the impact of COVID-19 began to affect most aspects of life, the Parenting Education Unit adapted quickly to switch to a virtual classroom scenario, well ahead of Hunter New England Local Health District's (HNELHD) planned adoption of Skype for Business later in the year.

Despite the success of the change, Jane Shields, Clinical Midwife Consultant and Donna Griffis, Midwifery Training Educator were nervous about the switch.

"We knew something was going to happen," Donna said. "Jane [Shields] had said 'we've got to think about going online [with our classes]'. So about 16 March we had to stop running our face-to-face classes, the nation went into lockdown on 23 March and on 26 March we gave our first Skype class."

The previous 12 hours of face-to-face learning has been condensed into 4.5 hours of online classes, broken up into 90 minute sessions on topics including labour and birth, breastfeeding and newborn baby.

"We had feedback that people who wouldn't normally attend our programs would come." said Jane Shields. "It was free, but it was more accessible to them, or they may have been too shy to actually attend a face-to-face program,"

Another benefit the Skype for Business classes have provided is to the Culturally and Linguistically Diverse (CALD) couples who are able to access these ante-natal services, with an interpreter.

The availability of online classes has seen a rise in the number of CALD patients attending, boosting education and awareness for parents-to-be in the Hunter New England region.

Midwife Julie Nagy giving a breastfeeding class via Skype for Business

An additional upside is the way in which the digital change has bought colleagues together, with Donna working to train 22 educators from HNELHD, despite limited platform experience.

Jane described herself and Donna as "literally crash test dummies for Skype", but the duo were focused on helping their clients with the move to virtual classes.

"Some of our clients were quite tech-savvy and confident, some wouldn't turn their cameras on. This was difficult for the educator as it was like talking to a blank screen with little engagement or feedback. Once our confidence grew, we became better at encouraging participation and interaction," Jane said.

Human and technical challenges aside, the JHH Parenting Unit has become the central hub for parenting education programs across the district and its 14 maternity sites (including John Hunter Hospital) with the majority of those previously running their own parenting education programs.

"One big benefit of Skype for Business is collegiality across our profession and within parenting education across HNE, so everyone feels part of something bigger and that we're able to offer support in other areas now."

She also praised the platform in making meetings more succinct and its capability as a way to connect with colleagues.

As the service transitions back to COVID-safe, face-to-face programs, an online component is being considered as a part of the unit's offering going forward.

5. Previewing what's big in 2021

Single digital patient record set to deliver vastly improved patient experience

With a focus on improved safety, and the quality and continuity of patient care, the single digital patient record initiative will provide a consistent experience for patients and clinicians, as well as improving data analytics and clinical decision support.

To be developed in partnership with industry, the Single Digital Patient Record (SDPR) system, will provide holistic medical information at the point of care. The single platform will incorporate Patient Administration System (PAS), Electronic Medical Record (eMR) and Laboratory Information Management System (LIMS) capabilities.

"While this initiative will provide untold benefits to all the patients of NSW, we are excited about its potential for improving the health outcomes of our regional patients," Dr Andrew Montague, Chief Executive, Central Coast Local Health District said.

"By enabling greater collaboration across all local health districts and specialty health networks, the Single Digital Patient Record will provide clinicians with even better tools to keep the patient at the centre of everything we do."

The SDPR will consolidate geographically fragmented eMR, PAS and LIMS systems to create a detailed lifelong patient record and deliver cost savings. It will also help provide data that can be used to improve health services.

"The eHealth NSW strategy aims to deliver world class, digitally-enabled, integrated, patient-centred healthcare and will position us well to deliver against the Future Health Strategy for NSW," Andrew Perkins, Executive Director, Investment, Strategy and Architecture, eHealth NSW added.

"The concept of a Single Digital Patient Record will transform the way we deliver healthcare, and most importantly, will improve the safety, quality and consistency of patient care."

The SDPR will provide patients with a more seamless care experience by allowing NSW Health clinicians to be better informed, ensuring patients will only have to provide their health information once, even if they need to go to different hospitals.

It will give patients the confidence that regardless of where they live or which service they attend, their information will be available to their treating clinician in its entirety.

"Our vision is to be able to provide a single, holistic, statewide view of every patient – and for that information to be readily accessible to anyone involved in the patient's care," Dr Zoran Bolevich, Chief Information Officer NSW Health, Chief Executive eHealth NSW said.

"A key vehicle for this vision is the Single Digital Patient Record initiative."

In October 2020, eHealth NSW released an Expression of Interest (EOI) for SDPR with the view of identifying a shortlist of suppliers. Successful applicants will proceed to the next procurement stage in early 2021. The initiative is expected to be implemented over a period of six years following successful completion of the multi-step procurement process.

"Our vision is to be able to provide a single, holistic, statewide view of every patient – and for that information to be readily accessible to anyone involved in the patient's care,"

Dr Zoran Bolevich

Chief Information Officer NSW Health,
Chief Executive eHealth NSW

Patient Reported Measures provides tailored health care for patients

By changing conversations from 'what's the matter with you?' to 'what matters to you?', clinicians and service providers will have a deeper understanding of their patients concerns and lives. In turn, it is expected that patients, families and carers will have improved health care experiences.

With a focus on patient-centred care, Patient Reported Measures (PRM) will enable clinicians and service providers to deliver tailored healthcare, and allowing those in need of care to provide direct and timely feedback on their experience. The PRM program gives patients the opportunity to communicate with their health professional and tell them how their illness or care impacts on their health and wellbeing. It also captures information on the patient's experience with various services.

Through the routine collection of data, using patient reported measures, health professionals will have a deeper understanding of a person's disease burden, symptoms or treatment impacts, and will be able to provide more holistic care.

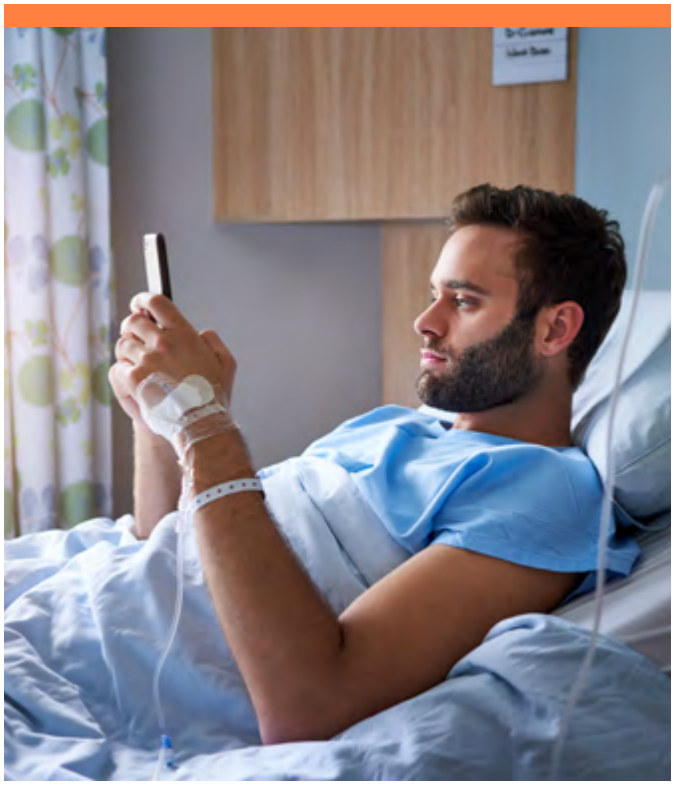
Aimed at producing better health outcomes, the program is part of a larger experience initiative known as the Health Outcome and Patient Experience (HOPE) platform, which has been co-designed with significant input from consumers, carers, clinicians and service managers.

Access to the platform is provided via an easy-to-use online portal that will capture survey responses based on patient health outcomes and experiences of care. The surveys will be completed over the course of the patient or carer's healthcare journey to ensure their care team better understands what matters to them.

Healthcare teams will then have immediate access to reports and dashboards, as well as the ability to run their own reports. The aggregate data will be used to celebrate what is working well across health services and will also drive improvements in service delivery.

NSW Health will also use the aggregate data to evaluate progress towards a value-based healthcare system: measuring outcomes and experiences that matter to patients.

The PRM/HOPE platform is set to go-live in one Local Health District in NSW early in 2021. Following that initial roll out, it will be delivered across the state.



6. Continuing support for the COVID-19 response

Fighting COVID-19 with digital triage tools

When COVID-19 struck, NSW Health moved swiftly to protect the state's 7.5 million residents and the 150,000 staff members who care for them.

Central to this mammoth effort was a digital triage screening tool, which was built and rapidly deployed within electronic medical record (eMR) systems across the state from 24 January – the day before the first Australian case of coronavirus was confirmed in Victoria.

The first of its kind in Australia, NSW Health's digital triage tool has helped patients to get quicker diagnoses and treatment, bolstering efforts to fight a deadly virus which has infected more than 11.7 million people globally to date.

As the acute response to COVID-19 has evolved, so too has NSW Health's eMR COVID-19 Assessment Tool, otherwise known as eCAT.

Developed with input from the Ministry of Health's Public Health Emergency Operations Centre and the Agency for Clinical Innovation's Emergency Care Institute, eCAT supports clinicians with screening questions, alerts and a list of patients who are either confirmed or suspected of having COVID-19.

Every second day the state's digital health agency eHealth NSW collaborates with local health districts (LHDs) and specialty health networks (SHNs) to enhance the way in which eCAT supports triage and assessments in emergency departments and inpatient wards. Chief Information Officers and LHD/SHN technical teams are also involved.

"Such a collaborative effort to design, build and deploy a digital triage tool at speed had helped to support NSW Health's response to COVID-19," said Sophie Tyner, Director of the Ministry of Health's Office of the Chief Health Officer.

"This is a wonderful example of NSW Health agencies working together very rapidly to adapt existing systems to respond to a rapidly evolving situation," Ms Tyner said.

All local health districts with Cerner eMRs are now using the key screening and assessment components of eCAT, with an increasing number using the COVID-19 patient list.

eHealth NSW has designed a detailed COVID-19 consultation workflow which will enable clinicians to undertake more detailed assessment and management plans for patients.

Given NSW's success with reducing the curve, and a decreasing number of COVID-19 patients now being treated in its public hospitals, the focus has turned to outpatient and community-based care.

Supporting this work is a group of Chief Clinical Information Officers plus representatives of the State Forms Committee and the State Health Emergency Operations Centre, who together are ensuring eMR workflows reflect changes to policies and guidelines triggered by COVID-19.

Continuing to support the COVID-19 response throughout 2020

Launched **eCAT** (**digital triage tool**) to over 160 NSW Health sites in January 2020

Stood up the **State Health Emergency Operations Centre** HQ in 3 days

Cyber Security rapid response team formed

Developed a **COVID-19 dashboard** for the Premier's Office

Launched **Personal Protective Equipment (PPE) mandatory training** in My Health Learning

Expanded Pexip **virtual conferencing services** into Amazon Web Services (AWS) cloud

Automated **Incident Controller's Daily Report**

Integrated **COVID-19 test results** into **HealtheNet** and **My Health Record**

Analysed, monitored and **tracked PPE consumption** across LHDs

Established a **new Data Intelligence Function** to support the Secretary

Provided AWS cloud solutions for **quarantine exemptions** group and a **cloud call centre** for contract tracing and the NSW Health COVID-19 hotline

Rapid deployment of **patient Wi-Fi** across multiple hospitals

Delivered the NSW Health **employee SMS system**

Deployed 1,149 **mobile phones** to paramedics

Set up a dedicated **PPE Advice Line** for NSW Health staff

Continuing to support the COVID-19 response throughout 2020

Piloted an **LHD Inventory Management solution** as part of the COVID-19 Supply Chain Reform work

Enhanced the statewide **Patient Flow Portal** for real-time capacity monitoring

Supported up to **1 million participants meeting virtually** each month

Provided **analytics and reporting on PPE stock** and usage in hospitals

Enhanced **StaffLink** so LHDs can **order** from HealthShare's **Pharmaceutical Stockpile**

Rolled out a **desk booking system** for all eHealth NSW office sites

Deployed a **COVID-19 virtual agent** for staff in SARA

Assisted with ICT and field hospital **surge planning** across the system

Rolled out **Microsoft Teams and Skype for Business** to 150,000 staff