



## Message from the Board Chair and Chief Executive

Metro North is an industry leader in many ways. We take pride in our ability to provide excellent person-centred care not only in our five hospitals and our community-based services, but also in people's homes and across the state through telehealth and outreach services.

During 2018-19, Metro North delivered even more services. Admissions from the emergency departments increased by 4,975 and there were an additional 8,767 presentations to EDs. Across our services, our staff performed 40,225 emergency and elective surgeries. In addition, we provided 1.5 million outpatient occasions of service, 58,018 more than the previous year.

To meet this demand, we invested \$2.947 billion in care, up from \$2.758 billion in the previous financial year. Despite the significant increase in demand for services, this year we achieved a modest operating surplus of \$4.3 million, an indication of our careful financial management. This small surplus is due to the efforts of leadership and staff across the health service to manage our budget responsibly and with due consideration for reducing waste.

To meet community healthcare needs, our doctors, nurses and allied health staff grew by 213 people. We had a 2.5 per cent increase in full-time equivalent staff

from 15,781 to 16,184 at end of financial year. New employees attend orientation which includes an introduction to Metro North's Values in Action.

During the year we expanded on our commitment to Values in Action through a series of events to bring together our staff in various ways. We know that having fun together through activities such as soccer or netball tournaments helps bridge the divides in our broad service and delivers better patient outcomes. These events also included a clinical challenge through the Hospital of Origin, and family-friendly events Movie by the Sea and Family Fiesta. By getting to know one another better, our staff are creating connections that will allow improved healthcare communication.

As a leader in healthcare, Metro North delivered a professional development opportunity through the inaugural #NextCare Health Conference. This two-day event featured leadership experts from within and outside the healthcare industry and brought people together from across Australia and even internationally to connect, inspire and transform their careers. Additionally, we delivered a range of clinical education events and conferences open to staff and other healthcare workers in Queensland.

## By getting to know one another better, our staff are creating connections that will allow improved healthcare communication.

Metro North continued to produce high quality clinical and translational research. During 2018-19 we awarded our first Clinical Research Fellowship grants.

The wellbeing of our staff is crucial to providing excellent care for our community. Metro North committed to achieving White Ribbon accreditation and working together to reduce domestic and family violence. We continued to host the Queensland Occupational Violence Strategy Unit, implementing strategies and programs to reduce violence against healthcare workers and increase education and support for those staff who have been physically, verbally or emotionally assaulted in the workplace.

As part of our commitment to closing the health gap for Aboriginal and Torres Strait Islander peoples, Metro North developed *Better Together*, a five-year Indigenous health plan. This plan was developed in consultation with Aboriginal and Torres Strait Islander people who provided more than 600 pieces of feedback.

We also launched Deadly Start, an education to employment program for Indigenous high school students interested in a career in healthcare, in partnership with Mater Education. The first group of students are learning on the job alongside nurses, allied health practitioners and patient services officers, while also completing their final years of high school. Students participating in this program will receive a qualification which will assist with future employment or may be recognised as prior learning for further formal education.

Metro North continued to support the statewide implementation of the financial system replacement to S4/HANA, implemented MyHR, and worked toward the roll out of the integrated electronic medical record (ieMR) as part of the organisation's digital transformation. Additionally, the electronic medication management program was implemented at Caboolture and Royal Brisbane and Women's Hospitals to improve medication safety, purchasing and education.

During the year, Metro North continued, with Brisbane North PHN and other community partners, to improve the connectedness of care for patients in our region, such as the Residential Aged Care District Assessment and Referral (RADAR) service, and GPs with Special Interests programs including the Healthy Spine Service. We also introduced nurse navigator roles to support patients and families and continued supporting people with disabilities to access the National Disability Insurance Scheme.

To meet current and future demand for services, we continued development of the \$1.1 billion Herston Quarter redevelopment which includes the construction of the Surgical, Treatment and Rehabilitation Service (STARS) due to open in 2021, planning for the Redcliffe Hospital multi-storey carpark, and the \$353 million redevelopment of Caboolture Hospital.



**Dr Robert Stable AM**  
Chair  
Metro North Hospital and Health Board



**Jackie Hanson**  
Acting Chief Executive  
Metro North Hospital and Health Service



The Fluoride Varnish Program is helping to prevent tooth decay and teaching our kids simple preventative measures.

## DELIVERING HEALTHY SMILES FOR KIDS IN MORETON BAY

Hundreds of students across Moreton Bay are learning how to prevent tooth decay and take care of their teeth through Metro North's Fluoride Varnish Program.

Staff from the Metro North Oral Health team regularly visit state schools to chat with the kids about simple preventative dental treatment and provide fluoride varnish treatment.

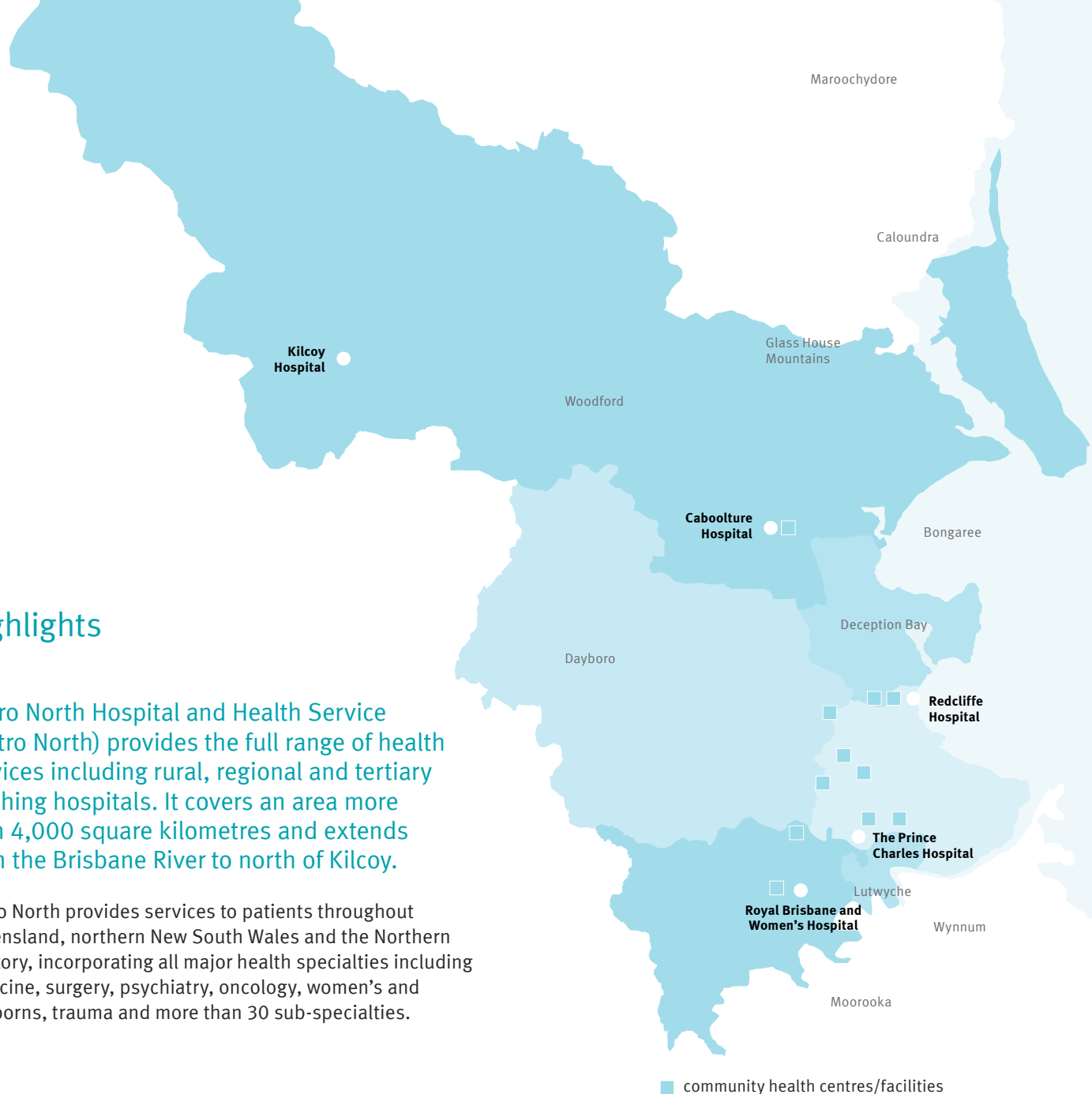
The Fluoride Varnish Program has grown from one participating school in 2015 to now include 19 state and special schools in the Caboolture and Redcliffe areas.

The cost effective preventative program has supported more than 2,400 children from low socio-economic areas who have limited access to

preventative oral care and are at risk of poor dental behaviours.

Oral health education is delivered by a multidisciplinary team of dental therapists, oral health therapists and dental assistants who visit children at their school.

The program also provides a dental referral pathway to public sector oral health care facilities and other children in the family are welcome to attend with their siblings.



## Highlights

Metro North Hospital and Health Service (Metro North) provides the full range of health services including rural, regional and tertiary teaching hospitals. It covers an area more than 4,000 square kilometres and extends from the Brisbane River to north of Kilcoy.


Metro North provides services to patients throughout Queensland, northern New South Wales and the Northern Territory, incorporating all major health specialties including medicine, surgery, psychiatry, oncology, women's and newborns, trauma and more than 30 sub-specialties.



<b>Staff</b>	16,184 (FTE)
<b>Investment in care</b>	\$2.947 billion
<b>Sites</b>	5 hospitals, 15 community services, 27 oral health facilities and 15 mental health facilities
<b>Patient admissions</b>	112,287 (from emergency departments)
<b>Emergency</b>	300,613 presentations
<b>Outpatient services</b>	1,503,424 outpatient occasions of service
<b>Surgeries</b>	40,225 elective and emergency surgeries performed
<b>Births</b>	8,308 babies born at our facilities
<b>Dental</b>	804,932 oral health treatments
<b>Interpreter services</b>	Top 3 languages – Arabic, Mandarin and Cantonese
<b>Telehealth services</b>	17,827 occasions of service



**1,024  
MORE  
ELECTIVE  
SURGERIES**

**8,767  
MORE  
ED  
PRESENTATIONS**



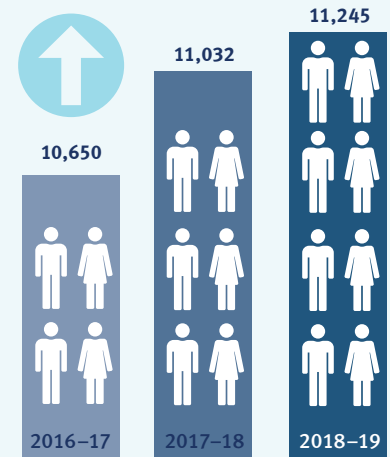
**1.2%**   


**OF STAFF IN METRO NORTH  
IDENTIFY AS ABORIGINAL AND/  
OR TORRES STRAIT ISLANDER**

**TARGET  
MET**



**CATEGORY 1 SPECIALIST  
OUTPATIENTS SEEN ON TIME**



**MORE CLINICIANS**

**↑ 8,308 BABIES BORN  
IN OUR HOSPITALS**

**173 MORE THAN  
LAST YEAR**



# ABOUT US

Established on 1 July 2012 Metro North is an independent statutory body overseen by a local Hospital and Health Board under the *Hospital and Health Boards Act 2011 (Qld)*.

## Strategic direction

Metro North Hospital and Health Service *Putting people first*



## Strategic Plan 2016–2020 Revised 2018

### Foreword

This Strategic Plan outlines our future direction to 2020, including our contribution to the Government's objectives for the community and *My health, Queensland's future: Advancing health 2026*.

Metro North Hospital and Health Service (Metro North HHS) will deliver responsive, integrated, connected and quality frontline services to strengthen the delivery of public health care for the people and communities we serve. Our services will support equity of access and health outcomes for all, particularly those who are most disadvantaged. Quality at Metro North HHS is founded on the individual person's experience with their care, and that of their family and support networks.

A focus on people will enable us to improve the patient experience, support and develop our staff and work with our partners to better connect care and improve outcomes. We will put our values into action.



**Dr Robert Stable AM**  
Chair  
Hospital and Health Board



**Shaun Drummond**  
Chief Executive  
Hospital and Health Service

### Vision

Changing the face of health care through compassion, commitment, innovation and connection.

### Purpose

Create, connect and apply knowledge to deliver high quality health services.

### Opportunities

- To optimise the potential of our people
- To be adaptable and responsive to change
- To embed an organisational culture of ethical and fair decision making
- To better connect care across the health continuum and across sectors
- To increase our commitment to research
- To adopt new technologies
- To pursue new and renewed infrastructure

### Values



Respect



Teamwork



Compassion



High performance



Integrity



Metro North delivers responsive, integrated, and connected care to local communities and provides specialty services for patients throughout Queensland, northern New South Wales and the Northern Territory. Our clinical services incorporate all major health specialties including medicine, surgery, psychiatry, oncology, women's and newborns, trauma and more than 30 sub-specialties.

## Vision

Changing the face of healthcare through compassion, commitment, innovation and connection.

### OBJECTIVE 1



To always put people first.

### OBJECTIVE 2



To improve health equity, access, quality, safety and health outcomes.

### OBJECTIVE 3



To deliver value based health services through a culture of research, education, learning and innovation.

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## Priorities

Significant progress occurred in 2018–19 toward implementing the Health Service Strategy 2015–2020.

The strategy has a five-year outlook, setting out how Metro North will achieve its Strategic Plan objectives.

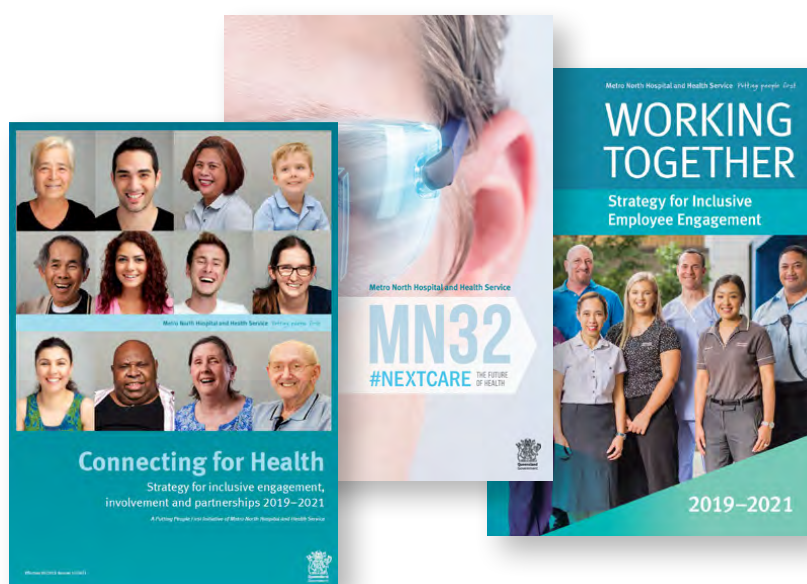
These focus areas are:

- Living healthy and well in our local communities
- Delivering person-centred, connected and integrated care
- Effective delivery of healthcare to address growing population health needs
- Responsive holistic healthcare that meets the specific needs of vulnerable groups including but not limited to:
  - older people including frail older people
  - children
  - young people
  - people with mental illness
  - people with substance use disorder
  - people with disabilities
  - Aboriginal and Torres Strait Islander peoples
  - culturally and linguistically diverse communities (CALD).

### Key achievements for 2018–19:

- Commencing the expansion of the Caboolture Hospital emergency department which will deliver 18 new treatment spaces including six Fast Track beds, eight new Short Stay beds, four Short Stay chairs, CT and X-Ray room and waiting area by mid-year

- Improving patient care and business performance across Metro North via the #NextCare Generator initiative commencing with 17 projects
- Progressing the Herston Quarter redevelopment including the commissioning of the Surgical, Treatment and Rehabilitation Service (STARS)
- Clinical breakthroughs including the Queensland first “balloon” surgery for lung disease pioneered by clinicians at The Prince Charles Hospital and the introduction of two new state-of-the-art microscopes set to revolutionise the way complex ophthalmic surgeries are performed at the Royal Brisbane and Women’s Hospital
- Release of a joint HHS and PHN plan shaped by consumers to improve mental health, suicide prevention, and alcohol and other drug treatment services in North Brisbane and Moreton Bay.



Improving patient care and business performance across Metro North



## Aboriginal and Torres Strait Islander Health

Metro North marked 2019 National Close the Gap Day in March by unveiling a draft Close the Gap plan and signing a public statement of commitment to improve health outcomes for Aboriginal and Torres Strait Islander peoples.

More than 100 community Elders, staff and patients gathered at the event held at Brighton Health Campus, to have input and share feedback to the draft Metro North *Better Together: Aboriginal and Torres Strait Islander Health Plan 2019–2022*.

### Committed to Closing the Gap in healthcare

The plan will focus on four key priority areas of Leadership, Governance and Workforce; Engagement and Partnerships; Transparency, Reporting and Accountability; and Culturally Responsive, Safe and Connected Care.

The priority areas will be supported by focus areas for clinical service delivery for a strong start to life, reducing the burden of disease, crisis and complex care and living well and living longer.

Metro North senior medical staff and executives committed to the plan by taking part in a film showcased to community at the event.

**53.8%** OF ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS HAD MORE THAN **FIVE** ANTENATAL VISITS, WITH FIRST VISIT IN THE 1ST TRIMESTER



## NEW ARTWORK REPRESENTS OUR VISION

Award-winning Aboriginal graphic designer and artist Elaine Chambers-Hegarty created the beautiful visual story artwork that represents the Metro North *Better Together Aboriginal and Torres Strait Islander Health Plan 2019–2022*.

Elaine was contracted by Metro North’s Aboriginal and Torres Strait Islander Health Unit (A&TSIHU) to create the artwork.

Elaine and Monique Proud from Positive Social Solutions and members of the Aboriginal and Torres Strait Islander Health Unit met and workshopped ideas for respective artworks with members of the Reconciliation Action Planning Committees at Royal Brisbane and Women’s, Redcliffe, Caboolture and The Prince Charles Hospitals and Community and Oral Health.

Once finalised, each of the facilities will have their branded artwork to display in their Reconciliation Action Plans, marketing materials and within buildings.



The Prince Charles Hospital Reconciliation Action Plan Committee had the privilege of taking part in a creative art workshop with esteemed Aboriginal artist Elaine Chambers-Hegarty. The artwork will form part of the RAP and for all Indigenous services across the hospital.

### IMPROVING OUTCOMES



#### ACTION ON RECONCILIATION

Each facility across Metro North has established Reconciliation Action Plan Committees in the past 12 months, with each achieving inroads into our strong commitment to reconciliation and commitment to enhance the lives of Aboriginal and Torres Strait Islander peoples into the future.

Each Committee meets monthly to plan for their localised Reconciliation Action Plans and discuss ways to improve reconciliation within their hospital or facility.

As one of Australia’s largest public health services, Metro North is proud to recognise the cultural diversity of its workforce and is committed to Closing the Gap in healthcare, reconciliation and respect for our Aboriginal and Torres Strait Islander patients, families and communities.





## A DEADLY START TOWARD CLOSING THE GAP

As part of our commitment to improving health outcomes for Aboriginal and Torres Strait Islander peoples, Metro North launched the Deadly Start Education-2-Employment program to attract, train and employ the next generation of Indigenous health workers.

Metro North Acting Chief Executive Jackie Hanson said the Australian-first initiative was the most ambitious targeted recruitment program aimed at Closing the Gap in healthcare ever offered.

“We are addressing all three of the education, employment and healthcare challenges by taking students from recruitment all the way through to employment outcomes,” Ms Hanson said.

The inaugural cohort of 34 students is the largest collective of Aboriginal and Torres Strait Islander students ever recruited into health-based education to employment pathways.

Students balance their school commitments with one day per week, or 375 hours in total across an 18-month period, of paid training at Royal Brisbane and Women’s Hospital (RBWH) or The Prince Charles Hospital (TPCH), earning a Certificate III in Health Support in Nursing, Allied Health or Dental.

“We know that access to education, employment and healthcare influences quality of life and life expectancy, which is why we are implementing long-term strategies like Deadly Start, that focus on generational change,” Ms Hanson said.

The program is set to expand considerably over the coming years as part of a targeted, proactive approach to lifting Metro North’s Aboriginal and Torres Strait Islander workforce from 1.2 per cent to 3 per cent by 2022.

This in turn supports the provision of culturally-appropriate care, with south-east Queensland’s Indigenous population tipped to reach more than 133,000 by 2031 – almost double that of other states.

“Culturally-appropriate care means having staff our patients can trust through a shared cultural

heritage, who can help address the fears they may be experiencing and walk them through their treatment options and what to expect,” Ms Hanson said.

“It’s also crucial to improving health outcomes, that we have culturally-appropriate staff to help them understand why they are being given certain medications and how to make sure they are effective.”

The partnership between Metro North, Brisbane North West Trade Training Centre, Mater Education and OSMAC has caught the attention of several other hospital and health services keen to replicate the model.

### PROGRAM HIGHLY COMMENDED IN RECONCILIATION AWARDS

The Deadly Start Education-2-Employment program partnership between Metro North, Brisbane North West Trade Training Centre, Mater Education and OSMAC has been highly commended in the 2019 Reconciliation Awards for its contribution to Closing the Gap.

The program has been designed to inspire, educate, engage and motivate Indigenous students through a culturally-supported education journey into their dream health career through a school-based traineeship in nursing, allied health and dental.



IMPROVING ACCESS



## CONNECTING CARE FOR INDIGENOUS PEOPLE IN CUSTODY

Australia's first Aboriginal and Torres Strait Islander led, multidisciplinary, social and emotional wellbeing service for Indigenous people in custody project received the Connecting Healthcare Category Award at the 2018 Queensland Health Awards for Excellence.

The Indigenous Mental Health Intervention Program (IMHIP) was established by Queensland Forensic Mental Health Service (QFMHS), which is part of Metro North. QFMHS are recognised leaders in Indigenous mental health in the criminal justice system.

IMHIP provides early identification, in custody care and transitional support to connect individuals back to their community. This priority driven service has been developed in partnership with Indigenous colleagues, communities and organisations to ensure that it is culturally informed.



The Indigenous Mental Health Intervention Program team received the Connecting Healthcare Category at the 2018 Queensland Health Awards for Excellence.

In addition to its client focus, IMHIP strives to develop the Indigenous workforce and support Indigenous leadership.

The IMHIP service is developed from an understanding of Aboriginal and Torres Strait Islander views of health and mental health, including the interconnections between spiritual, social, emotional, cultural and physical wellbeing, as such, the service model is holistic and more readily accessible.

The team has incorporated a range of culturally valid outcome measures into routine practice and mental health applications delivered via Android tablet PCs. Evaluation findings indicate that the IMHIP approach is valued and that outcomes are positive and meaningful.

PUTTING PEOPLE FIRST



## CONNECTING THROUGH STAFF YARNS

Metro North is committed to recruiting and retaining the Indigenous workforce and has established an online portal for Aboriginal and Torres Strait Islander staff to connect and collaborate in the workplace.

The Staff Yarns portal is a hub for around 200 Aboriginal and Torres Strait Islander staff to access information about events, Talk-About newsletter, local support groups, training and job opportunities.

It provides a central point for information and knowledge sharing within the Aboriginal and Torres Strait Islander staff community.

The hub also forms a communication channel for staff within the Aboriginal and Torres Strait Islander Health

Unit and is updated on a regular basis with events being held in the community, in-house and details of upcoming meetings.

More than 40 identified staff have signed up to become part of the online network and enjoy regular opportunities to meet face to face and yarn about service improvements, cultural matters and support within the broader workplace.



## Our community based and hospital based services

A comprehensive and diverse range of health services are delivered from:

- The Royal Brisbane and Women’s Hospital (RBWH) and The Prince Charles Hospital (TPCH): tertiary/quaternary referral facilities, providing advanced levels of healthcare which are highly specialised, such as heart and lung transplantation, genetic health and burns treatment.
- Redcliffe and Caboolture Hospitals: major community hospitals providing a comprehensive range of services across the care continuum.
- Kilcoy Hospital: a regional community hospital.
- Mental Health, Community and Oral Health services: provided from many sites including hospitals,

community health centres, residential and extended care facilities and mobile service teams.

- A dedicated Public Health Unit focused on preventing disease, illness and injury and promoting health and wellbeing across the community.
- Woodford Correctional Centre: provides offender health services.
- The state-wide Clinical Skills Development Service is one of the world’s largest providers of healthcare simulation training.

The Strategic Plan 2016–20 outlines how we will meet the health needs of our growing population over the duration of the plan.

### IMPROVING QUALITY



## AGED CARE IN RADAR ZONE

Frail, older aged care residents are receiving specialised care within the comfort of familiar surroundings thanks to care partnerships Metro North’s Residential Aged Care District Assessment and Referral (RADAR) program and between residential aged care facilities (RACFs).

The RADAR teams consist of geriatricians, emergency physicians, registrars, clinical pharmacists, allied health and nursing teams and are adaptations of already established and successful services such as the Older Persons Acute Assessment Service and Hospital in the Nursing Home at Royal Brisbane and Women’s Hospital, Residential Care Liaison Service at Redcliffe Hospital, Geriatric Outreach Assessment Service at The Prince Charles Hospital and adds an outreach component to the Geriatric Emergency Department Intervention Service at Caboolture Hospital.

The seven-day RADAR central coordination Nurse Navigator phone led service is available to Residential Aged Care Facilities (RACF) GPs, nurses and practice managers. It is focused on providing best patient pathways and clinically appropriate alternatives for residents who would otherwise have presented to an emergency department or been admitted to hospital.

Clinical Services Program Manager Gaenor Cross said that where necessary, medical teams from the Metro North hospitals visit RACFs and provide advice and support to clinical teams in the facilities to best manage their patient at home.

“The program is a collaboration between Metro North clinicians, primary care providers in the RACFs and the Queensland Ambulance Service and is a wonderful demonstration of clinician collaboration focused on the best care for their clients,” she said.

“We are achieving this through aligned care and a focus on providing a linked service across Metro North with the same best outcome for all RACF residents.”



Members of the RADAR Royal team from Royal Brisbane and Women’s Hospital.

PUTTING PEOPLE FIRST



# DOMESTIC AND FAMILY VIOLENCE IS A WORKPLACE ISSUE



Metro North’s leadership is committed to stand up, speak out and act to prevent violence against women and domestic and family violence by participating in the White Ribbon Australia Workplace Accreditation Program.

Whether it occurs in or beyond the workplace, violence affects the health and safety of employees, families, friends, their wellbeing and their productivity.

Metro North will work to promote a respectful workplace culture and provide support to those whose lives are affected by domestic and family violence.

## OUR ACTIONS

### NOVEMBER 2018

Commitment to address domestic and family violence within the workplace by embarking on the White Ribbon Workplace Accreditation Program.

### JANUARY 2019

Leadership team pledges to commit to preventing domestic and family violence by embarking on the White Ribbon Workplace Accreditation Program at Royal Brisbane and Women’s Hospital.

### FEBRUARY 2019

Review of all policies and guidelines relevant to supporting staff experiencing domestic and family violence, resulting in the development of a guideline – domestic and family violence – support in the workplace.

### MARCH 2019

Procurement process to engage an external provider in the provision of an online domestic and family violence training module, with the training to become mandatory for all line managers.

### APRIL AND MAY 2019

White Ribbon Workplace Accreditation launched at The Prince Charles Hospital and Community and Oral Health directorate.

### DEVELOPMENT AND LAUNCH OF A DOMESTIC AND FAMILY VIOLENCE INTRANET SITE

This is to support staff experiencing domestic and family violence.

### DEVELOPMENT OF DOMESTIC AND FAMILY VIOLENCE LINE MANAGER

Ready Resource Pack to be used with the roll out of mandatory line manager training.

## Targets and challenges

Metro North supports the directions outlined in *My health, Queensland's future: Advancing health 2026* by continuing to improve service for our patients and families, optimising the potential of our people, being adaptable and responsive to change, embedding an organisational culture of ethical and fair decision making, better connecting care across the health continuum and across sectors, increasing our commitment to research, adopting new technologies and pursuing new and renewed infrastructure.

The key challenges for Metro North are population demand growth, asset and infrastructure renewal, workforce capability and capacity, digital health transformation, information and system security, health source resourcing and system dependencies.

In 2018–19 Metro North has:

- listened to the voice of patients and their carers and families to improve the patient experience
- listened to staff and partners and involving them in organisational development, governance and decision making

- led integration, coordination and continuity of services across and within primary, community and hospital care creating system capacity
- generated new knowledge through research, evaluating what others have learnt and actively bringing this knowledge into practice
- created an environment that promotes innovative approaches to support our people in continuous improvement and organisational learning
- worked with our partners to ensure an appropriate balance in health investment between prevention, management and treatment of disease
- provided models of service delivery that are fiscally responsible.

Metro North will continue to implement initiatives in relation to the management of patients with chronic diseases, children and women's health and mental health, and prioritise new initiatives across a range of areas including improving care for our older and frail patients.

### IMPROVING OUTCOMES



## 'HOT LAB' EXPANSION AIDS CANCER PATIENTS

Critical wait times for a cancer diagnosis in Queensland will be reduced thanks to a \$6.11 million expansion of the Royal Brisbane and Women's Hospital (RBWH) Radiopharmaceutical Centre for Excellence (Q-TRaCE), opened in June.

The Nuclear Medicine 'Hot Lab' has doubled capacity to produce radioactive pharmaceuticals used to diagnose and treat patients throughout Queensland and now boasts a dedicated lab for research.

The state-of-the-art facility will mean shorter waiting lists for Queenslanders requiring diagnostic imaging and monitoring of treatment.

RBWH produces a wide range of radioactive tracers that are shipped to Queensland Health facilities across the state.

In the past 12 months, nearly 9,000 patients across Queensland have benefited from a radioactive tracer manufactured by Q-TRaCE at RBWH, and that number will grow with this investment.

The facility also includes a dedicated research lab where researchers will have more opportunity to manufacture experimental radiopharmaceuticals.

Q-TRaCE researchers are also working to extend the lifespan of radioactive tracers, which are shipped to other parts of the state under heavy time constraints.

Extending the lifespan of tracers may allow more patients in the future to be scanned or treated at regional centres, meaning less travel for patients and improved access to diagnostic imaging.

RBWH is one of only two public hospitals in the country certified by the Therapeutic Goods Administration to produce radiopharmaceuticals, and the only Queensland Health facility with a cyclotron to produce radioactive tracers.

