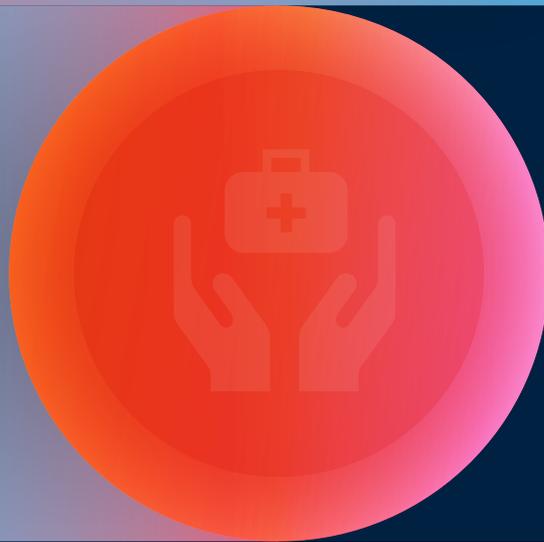
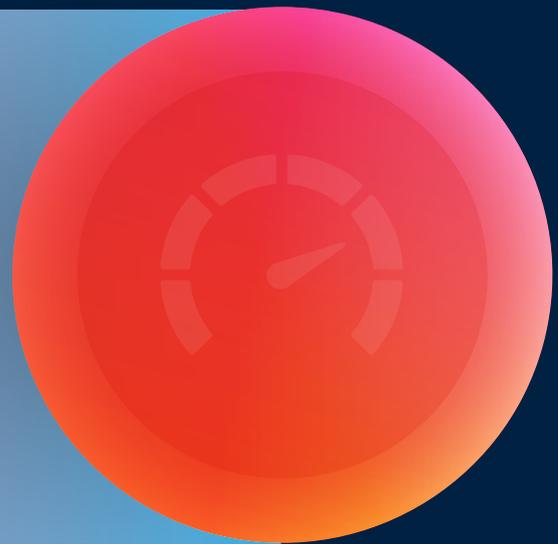


QUALITY INITIATIVES

The 27th Annual
ACHS Quality Improvement
Awards 2024



Quality Initiatives - Entries in the 27th Annual ACHS Quality Improvement Awards 2024.

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Introduction

The 27th Annual ACHS Quality Improvement Awards 2024

The annual ACHS Quality Improvement (QI) Awards were introduced in 1997 to acknowledge and encourage outstanding quality improvement activities, programs or strategies that have been implemented in healthcare organisations.

In 2024, the 27th Annual ACHS QI Awards were open to submissions from all domestic ACHS member organisations following the ACHS NSQHS (National Safety and Quality Health Service) Standards Program, EQulP6 (Evaluation and Quality Improvement Program 6th edition), Hospitals and Health Services Standards Program, EQulP6 Day Procedure Centres, EQulP6 Oral Health Services, EQulP6 Haemodialysis Centres, EQulP6 Aged Care Services, EQulP6 Healthcare Support Services, and the ACHS Clinical Indicator Program.

Judging was conducted externally with separate panels of three or four judges for each of the QI Awards categories:

Clinical Excellence and Patient Safety:

This category recognises innovation and demonstrated quality improvement in the delivery of safe, effective patient care.

Non-Clinical Service Delivery:

This category acknowledges a demonstrated outcome of improvement and innovation in patient and/or consumer services and organisation-wide practice including services provided by community and allied health organisations.

Healthcare Measurement:

This category recognises organisations that have measured an aspect of clinical management and/or outcome of care, taken appropriate action in response to that measurement, and demonstrated improved patient care and organisational performance upon further measurement. Healthcare measurement can include data collected from the ACHS Clinical Indicator program or other methods of monitoring patient care processes or outcomes. Both quantitative and qualitative data can be used, however this category must describe the initial measurement, the analysis of that measurement, the action(s) implemented, and the improved measurement(s).

Each judging panel consisted of an ACHS Councillor, an ACHS Assessor, and a representative from an ACHS member organisation.

Submissions were required to meet specific criteria that were weighted equally:

- Judges assessed all eligible submissions on the five (5) ACHS principles of: consumer focus, effective leadership, continuous improvement, evidence of outcomes and best practice
- Judges assessed additional criteria: improvement in patient safety and care, measured outcomes, applicability in other settings, innovation in patient care and/or processes and relevance to the QI Awards category
- The submission **MUST** relate to a period of up to no more than two (2) years prior to the year of entry.

Each winning submission in the ACHS QI Awards receives a Certificate of Acknowledgement, a QI Awards trophy and a cash prize provided by ACHS.

ACHS publishes submissions from all participating organisations to share and encourage exceptional quality improvement strategies amongst the ACHS member organisations.

The electronic version of this document will be published on the ACHS website (www.achs.org.au).



Winner Submissions by Category

The 27th Annual ACHS Quality Improvement Awards 2024

CLINICAL EXCELLENCE AND PATIENT SAFETY

SA Medical Imaging, CALHN and Women's and Children's Health Network, SA **Multi-Departmental**

Fast Advice and Access for Intravenous Routes with Imaging (FAAIRI) Service

Catherine Baring (Miller), Sarah Goh, Susan Waters, Dr Philippa Lane, Georgina Kakoulis, Jacinta Manos,
Dr Brigid Connolly, Dr Ping Hin (Jeffrey) Yeung, Dr Michael Wilks, Dr Rebecca Linke,
Nicholas Zabanias and Tom Beatty

Full submission page 4

NON-CLINICAL SERVICE DELIVERY

Sydney Local Health District, NSW

Biomedical Engineering - Capital Infrastructure Engineering

Harnessing Byproduct Water: Advancing Sustainable Water Management in Local Community

Ryan Lu, Kesh Chand, Chin Voon, Rodney Staughton, Shane Oakes, Tegan Roper, Mufid Noufal
and Nicole Webb

Full submission page 22

HEALTHCARE MEASUREMENT

Western Health, VIC

Nutrition

Piloting a Power Shift through Food

Allison Lauder, Kathryn Marshall and Vicki Barrington

Full submission page 43



Highly Commended Submissions by Category

The 27th Annual ACHS Quality Improvement Awards 2024

CLINICAL EXCELLENCE AND PATIENT SAFETY

Hunter New England Local Health District, NSW

Children Young People and Families

All Together Now: Coordinating Care for Kids with Medical Complexity in the HNEkids Compass Project

Stephanie Hodgson, Ashleigh Griffiths and Camilla Askie

Fiona Stanley Fremantle Hospital Group, WA

Immunology

Virtual Immunology Clinic for General Practice

Prof Dominic Mallon, Dr Jack Bourke and Dr Michael O'Sullivan

Western Sydney LHD - Blacktown and Mount Druitt Hospitals, NSW

Integrated and Community Health

The Young Strong and Deadly: A 14-week Aboriginal-led health education and physical exercise program

Andrew Fraser, Dr Stephanie Fletcher-Lartey, Tano D'Urso, Darian Preece and Hillary Lo

NON-CLINICAL SERVICE DELIVERY

Child and Adolescent Health Service, WA

Research Department

Improve children's access to novel and emerging treatments, ensuring equity of access for our patients

Simone Knab and Alexandra Robertson

HEALTHCARE MEASUREMENT

Townsville Hospital and Health Service, QLD

Clinical Governance Directorate

Improving rates of VTE prophylaxis prescribing at Townsville University Hospital

Dr Kunwarjit Sangla, Dr Stephen Perks and Rebecca Furlong

Royal North Shore Hospital, NSW

RNSH Hip Fracture Committee

Excellence in Hip Fracture Care

Bonnie Liu, Dr Andrew Ellis, Stephanie Laurent and Saskia Lonsdale





SA Medical Imaging, CALHN and Women's and Children's Health Network, SA Multi-Departmental

Fast Advice and Access for Intravenous Routes with Imaging (FAAIRI) Service

Catherine Baring (Miller), Sarah Goh, Susan Waters, Dr Philippa Lane, Georgina Kakoulis, Jacinta Manos,
Dr Brigid Connolly, Dr Ping Hin (Jeffrey) Yeung, Dr Michael Wilks, Dr Rebecca Linke,
Nicholas Zabanias and Tom Beatty

AIM

The aim of implementing the FAAIRI Service was to place the most appropriate vascular access device (VAD) with one attempt for children who require them without unnecessary delay. This has been done using patient and family centred care and best evidence to inform quality, safe practice. A secondary aim was to reduce pressure on senior Medical Officers from Anaesthesia and Paediatric Intensive Care Units who, previously, were regularly contacted when vascular access could not be obtained. Another secondary aim was decreasing costs through reduced clinician time, consumables and bed days.

SUMMARY ABSTRACT

Changed model of care

The FAAIRI Service is the first nurse-led comprehensive paediatric vascular access service in Australia. These services are common in many westernised countries in the northern hemisphere. Whilst Queensland, New South Wales, Victoria and Tasmania have paediatric nurse-led peripherally inserted central catheter (PICC) insertion services, none of these providers currently support children with difficult IV access (DIVA) for peripheral intravenous cannula (PIVC) insertions (often known as 'drip' or 'IV'). Almost all children admitted to hospital have at least one IV inserted and internationally 50% of children require more than one attempt, which is considered a DIVA (Sharp et al 2023).

In 2019, the FAAIRI service was planned and introduced by South Australian Medical Imaging (SAMI) in collaboration with the Women's and Children's Health Network (WCHN) for the Women's and Children's Hospital (WCH) Adelaide. This service utilised the existing 1.0 FTE PICC Nurse Consultant role. The FAAIRI was a collaborative venture from two separate SA Health entities (SAMI and WCHN), both operating at the WCH site. This role became known as Paediatric Vascular Access Nurse Consultant (PVANC).

USGPIVC Insertions

When a child has known/predicted DIVA, referrers can ask FAAIRIs to place an IV without themselves making any attempts, and usually have that line successfully placed within one hour of referral, often earlier if the patient is ready. Previously, Medical Officers were advised to make two attempts before escalating to WCHN Anaesthesia, and then the patient may need to wait up to 4 hours for the anaesthetist to arrive, since this was not their primary role.

Over the three-year period since inception, the service has grown to deliver more than 1,000 ultrasound-guided (USG) PIVC (USGPIVC) insertions per year with 98% first-time success rate. Only three children in the past year referred to the service were unable to have a PIVC insert with two attempts. Children are aged between birth and 18 years, with the service also assisting pregnant and postnatal women. A child (8 years old) requiring a PIVC for cancer treatment stated 'Now it's just so quick and easy. I (previously) had to have doctors try up to 10 times' (Channel 7 News interview with child, parent, research collaborator and FAAIRI nurse, 2023).



Transition of care

FAAIRIs transition their known patients with DIVA to adult services as they near adulthood, with these patients previously having no clear pathway for support for their vascular access needs in the adult system.

Critical Line Management

Referrers can ask FAAIRIs for advice about how to manage/preserve challenging to replace vascular access devices (VADs) that are blocked/broken/infected/insecure and needed for crucial patient medications. The FAAIRI Service's development of the Critical Line Procedure has led to most critical IV lines being salvaged, where previously some children-critical medical treatment was delayed through difficulty in replacing/preserving IV lines.

Providing teaching and mentorship

Due to exponential growth of referrals for USGPiVCs and many patients requiring PIVC insertion outside of FAAIRI working hours, the FAAIRIs collaborated with WCH Paediatric Emergency Department to deliver USGPiVC training and bedside support to more than 50 clinicians. This has led to a marked decrease in referrals for USGPiVCs to FAAIRIs to manageable numbers and rapidly improved PIVC insertion success rates for children with DIVA at night and on weekends.

PICC insertions

Referrers can call the service for advice about which VAD is most appropriate for their patient. This has resulted in PICC insertions doubling from 200 to 400 per year and often inserted earlier in patient journeys. Children who receive a PICC can have all of their treatment, including blood sampling via this one VAD, instead of multiple PIVCs (commonly more than 5 needles per week of treatment). Once a PICC is inserted, patients who are clinically stable can often be discharged and have their treatment at home. This is more family-centred and also reduces bed days.

Role in identification and response to incidents

FAAIRIs have worked with WCHN staff to identify, audit and respond quickly to clusters of Central Line Associated Bloodstream Infections (CLABSIs) and thrombus. They have then worked with key stakeholders to prevent future incidents.

Research

FAAIRIs have worked with University of South Australia and Griffith University to undertake published research about the impacts of DIVA on children and their caregivers (Sharp et al. 2023). Findings from this research were translated into clinical practice and shared with clinicians during education. The FAAIRI Service is built on and has expanded using best evidence and current research to inform practice.

Intra- and Interstate Service Model Replication

The SAMI FAAIRI Service has been instrumental in improving safety and quality of vascular access for children at WCH, without any increase in funding. The service has reduced delays to care and overall occupied bed days for patients. Clinicians from several paediatric and adult hospitals have sought advice and are considering replicating Australia's first nurse-led comprehensive vascular access service for children in their hospitals. Planning for several of these services are already in advanced planning.

Awards

Four awards have been won by the FAAIRI Service, including one individual leadership award for the FAAIRI PVANC.

REPORT

APPLICATION OF ACHS PRINCIPLES

1. Consumer Focus

The FAAIRI Service is generally able to place a successful PIVC within a few minutes. This is a relief to children and their caregivers, with one parent stating, *'The FAAIRI nurse was a wonderful support for (my child). (My*



child) was super anxious about (having an IV inserted). The care and support from the FAAIRI nurse made (my child) feel safe and comfortable. I doubt the process would have been as seamless without this level of care and support. As a parent whose child has been a regular visitor for appointments, I can only say thank you and encourage this service to be available to all children who require the care of the hospital' (WCHN Consumer Feedback, September 2023).

On weekends/at night (when the FAAIRIs are not available) some patients had 15 attempts to insert their IV (extra pain/trauma/vein destruction) and waited up to 36 hours to have a successful IV (often not achieved until the FAAIRIs returned to work), delaying treatment and often leading to intramuscular antibiotic use. In some cases, vein destruction secondary to multiple PIVC insertion attempts led to the only vein left to access being the neck jugular vein. Occasionally, patients developed bloodstream infections and/or deep vein thrombosis through multiple injuries to veins. A mother of a 12-year-old child with DIVA stated that prior to the FAAIRI Service *'Whenever he had to get a drip or blood test...he would talk about it for days in advance...about how stressed he was, how he was going to have a terrible day ...'* (Sharp et al. 2023).

All FAAIRI USGPVC insertions are recorded as Medical Imaging reports, which can be easily searched by both FAAIRIs and other staff at WCH and also statewide using the Electronic Medical Record (EMR). Data entered includes the qualities of patient veins, vein availability and strategies for successful PIVC insertion. This informs future care of these patients and assists when children transition from paediatric to adult services.

FAAIRIs alert treating teams when patients' peripheral vein access is degrading too quickly and advocate for central venous access device (CVAD) as soon as this is identified. This has led to increased implanted venous port insertions, which can remain in a patient's superior vena cava vein for many years and be easily accessed but covered with skin when not in use (American Vascular Access 2019).

In the months before children with DIVA and chronic health conditions 18th birthday, the FAAIRIs begin transitioning care of children with DIVA to adult SAMI sites, through dialogue with SAMI, patients/families and each of their treating teams. Whilst South Australia does not currently have formal adult DIVA services, these are in planning and PICC nurses in each of the SAMI sites are competent at USGPVC insertion. SAMI PICC nurses at adult sites currently take over care of these patients on an ad-hoc basis.

2. Effective Leadership

The FAAIRI PVANC won the South Australian Nursing and Midwifery Excellence Awards 2023 'Excellence in Leadership: Emerging Leader Award', for her leadership in planning, implementing and expanding the scope of the FAAIRI Service.

The FAAIRI PVANC taught/mentored a second SAMI nurse to competence in all aspects of the role to enable backfill when she is on leave, and assist with SAMI WCH patient USGPVC insertions, since the service grew over capacity.

Approximately 80 Trainee Medical Officers (TMO) over a two-year period received 'Planning for paediatric PIVC insertion success' education by the FAAIRIs. The FAAIRIs, together with WCH Anaesthesia, introduced formal education and bedside support for TMOs in 2022. This included advice about choosing the right VAD, tips for engaging with children and families, PIVC insertion site selection, room set up and insertion of PIVC. TMOs were advised that they could contact FAAIRIs during their WCHN rotation for bedside support if they wanted to try to insert PIVCs in children but lacked the confidence. Through surveying the TMOs, the FAAIRIs were able to show that all TMOs were more confident at choosing the right VAD and inserting/securing PIVCs in children. TMOs who had undertaken FAAIRI training were more confident than ones who had not (FAAIRI training was not compulsory initially). This led to FAAIRI training becoming compulsory during TMO Orientation Week.

'Planning for paediatric PIVC insertion success' moved online in August 2024 to allow USGPVC training. The online module will be available throughout SA Health soon, which will allow clinicians from across South Australia to access this education and improve their competence/confidence in paediatric PIVC insertion.



The FAAIRs noted that after hours and on weekends, children with DIVA were often having many attempts to have their PIVCs inserted and that referrals numbers were over the capacity of 1.0FTE. The service collaborated with WCH PED doctors to upskill clinicians in high volume IV insertion areas (MDU, Paediatric Intensive Care Unit (PICU), Hospital in the Home, Paediatric Emergency Department (PED), after hours TMOs) to become competent in ultrasound guided IV insertion. This is already reaping rewards, with long delays/large number of IV attempts almost eliminated in the past few months. Up to now, around 50 WCH clinicians have been upskilled, with more to follow.

For the past two years and into the foreseeable future, FAAIRs also provide bedside support for clinicians for both standard and ultrasound guided IV insertion. Previously, there was no formal bedside educational support for IV insertion (traditional or ultrasound guided) at WCH. By the FAAIRs providing this training and support, WCH can meet the Australian Commission on Safety and Quality in Health Care (ACSQHC) *Management of Peripheral Intravenous Catheters Clinical Care Standards* (statement 3: 'Ensure competency') (ACSQHC 2021).

Prior to upskilling this large cohort of clinicians to USGPIVC insertion, children who had DIVA would be referred on to WCH anaesthetists/PICU once the FAAIRI Service was over capacity for the day (with only 1.0 FTE). Now, with FAAIRI USGPIVC training/support, MDU staff insert nearly all USGPIVCs for their own patients with DIVA. This reduced FAAIRI referrals, giving them capacity to accept referrals from other departments which may have previously been referred on when overcapacity.

Before MDU nurse upskilling, up to five patients per week required ward admission to complete treatment as their infusions were delayed, waiting more than an hour for assistance from WCH PICU/anaesthetist for an USGPIVC. Unscheduled ward admissions of MDU has now reduced.

3. Continuous Improvement

Role in identification and response to incidents

In 2023, within a few weeks, 10 children were diagnosed with CLABSI and the SAMI FAAIRs, together with WCHN Infection Control, underwent an audit to identify causes. CLABSI can be life-threatening, causes increased bed days and an on average additional care cost of \$34,843 in 2018, likely much more in 2024 (ACSQHC 2021).

Contributors included introduction of Electronic Medical Records (EMR) (changes in documentation practices), a large group of newly graduated Registered Nurses and Midwives, winter upswing in admitted patients and all patients in the cluster being high-risk due to being on long-term total parenteral nutrition or having cancer treatment.

This information was swiftly shared with all members of the Vascular Access Service Governing Group (VASGG) and extra education about CVAD care and EMR was given to all paediatric nurses, with negligible CLABSIs since. In addition, the FAAIRs later found that a different type of needleless access could reduce CLABSI through better design. This new product is about to be rolled out across WCH, after widespread trialling and stakeholder engagement, led by the FAAIRI Service.

The FAAIRI Service, together with Paediatric General Medicine, noticed a cluster of children with thrombus over a few months through having a PICC insitu. The FAAIRs identified that some children had underlying conditions which put them at increased risk but for some the only reason which could be identified was being a small child and having a reverse taper PICC in. The FAAIRs researched and ordered in non-taper PICCs to be used in children with small veins. In addition, they worked with radiologists to decrease the threshold for tunnelling PICCs via jugular vein (larger than arm veins so allows more flow around PICC) (American Journal of Vascular Access 2019).

The FAAIRI Service, together with WCHN Infection Control, also advocated and obtained WCH Drug and Therapeutic Goods Committee approval in August 2024 to make Kitelock EDTA lock available for children with critical lines to prevent CLABSIs, thrombus, biofilm accumulation and reduces need for alteplase to unblock CVADs (Liu F et al. 2018).



Critical Line Management

FAAIRIs noticed that VADs which were difficult to replace and/or critically needed to support children were sometimes removed due to infection, clots, breakage or malposition without seeking advice about salvaging that VAD. They researched salvage techniques and worked with key stakeholders including SAMI radiologists and WCHN Infectious Diseases and Pharmacy to develop a hospital-wide Critical Line Procedure in 2022, which states that where possible, critical lines that cause infection/thrombus are blocked or broken should not be removed until the treating team has contacted FAAIRIs (in hours) or on-call radiologist (after hours).

This is continually reinforced through frequent FAAIRI education/presentations throughout WCH (including junior-senior, across divisions and multi-disciplinary teams). An evidence-based protocol for salvage of infected critical CVADs was implemented since 80% CLABSIs could be treated without removal of the CVAD (Ford et al. 2021). Non-occlusive thrombus are now managed conservatively with anticoagulants (Wittmar & Raffini 2020).

The FAAIRIs also offer tailored solutions to difficult problems in securing VADs, including using surgical glue (Perth Children's Hospital 2024) and Securacath (©Vygon) (Kleidon et al. 2024).

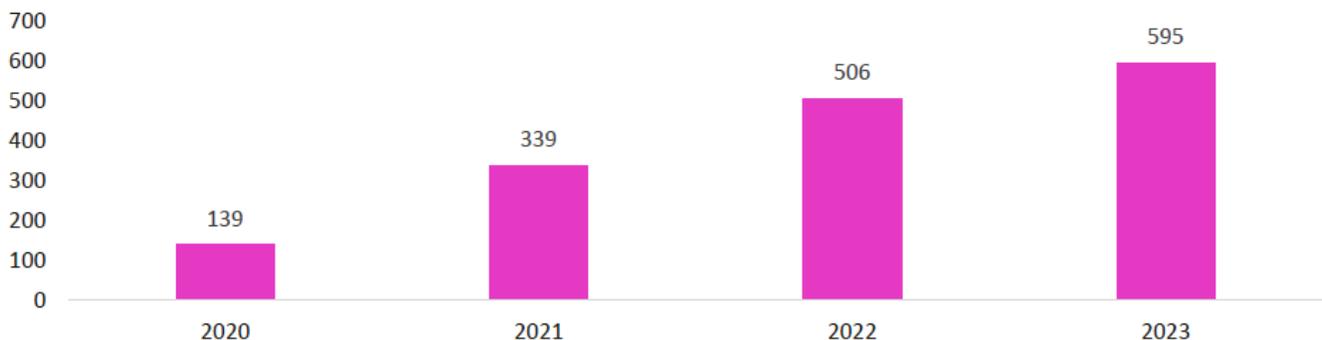
This has led to almost all identified Critical Lines with issues being able to be salvaged. Some children for whom their VAD is almost impossible to replace have avoided palliation through this procedure. Salvage of critical lines reduces replacement of VADs, which reduces WCH anaesthetist and SAMI radiologist use (these types of clinicians are in critical short supply).

4. Evidence of Outcomes

USGPVIC Insertions

Referrals for USGPVIC were booked with Medical Imaging requests, allowing for Medicare billing for service and collation of referral numbers. Table 1 represents radiological requests for these services. Patients who have USGPVIC inserted as part of another radiological exam (eg MRI, CT scan) did not have a separate radiological order for an USGPVIC, so those patients are not represented in the table below. It is thought anecdotally by staff that approximately an equivalent number of Medical Imaging patients also use this service, so the numbers of patients seen for USGPVIC is possibly twice as many as stated in the table.

Table 1: WCH (non-Medical Imaging) USGPVIC insertion referrals



More than 2,000 patients (98% children) with either DIVA and/or needing longer term vascular access and/or critical vascular access benefited from the services of FAAIRIs in 2023. Children ranged from newborn to 18 years. Approximately 1,500 patients (98% children) had a PIVC inserted, with 98% only requiring one attempt and only 3 children (0.003%) requiring more than two attempts.

Feedback from Anaesthetists has been that there are less interruptions during business hours to assist children with PIVC insertion. Some Anaesthetists reported previously they may receive up to 5 calls per day. Each of these children were taken to Recovery for insertion taking up a Recovery bed space needed for post-operative patients.

Over three-quarters of the children referred to FAAIRIs for USGPVICs have seen the service more than once during their health journey. Of children who have had more than one USGPVIC referral to the FAAIRI Service, 75% are having treatment of lifelong conditions in either Medical Day Unit or Haematology/Oncology day units. More than



a third of these day patients have Inflammatory Bowel diseases such as Crohn's Disease and Ulcerative Colitis, with treatment for Immune Disorders, Sickle Cell disease and Thalassaemia also common. Providing first-time successful PIVC insertion for these patients preserves their veins to ensure treatment can be given into adulthood and reduces pain and trauma.

PICC insertions

For FAAIRI referrals, the FAAIRI assesses if PIVC is the most appropriate choice, which sometimes leads to change to a different VAD such as a PICC or implanted port. The 'Planning for Paediatric PIVC insertion success' program delivered to TMOs by FAAIRIs directly led to PICC referrals doubling from 200 to 400 per year (see Table 2 below) and earlier referrals for PICCs, as doctors recognised when children would benefit from a PICC rather than at least 5 PIVCs for extended care (Ullman et al. 2020).

In addition, PICCs were placed early during bacteraemia, rather than waiting to receive a negative blood culture, to preserve veins and ensure predictable vascular access for antibiotic treatment (Stewart & Runnegar 2018). This often leads to earlier discharge and reduced bed days, with stable patients able to have IV treatment at home via their PICC. Placing PICCs early in treatment also leads to better vein preservation and less physical and psychological trauma, with many children having chronic lifelong health conditions for which they will need vascular access into the future.

Table 2: PICC insertions per year



5. Striving for Best Practice

FAAIRIs have been involved in world-first primary research about children's and caregivers' experience of DIVA and then utilised these findings immediately to improve patient care. They were able to establish that children with DIVA and chronic health conditions ruminated, sometimes for several days prior, about upcoming IV insertions when they expected getting an IV would take more than one attempt (Sharp et al. 2023). This may lead to refusal to attend, with some children known to the FAAIRI Service having had significant hospital admissions after refusing to come for monthly IV treatments which kept them healthy (Appendix 1).

FAAIRIs (prior to rebranding from PICC role) worked with Anaesthesia to commence the Fast, Feed and Wrap project. Babies under 6 months corrected had their milk feed times manipulated and received a feed just prior to PICC insertion. This negated need for general anaesthetic (GA). GAs for small children present acute physical risk and are also known to have effects on long-term cognition. The results of this successful trial were published, with FAAIRIs co-authoring (Laing et al. 2020). This project won two awards:

- SA Health 'Enhancing Hospital Care' Award 2021
- WCHN 'Enhancing Hospital Care' Award 2021

As well as the previously mentioned awards, the FAAIRI Service has won the WCHN 'Improving Safety and Quality' Award 2023.

They have also used published evidence at every stage to plan, build and expand the service, and improve vascular access for children.



INNOVATION IN PRACTICE AND PROCESS

The SAMI WCH PICC nurse undertook research about various models of care offered for nurse-led paediatric vascular access services. This research culminated in presenting her Honours thesis about paediatric DIVA prediction at the American Vascular Access Society Conference (2019). These services plan and place VADs, including peripherally inserted central catheters (PICCs) and using ultrasound guidance visualisation to place PIVCs, which improves first-time success because veins and the needle can be seen throughout the procedure.

In 2021, SAMI PICC service changed its model (cost neutral, no new staff) to include offering USGPVIC insertions to women and children throughout WCH with known or predicted DIVA during business hours. Planning for this changed model happened in close collaboration and with strong support of many key stakeholders, particularly WCHN departments of Anaesthesia and Infection Control. This ensured the service met organisational needs, stakeholder buy-in, quality and safety.

The service was branded as the 'Fast Advice and Access for Intravenous Routes with Imaging' (FAAIRI) Service, since it was thought to be memorable and gentle/fun for children.

FAAIRIs, SAMI Nursing Director, WCH Anaesthesia, Infection Control, Procurement, Centre for Education, educators from all paediatric and women's areas met monthly through the Vascular Access Service Governing Group (VASGG) to discuss all aspects of quality and safety in vascular access for WCH, with planning and implementing the FAAIRI Service a standing item. The FAAIRI Service criteria for USGPVIC referral (Schults et al. 2022) and criteria for vascular access device (VAD) choice (Ullman et al. 2020) using best available evidence.

The FAAIRI Service was launched in March 2021 with bright pink flyers placed near all WCH PIVC trolleys and the FAAIRIs wore matching bright pink scrubs (sometimes with pink tutus, tiaras and wands). This alerted clinicians to the presence of the service and prompted discussion on what the service can do for patients.

In the first six months of the service, there were challenges with some clinicians expressing concerns that allowing nurses to place USGPVICs for children with DIVA may deskil other clinicians. The FAAIRI PVANC presented to disciplines within WCHN and SAMI staff about the evolution of the service. This, together with proving that FAAIRI teaching upskilled doctors, has assisted the nurse-led FAAIRI Service in gaining universal WCHN and SAMI support for nurses to play this pivotal role in vascular access. The service continues to provide education and support to all clinicians on strategies and tips for first time PIVC success, including using ultrasound guidance.

APPLICABILITY TO OTHER SETTINGS

The FAAIRI PVANC predicted that the service would be successful, and recorded all of the steps which led to the service's success and any tips for pitfalls to avoid to allow replication. The FAAIRIs have been able to share how to replicate this service, for both children and adults.

Strategies for success and improved patient care were, stakeholder buy-in/collaboration (including expansion of the Vascular Access Governing Group from 5 to more than 20 stakeholders from WCHN and SAMI WCH), demonstrating that TMOs were up skilled rather than deskilled by the presence of FAAIRIs, advertising (branding with hot pink - flyers and scrubs) and using reviewing/applying best evidence to inform practice. In addition, FAAIRIs ongoing open dialogue across WCH, SAMI, with other local health networks and across Australia means there is continual reciprocal sharing of practice/product/service delivery changes and solutions to difficult and/or unusual vascular access issues.

In addition, clinicians from every other state of Australia have sought advice from FAAIRIs to replicate this service model in their states, because it changed the landscape entirely for vascular access for children at WCH.

FAAIRIs are currently mentoring vascular access clinicians in centres across Australia and working with staff to support improved vascular access outcomes for children. The service is now seen as a nation-leader in paediatric vascular access and is contacted for ad-hoc advice several times per week by intra-/interstate clinicians.



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APPENDIX

Appendix 1

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Hunter New England Local Health District, NSW

Children Young People and Families

All Together Now: Coordinating Care for Kids with Medical Complexity in the HNEkids Compass Project

Stephanie Hodgson, Ashleigh Griffiths and Camilla Askie

AIM

The overarching aim of the project was to improve the quality of integrated care for children with medical complexity within the Hunter New England Local Health District. This aim was to be achieved by implementing a co-designed, sustainable, and cost-effective care coordination model. The model focused on enhancing communication and collaboration among healthcare providers, with a goal to demonstrate a 30% increase in same-day appointment coordination for enrolled children within 12 months of implementation.

SUMMARY ABSTRACT

Children with medical complexity (CMC) are a vulnerable population at risk of fragmented and poor-quality care (Leyenaar, et al. 2022). CMC require frequent access to a variety of health services and team-based interdisciplinary care over many years (Altman, et al. 2018). Children in this category represent approximately 10% of children attending children’s hospitals, but account for approximately 60% of expenditure (Peltz, et al. 2016).

CMC, who may also be known as “complex chronic” (Feudtner, et al. 2000), have multiple significant chronic health problems that affect multiple organ systems and result in functional limitations, high health care need or utilisation, and often the need for medical technology (Cohen, et al. 2011; Kuo, et al. 2011; Simon, et al. 2014). CMC and their families often encounter significant disruptions and challenges in navigating healthcare (Breen, et al. 2018a and 2018b). These challenges are compounded by the complexities of coordinating care across multiple services and providers, making it difficult to manage their health effectively (Hodgson, et al. 2024).

The HNEkids Compass Project aimed to develop and implement a co-designed, sustainable, cost-effective model of complex care coordination to empower CMC and their families within Hunter New England Local Health District (HNELHD) by June 2024. The project commenced in November 2021 and was completed over a three-year period through five project phases, led by a Project Lead, Project Manager and Project Officer, and supported by a project specific Steering Committee.

Throughout the project, extensive stakeholder and consumer consultation was undertaken. The Model was co-designed with contributions from over 150 participants, including 15 consumer representatives. A further 31 interviews (10 parents/carers of CMC and 21 paediatric health staff) and over 100 informal consultations helped uncover the experiences and needs of both families and staff. This co-design process culminated in the establishment of the HNEkids Complex Care Coordination Service in 2023. This Service incorporates a novel, six-to-twelve-month intensive coordination program that unites various district specialties through the HNEkids Complex Care Coordination Network to support a sustainable, integrated experience following the initial intervention and beyond.

The initial phase of the Model focuses on goal setting, creating care plans and educating the family, building their capacity to coordinate their child’s care beyond their enrolment in the Service. The Service employs intake/transition processes with graduation points, ensuring it can serve new families without overburdening resources. Upon completion of the initial phase, the family transitions into a maintenance phase where they are supported through regular “check-in” contact from a member of the HNEkids Complex Care Coordination Network.



Implementation results from the first 20 children through the Service demonstrated significant improvements in health service coordination and family satisfaction. Coordinated same-day appointments increased from 10% to 65% of children after six months of Service implementation, substantially reducing travel requirements, school and work absenteeism, and associated costs for families. Emergency department presentations decreased by 60%, and the combined cohort inpatient length of stay at John Hunter Children's Hospital (JHCH) dropped from 276 days pre-enrolment to 110 days post-enrolment, averaging an 8-day reduction per child. Health staff and consumer feedback found the Service to be acceptable and valuable, reporting improvements in care integration, communication, and trust.

The HNEkids Complex Care Coordination Service is now business as usual. HNELHD have invested in a permanent Paediatric Complex Care Coordinator and this role is integral to leading the Model ongoing. This work has been instrumental in improving the quality and experience of care for CMC in HNELHD, with families who had been through the Service describing it as invaluable. Areas for potential enhancement of the Service include incorporating dedicated administrative Social Work and Aboriginal Health personnel to the Service team, to better support the high proportion of families with additional psychosocial vulnerabilities enrolled in the Service.



CLINICAL EXCELLENCE AND PATIENT SAFETY

HIGHLY COMMENDED

Fiona Stanley Fremantle Hospital Group, WA

Immunology

Virtual Immunology Clinic for General Practice

Prof Dominic Mallon, Dr Jack Bourke and Dr Michael O'Sullivan

AIM

- To use currently available technology to implement a novel workflow whereby General Practitioners (GPs) are able to refer patients to an Immunology specialist via an online referral form which (on acceptance of the referral by the specialist) activates Microsoft automation that enables an online, synchronous videocall consultation involving the patient (who may be at home or in the GP's office), GP and specialist; either in real time or at a later date and time chosen by the GP.
- To evaluate the clinical effectiveness, patient and general practitioner experience through pilot and post-pilot implementations of this novel clinical workflow.

SUMMARY ABSTRACT

Timely and equitable access to specialist advice for patients is a perennial problem, exacerbated by WA's geographical size and long waiting lists, especially for rural patients intending to access the public system.

The Virtual Immunology Clinic for General Practice (VIC-GP) was established as a pilot project in January 2022 to enable GPs to refer patients via an online referral form that triggers a synchronous virtual appointment involving the patient, the referring GP and the Immunologist. Automated workflows that provide the Specialist with links to BossNet Digital Medical Record, REDCap and Microsoft Teams in real time were established for the pilot phase (January 2022 - July 2023); and a cybersecure and scalable Online Services Portal was implemented for the post-pilot phase.

Independent audit of the clinic via case review of the initial 53 patients assessed via this novel workflow (by 1 paediatric, 2 adult clinical immunologists, plus the SMHS liaison GP) showed equivalent clinical effectiveness (when compared with usual face to face clinical consultations) and robust management of any risks associated with not having the patient attend in person.

One hundred and sixty (160) GPs from 55 General Practices / Rural Hospitals / Aboriginal Medical Services (29 urban; 26 rural) have now registered for access to VIC-GP. 744 new referrals have been received. Audits of new referrals show a pivot from urban to rural patients (from 19% during the pilot to now 60% of referrals being rural) with an average saving of 128 days on the waiting list; 1,370 km travelled; and 2 productive days lost, per referral.

In context education and upskilling has brought best practice clinical immunology and allergy into the GPs' surgeries and has reduced the need for GPs to refer patients to immunology.

The service provides more timely and equitable access to care, especially for those patients whose circumstances (cultural barriers; English as a second language; geographical distance; busy family, business or farm lives) make outpatient clinic attendance difficult, with high rates of reported GP educational value and patient overall satisfaction.

This clinic is now established as a part of the routine services provided by the Immunology Department at Fiona Stanley Hospital.



Western Sydney LHD - Blacktown and Mount Druitt Hospitals, NSW

Integrated and Community Health

The Young Strong and Deadly: A 14-week Aboriginal-led health education and physical exercise program

Andrew Fraser, Dr Stephanie Fletcher-Lartey, Tano D'Urso, Darian Preece and Hillary Lo

AIM

The aim of the Young Strong and Deadly Program (YSDP) project was to reduce barriers, such as transport, finances, education and social connection, increasing healthy behaviours and improving social and emotional wellbeing among young Aboriginal adolescents aged 12-16 years, over a 14-week period from September to December 2023.

SUMMARY ABSTRACT

Background: Western Sydney Local Health District (WSLHD) serves one of the largest urban populations of Indigenous people in Australia. Over 10% of young people in western Sydney are disengaged from education and employment, leading to low socioeconomic status (SES), poor nutrition, and low physical activity. These factors increase the risk of chronic diseases, which are diagnosed in young Aboriginal people at twice the rate of their non-Aboriginal peers, and this disparity triples by early adulthood. The Young Strong and Deadly program (YSDP) was developed to address these issues through a culturally appropriate, strength-based approach to physical activity and health education.

Methods: The YSDP was co-designed with Aboriginal community stakeholders and informed by Aboriginal Subject Matter Experts (SMEs) in health and physical exercise. The program targeted Aboriginal youth aged 12-16 years with poor school attendance and included paid gym memberships, free transport, and culturally relevant health education. The program was delivered over 14 weeks with twice-weekly sessions led by Aboriginal fitness coaches, supported by an Aboriginal Health Promotion Officer and a Youth Health Worker. A mixed-method, pre-post-test observational study design was used to evaluate the program, including quantitative and qualitative measures of physical activity, nutrition, and wellbeing.

Findings: Of the 31 participants recruited, 24 (80%) completed the program, with an average weekly attendance rate of 70%. Significant increases were observed in participants' knowledge of healthy eating recommendations, vegetable and water intake, and appropriate fruit consumption. Physical performance improvements included a mean deadlift increase of 18.1 kg, a mean push-up increase of 6, a mean plank duration increase of 36.7 seconds, and a 7% increase in speed. Self-perception of wellbeing improved significantly, although self-perceived happiness did not change. Participants reported learning how to safely use the gym, forming friendships, and building self-esteem. Parents noted improvements in their children's self-esteem, health behaviours, school focus, and self-confidence.

Discussion/Conclusions: The YSDP demonstrated high retention rates and significant improvements in physical performance and wellbeing among young Aboriginal participants. The program's success was attributed to its inclusive, culturally appropriate design, strong community partnerships, and continuous evaluation.

The program exemplifies best practices in health intervention by removing barriers to participation through paid gym memberships and free transport, ensuring accessibility and inclusivity. The community co-design approach, involving Aboriginal stakeholders and SMEs, ensured cultural relevance and appropriateness. The integration of physical activity with nutrition education, using culturally significant ingredients, provided a holistic approach to



health. The program's adaptability in including both males and females, despite initial focus on males, highlights its flexibility and commitment to equity.

The YSDP's emphasis on continuous evaluation and self-accountability ensures that the program remains effective and up-to-date. The strong community-based partnerships fostered a sense of shared responsibility and engagement, essential for cultural safety and ownership of health interventions. The program's design for scalability and sustainability, with support for multiple cohorts and ongoing research, indicates a long-term commitment to improving health outcomes for Aboriginal youth. The focus on building research and evaluation capacity among Aboriginal staff is crucial for sustaining improvements and fostering long-term community empowerment.

In summary, the YSDP program demonstrates innovation through its inclusive, community-driven approach, strong Aboriginal leadership, collaborative partnerships, and commitment to continuous improvement. This holistic and culturally appropriate intervention not only addresses immediate health needs but also builds a foundation for long-term community empowerment and well-being. By applying these principles, other departments, health districts, and programs can develop and implement effective health interventions for Aboriginal youth, leading to improved health outcomes for diverse populations



CLINICAL EXCELLENCE AND PATIENT SAFETY

TABLE OF SUBMISSIONS

Alfred Health, VIC

Impact of RANZCR iRefer Clinical Decision Support Implementation on Imaging Utilization: Preliminary Findings from a Quaternary Hospital

Meng Law, Pip Hawkings, Ben Morgan, Chris Perry, Bruno Di Muzio, Peter Cameron, Carmel Lackey and Chris Mason

Avive Clinic Mornington Peninsula, VIC

Inpatient Embodies Emotion and Movement Program

Dr Megan Deutsher

BlueCare, QLD

Delivering community based Palliative Care in regional, rural and remote Queensland

Jess Slater

BlueCare, QLD

Hospital in the Home - How an Aged Care Provider Partnered with Private Hospitals and Private Health Fund to deliver Clinical Care in the Home

Kerry Ledwith

Campbelltown Hospital, NSW

The Adult Surgical Prophylaxis Flipchart (ASPF) - an innovative tool designed for anaesthetists and surgeons

Priscilla Tran, Marian Youssef, Gian Parisi, Dr Jenny Cheong, Dr Lisa Noonan, Dr Josephine Tan, Dr Richard Cracknell and Dr Michael Maley

Child and Adolescent Health Service, WA

CAHS Sepsis Program

Dr Bernard McCarthy, Natalie Middleton and Prof Christopher Blyth

Fiona Stanley Fremantle Hospital Group, WA

Virtual Immunology Clinic for General Practice

Prof Dominic Mallon, Dr Jack Bourke and Dr Michael O'Sullivan

Fiona Stanley Fremantle Hospitals Group, WA

A Novel Multidisciplinary Model to Reduce Hospital Acquired Complications

Catherine Li, Emma White and Matt Brennan

Gold Coast Health, QLD

Interdisciplinary Psychology and Speech Pathology Service

Madeleine Campbell, Dr Jessica Davis and Elke Hafkamp

Heathcote Health, VIC

Whole System Quality

Angie Dredge and Dan Douglas



<p>Hunter New England Local Health District, NSW</p> <p><i>Impact of the HNE outpatient telestroke network</i></p> <p>Dr Carlos Garcia-Esperon, Dr Heidi Janssen, Emma McCartney, Rachel Peake, Jaclyn Birnie, Jo Wicks, Dr Sue Amarasena, Simone Owen, Cecelia Washington, Prof Neil Spratt, Prof Christopher Levi and Dr Beng Lim Alvin Chew</p>
<p>Hunter New England Local Health District, NSW</p> <p><i>All Together Now: Coordinating Care for Kids with Medical Complexity in the HNEkids Compass Project</i></p> <p>Stephanie Hodgson, Ashleigh Griffiths and Camilla Askie</p>
<p>Hunter New England Local Health District, NSW</p> <p><i>Seeing is Knowing: Video Guided Learning</i></p> <p>Tegan Izzard and Ellen Mills</p>
<p>Hunter New England Local Health District, NSW</p> <p><i>Improving hospital discharge outcomes in HNELHD: Evaluating the uptake and impact of follow up phone calls</i></p> <p>Gena Lieschke, Sophie Dilworth, Jean Ball, Michael Fahy, Gregory Hayes, Robyn Howard, Stacey Simpson, Samatha Wieczorek, John Wiggers, Michelle Giles, Maralyn Foureur and Elizabeth Grist</p>
<p>IMH Hironnelle Private Hospital, WA</p> <p><i>Patient-Centered Murals: Collaborative Art for Healing Spaces</i></p> <p>Margarita Zanyuk</p>
<p>King Edward Memorial Hospital, NSW</p> <p><i>CARE - HG: Collaborative Approach to Reduce Emergency visits for Hyperemesis Gravidarum</i></p> <p>Phoebe Fitzgerald, Pushpa Sivakumar, Kirsty Officer, Katie Lussenburg and Valda Duffield</p>
<p>Mercy Health Albury, NSW</p> <p><i>Loneliness In Older Age: Improving social outcomes through routine screening and person-centered care planning</i></p> <p>Bronwyn Rivers and Kate Everitt</p>
<p>Mercy Health Albury, NSW</p> <p><i>Effectiveness of Reminiscence and Cognitive Stimulation Therapies for Ageing Adults in a Geriatric Evaluation Management Unit</i></p> <p>Pauline Lawrence and Leeanne Egan</p>
<p>Metro North Health, QLD</p> <p><i>Minimising iron staining - an 8-year quality improvement journey</i></p> <p>Martin Canning and Christopher Freeman</p>
<p>Queensland Health, QLD</p> <p><i>Rapid Discharge Theatre List</i></p> <p>Patrick Glover, Clayton Lam and Carla Russell</p>



<p>Royal North Shore Hospital, NSW</p> <p><i>Revolutionising Outpatient Services at NSLHD: Digital Transformation Through the electronic referral (eReferral) System</i></p> <p>Irene Chen</p>
<p>Royal North Shore Hospital, NSW</p> <p><i>Excellence in Hip Fracture Care</i></p> <p>Bonnie Liu, Dr Andrew Ellis, Stephanie Laurent and Saskia Lonsdale</p>
<p>Royal North Shore Hospital, NSW</p> <p><i>Improving outpatient waitlist length and patient experience through the General Practice Liaison Officer role</i></p> <p>Dr David Cosgriff</p>
<p>Royal Perth Hospital, WA</p> <p><i>The Vascular Access Team and the DRIP Criteria - The Perfect Partnership</i></p> <p>Nick May and Shirene Mattaboni</p>
<p>RPA Virtual Hospital, NSW</p> <p><i>Elevating the access and patient experiences with a virtual fracture clinic</i></p> <p>Min Jiat Teng, Ben Warnock and Isabella Khoudair</p>
<p>Ryde Hospital, NSW</p> <p><i>Quilts & Hearts</i></p> <p>Barbara Scott</p>
<p>Ryde Hospital, NSW</p> <p><i>Risky Business: Development of a Protocol for Eating and Drinking with Acknowledged Risk (EDAR)</i></p> <p>Sarah Drake, Catherine Pash, Bianca Italiano, Dr Mary Webber, Dr Rajni Lal, Dr Martin Kennedy, Barbara Scott, Jennifer Granger, Radha Murthi, Anna Butcher and Janine Carragher</p>
<p>Ryde Hospital, NSW</p> <p><i>BEFAST Early Recognition of the Signs of Stroke</i></p> <p>Simpy Arora, Dr Peter Roberts, Sarah Artup, Dr Kenin Lai, Katie McKnight and Janine Carragher</p>
<p>SA Medical Imaging, CALHN and Women's and Children's Health Network, SA</p> <p><i>Fast Advice and Access for Intravenous Routes with Imaging (FAAIRI) Service</i></p> <p>Catherine Baring (Miller), Sarah Goh, Susan Waters, Dr Philippa Lane, Georgina Kakoulis, Jacinta Manos, Dr Brigid Connolly, Dr Ping Hin (Jeffrey) Yeung, Dr Michael Wilks, Dr Rebecca Linke, Nicholas Zabanias and Tom Beatty</p>
<p>Sir Charles Gairdner Osborne Park Hospital Care Group, WA</p> <p><i>Enhancing Mandatory Training Compliance of Patient Support Services Staff SCGOPHCG</i></p> <p>Brenton Moyle, Linda Davies and Pearl Kennon</p>



<p>South Western Sydney Local Health District, NSW</p> <p><i>Choice in end-of-life care, a sustainable option if the model is right!</i></p> <p>Janeane Harlum, Prof Josephine Chow, Dr Nutan Maurya and Kim Jobburn</p>
<p>St Andrew's Hospital, SA</p> <p><i>Inadvertent perioperative hypothermia - prevention strategies for urology surgical patients</i></p> <p>Kathryn Humphries, Tamara Page, Tina Donaldson and Sharon Blaney</p>
<p>St John of God Berwick, VIC</p> <p><i>2024 Year of Invasive Devices - Best Practice Care Always</i></p> <p>Priscilla Singh, Susan Marquez and Allison Merrigan</p>
<p>St Vincent's Health Australia, VIC</p> <p><i>Amplifying the patient voice: Using real time data to inform exceptional experiences</i></p> <p>Jane Evans, Edel Murray and Alex Joyner</p>
<p>Timboon and District Healthcare Service, VIC</p> <p><i>A Model for Delivering of High-Quality Consumer-Centred Healthcare In Rural Settings</i></p> <p>Larissa Barclay</p>
<p>WA Country Health Service, WA</p> <p><i>Reducing unnecessary hospital emergency presentations among aged care facility residents</i></p> <p>Allan Pelkowitz</p>
<p>Western Health, VIC</p> <p><i>POPPY: The advanced Practice pelvic organ Prolapse Physiotherapist Led Clinic</i></p> <p>Kerry O'Sullivan, Chennelle Mendoza, Dr Rebecca McDonald, Dr Debjyoti Karmakar, Mary De Gori and Rebecca Pile</p>
<p>Western Sydney LHD, NSW</p> <p><i>Managing Hyperemesis Gravidarum with Hospital in the Home Services: A holistic approach to pregnancy wellness.</i></p> <p>Jakeline Pateraki</p>
<p>Western Sydney LHD - Auburn Hospital, NSW</p> <p><i>What's Important Today? (WIT Round)</i></p> <p>Bronte Wilson, Oliver Scott, Elaine Chui, Jennifer Celkys, Catherine Knight, Jodi-Anne Gibson, Leza Nissan, Elizabeth Williams, Alexandra Mead, Maria Senatore and Beverley Skillicorn</p>
<p>Western Sydney LHD - Blacktown and Mount Druitt Hospitals, NSW</p> <p><i>Triage 2 Treatment: Improving Access to Care</i></p> <p>Helen Zaouk and Jordan Fenech</p>



Western Sydney LHD - Blacktown and Mount Druitt Hospitals, NSW

The Use of Bioflo Peripherally Inserted Central Catheters (PICC) with Hyperemesis Gravidarum (HG) Patients

Rainor Lozanes and Anthony Marshall

Western Sydney LHD - Blacktown and Mount Druitt Hospitals, NSW

Improving Syphilis Treatment Outcomes in Western Sydney via a Direct Referral Pathway between Public Health and Sexual Health

Dr Rohan Bopage, Jennifer Lampard, Sophie Norton, Melissa Power, Dr Conrad Moreira, Prof Ramon Z. Shaban and Prof David Lewis

Western Sydney LHD - Blacktown and Mount Druitt Hospitals, NSW

The Young Strong and Deadly: A 14-week Aboriginal-led health education and physical exercise program

Andrew Fraser, Dr Stephanie Fletcher-Lartey, Tano D'Urso and Darian Preece

Western Sydney LHD - Mental Health Services, NSW

Excellence in Acute Community Mental Health Experience

Sarveswari Dharmakumar and Suman Chhetri

Western Sydney LHD - Oral Health Services, NSW

City to Bush Dentistry (CBD). Twenty Years of Capping Costs with Close to Home Patient Centered Care

Dr Neeta Prabhu, Neville Heer, Lara Mayze and Angela Rankin

Women's and Children's Health Network (WCHN), SA

Introducing Safe Single-checking of Low-risk Medication to Improve Nursing Workflow for Medication Administration in Paediatric Patients

Sophie Sennar and Emma Jeffs





NON-CLINICAL SERVICE DELIVERY

WINNER

Sydney Local Health District, NSW

Biomedical Engineering - Capital Infrastructure Engineering

Harnessing Byproduct Water: Advancing Sustainable Water Management in Local Community

Ryan Lu, Kesh Chand, Chin Voon, Rodney Staughton, Shane Oakes, Tegan Roper, Mufid Noufal
and Nicole Webb

AIM

The production of ultrapure water for kidney dialysis generates a substantial volume of wastewater, primarily in the form of RO (reverse osmosis) concentrated water, and it is safe for various non-potable applications. This sustainability project seeks to enhance water usage efficiency within SLHD (Sydney Local Health District) by repurposing RO concentrated water for suitable non-potable purposes, thereby contributing to a more sustainable water future for the local community.

To successfully implement this water reuse initiative, it is critical to thoroughly assess the community's water demand, including volume requirements, usage profiles, quality standards, and the necessary coordination and infrastructure. The specific objective of this project is to repurpose the RO reject water exclusively for cleaning local streets using a vehicle equipped with a tank and automated cleaning equipment.

SUMMARY ABSTRACT

Since 2022, RPAH (Royal Prince Alfred Hospital) and the CoS (City of Sydney Council) have spearheaded a pioneering initiative in Australia to capture and reuse RO reject water for street and footpath cleaning. This innovative project has the potential to serve as a model for other healthcare facilities and municipalities across SLHD and beyond, inspiring similar efforts to maximise the reuse of water resources. The collaboration between SLHD and CoS exemplifies how public institutions can work together to tackle environmental challenges and promote sustainability at a local level.

At the Kidney Centre (RPAH), a water purification system (using membrane filters) produces ultrapure water for dialysis. This process generates approximately 1.5 million litres RO reject water annually, which is typically discharged into the sewer system. As part of a broader sustainability effort, RPAH now captures 20,000 litres of this reject water in two collection tanks each week. The council workers, operating sweeper trucks equipped with water tanks in diverse sizes (500, 1,000, and 7,000 litre), collect recycled water from the reservoir (two 10,000 litre tanks) located next to the Kidney Centre (RPAH) at the Professor Marie Bashir Building. This water is then used for street and footpath cleaning, reducing reliance on potable water for such non-potable applications.

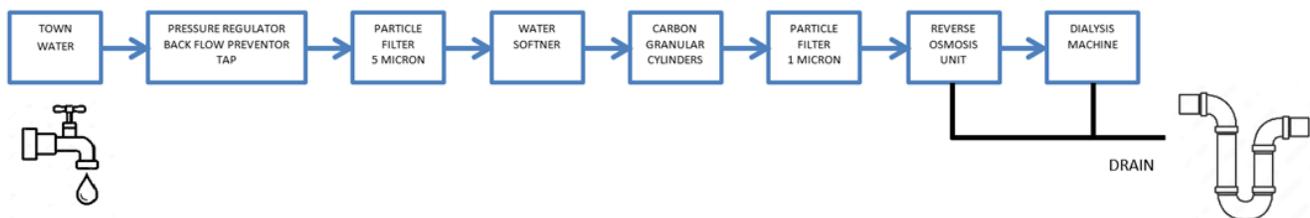


Figure 1 - Dialysis Water Treatment



Potable water often does not meet the stringent standards required for renal dialysis and thus requires extensive treatment. The treatment process includes pre-filtration, softening, filtration through activated carbon, and RO unit, the most effective method for producing ultrapure water suitable for dialysis (AAMI, 2003). RO treatment, a critical step in this process, uses a semi-permeable membrane to remove ions and micro-contaminants from potable water. The product water from RO treatment is clean and safe for drinking (Triton Water Solutions, 2019). While widely used in industries like seawater desalination and wastewater recycling, RO treatment generates significant amounts of reject water with 2-3 times higher concentrations of salts and other contaminants (Desalination and Water Recycling, MIT, 2017). SLHD has developed a sustainable method to repurpose this reject water for applications where high-quality water is not required, such as street cleaning using specially equipped vehicles.



Figure 2 - RO Treatment Water for drinking

The initial project evaluation involved system design, plumbing pre-installation, cost estimation, and health and environmental risk assessments (Environmental Health, 2023), has been conducted by the SLHD Capital Infrastructure and Engineering Department (SLHD CIE). Support from the water treatment specialist, Integra Waters, has been crucial to ensuring compliance with regulations and best practices.

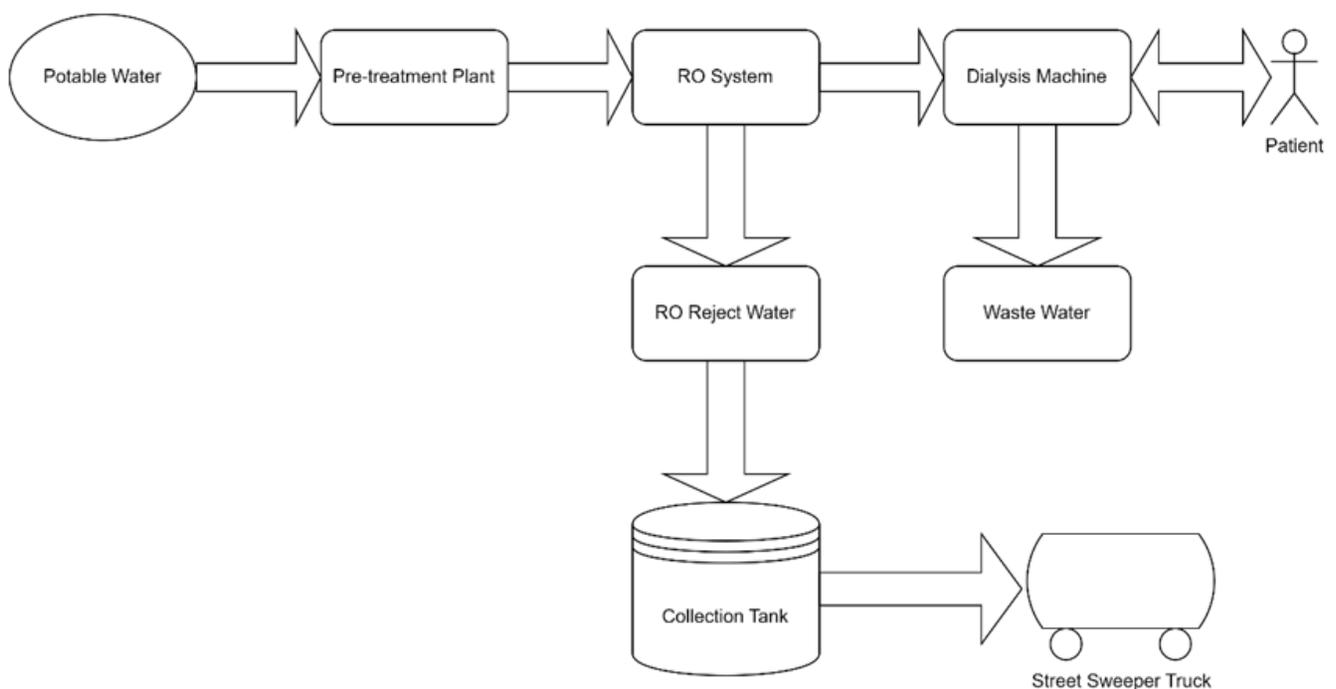


Figure 3 - RPAH Dialysis Water Flow



REPORT

APPLICATION OF ACHS PRINCIPLES

1. Consumer Focus

SLHD places a strong emphasis on consumer focus throughout the implementation of the project. The project team began by conducting thorough consultations with the stakeholders, including the Kidney Centre (RPAH), SLHD CIE and the water treatment specialist, and the local community to understand their concerns about water conservation, environmental sustainability, risk management, and public health. This understanding shaped the project's goals, ensuring it addressed these concerns directly. This consumer-focused approach is a key factor in the project's success and potential as a model for similar initiatives in other regions.

- **Ensuring the priority of consumer:** The initiative is rooted in a commitment to safeguard the community's access to potable water by reducing its use in non-essential applications. By repurposing RO reject water for street and footpath cleaning, the project ensures that more potable water is available for critical uses, such as healthcare and domestic daily consumption. This approach demonstrates a clear prioritization of consumer needs, conserving vital resources while promoting public health.
- **Evaluating the perspective from consumer:** A robust feedback loop is integral to the initiative, with ongoing consultations with both hospital and community members to ensure alignment with consumer expectations. These evaluations go beyond measuring satisfaction, which are focusing on identifying areas for improvement to better serve the community. Routine meetings and stage reviews have led to continuous adjustments in the project, enhancing its relevance and effectiveness.
- **Conducting risk assessment for consumer:** To ensure safety and compliance, the Integra Water conducted a risk assessment of the project. The water quality of the RO product is assessed through direct measurement of specific contaminants, estimation based on water recovery data from the RO plant and local water authority, and water quality data provided by the dialysis service provider (Integra Water, 2023).

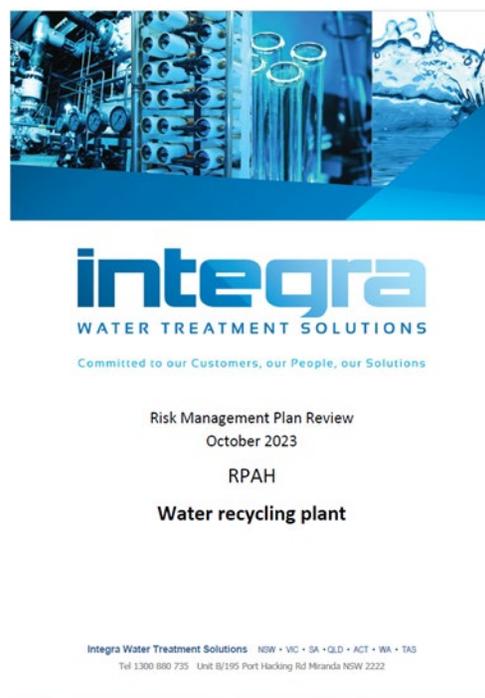


Figure 4 – Cover Page of Risk Management Plan Review of RPAH Water Recycling Plant (by Integra Water)

By maintaining a strong focus on consumer needs and actively engaging with the community, SLHD and CoS have ensured that this sustainability initiative not only meets environmental goals but also aligns closely with the



expectations and priorities of the people it serves. This consumer-centric approach makes the initiative a potential model for similar efforts in other regions.

2. Effective Leadership

The effective leadership demonstrated a commitment to excellence and innovation, guiding the project through strategic vision and effective management. The project's success relies on the collaboration between multiple parties, including the Kidney Centre (RPAH), Integra Water, the CoS and the SLHD CIE teams.

The CoS actively supported the project by planning and conducting the transportation and usage of 20,000 litres of RO reject water for street cleaning and sweeping on a weekly basis. Integra Water ensured regulatory compliance through risk assessments, while the engineering team of SLHD CIE facilitated the project's implementation by providing space for harvest tanks, installing professional plumbing setups, and coordinating efforts with external contractors.



Figure 5 - Photo of project participants

SLHD and CoS established a clear strategic direction for the water reuse initiative, focusing on sustainability and efficient resource management. This vision was effectively communicated across the organization, aligning all stakeholders with the project's goals, and ensuring coordinated efforts in its implementation. The biomedical team of SLHD CIE provided guidance that kept the project focused on its objectives, timeline and techniques by the following methods:

- **Pursuing the ongoing development of strategies:** The project leaders actively pursued continuous improvement by developing and refining strategies for RO reject water capture and reuse. They adopted advanced technologies and best practices to optimise the efficiency of the water reuse process. This commitment to excellence involved regular reviews of systems, such as regular testing on water quality, and processes to identify opportunities for enhancement and innovation. For example, to ensure project viability the distance between the reject water tanks and the RO unit has been minimised because of the need for running new piping from the dialysis unit, which would increase costs and affect the feasibility of the project.
- **Motivating the workforce to develop:** Effective leadership played a key role in motivating and engaging the workforce involved in the initiative. The leaders fostered a culture of collaboration and empowerment, encouraging employees to contribute ideas and take ownership of their roles. Also, the training programs and professional development opportunities were provided to support staff growth and ensure that the team was well-equipped to manage the challenges of the project. To ensure the safety of all operators of the water harvesting project, the operating procedure of water truck filling and safety operation procedure



(SOP) documentation was developed and operated by the SLHD CIE teams and local council workers (see Appendix 1 - 2024 224683 Local Operating Procedure - Water Truck Filling RPA v2).

- **Embracing innovation and creativity:** The leadership team welcomed innovative solutions and creative approaches to overcome challenges and achieve project goals. By fostering an environment that valued innovation, the leaders were able to implement a novel approach to repurposing RO reject water that could serve as a model for other institutions.

Through commitment to continuous improvement, staff empowerment, and a focus on innovation, the leadership at SLHD and CoS demonstrated effective management and set a high standard for excellence in the water reuse initiative. Their leadership not only guided the project to success but also established a framework for future sustainability efforts.

3. Continuous Improvement

SLHD is embedding a culture of continuous improvement into the water reuse initiative, demonstrating a commitment to enhancing performance. Since the inception of this project, continuous improvement has been made to focus on efficiency, effectiveness, and compliance with safety standards. This approach ensures that the project evolves and adapts to meet emerging needs and opportunities for advancement.

- **Improving the system to ensure efficient and practical operation:** The initiative incorporates continuous improvement into its daily operations by regularly reviewing and refining processes. The effectiveness of the RO reject water reuse system has been consistently evaluated. This includes securing the harvested tanks, implementing code security locks for authorised access, separating the flow into two tanks, conducting leakage, chemical, and bacteria tests, and developing clear SOPs for operations, contact information, and emergency procedures to ensure that the initiative remains both effective and efficient.
- **Consistently maintaining quality care:** The project focuses on maintaining standards of quality in water reuse while ensuring it meets the community's needs. The initial test of water quality is conducted by Trace Inorganics Laboratory of NSW Health Pathology (see Appendix 2 - Water Quality Test). By implementing rigorous monitoring and quality control measures, including monthly inspections and routine water testing, SLHD and CoS ensure that the water repurposed for street cleaning meets safety and performance standards. Continuous monitoring of water quality and routine safety inspection, conducted by the CIE engineering team, are essential to detect any potential issues early and ensure the safety and efficacy of the reuse application. This ongoing commitment to quality helps maintain consumer trust and satisfaction.
- **Monitoring outcomes for consumer care:** The initiative involves regular monitoring of outcomes, such as water quality, the volume of reused water, the effectiveness of street cleaning, and community feedback. This data is collected and analysed to assess the project's impact and identify areas for improvement. By using outcomes data to inform decisions, the biomedical team can make evidence-based adjustments to enhance the initiative's effectiveness and address any issues that arise.
- **Implementing feedback mechanisms:** The feedback from community members, stakeholders, and staff is actively sought and used to drive continuous improvements. This feedback loop ensures that the initiative remains responsive to community needs and continually evolves to better serve its purpose. For instance, the engineering team of SLHD CIE, responding to a request from the council's environmental team early this year, upgraded the plumbing setup, extending pipes of water output and relocating the water collection spot, to improve the convenience of transferring water from harvest tanks to sweeper trucks (see Figure 6 (a)(b)(c)(d)).

By integrating continuous improvement into every aspect of the water reuse initiative, SLHD and CoS ensure that the project not only meets its current objectives but also adapts to future challenges and opportunities. This



approach sustains the initiative's success and reinforces its role as a leading example of sustainable water management in healthcare.



Figure 6 (a)(b) - Original hose setup and water collecting spot in July 2023



Figure 6 (c)(d) - New hose setup and water collecting spot in July 2024

4. Evidence of Outcomes

The completion of this project has demonstrated evidence of its positive outcomes, aligning effectively with ACHS principles. These outcomes have a significant impact on operational efficiency, local water sustainability, and community engagement. By increasing the volume of reused water, the project has successfully met the demands for footpath and street cleaning. It has also innovatively utilised existing assets and facilities by integrating the water treatment plant for dialysis with new RO reject water harvesting tanks, resulting in environmental benefits



such as reduced wastewater impact and broader community gains. Designed for easy installation and operation, the project requires only minor maintenance, maintaining a balanced supply and demand profile that supports its long-term feasibility.

- **Positive environmental impact:** One of the most significant achievements of this project is water conservation. By repurposing approximately 20,000 litres of RO reject water each week for street and footpath cleaning, the project has significantly reduced the community's reliance on potable water. This outcome not only contributes to local water conservation efforts but also aligns with broader environmental sustainability goals. By reducing the volume of byproduct water discharged into the sewer system, the project also has lessened the burden on local wastewater treatment facilities.
- **Financial benefit:** The reduction in potable water usage has also led to notable cost savings for both SLHD and CoS. By utilizing RO reject water, which would otherwise be discarded, the hospital and the local council have been able to decrease their water bills and allocate resources more efficiently. These savings can be redirected to other critical areas, enhancing the overall financial sustainability of the hospital and council operations. In the contrast, the overall cost of the project is limited with expenditure occurring on risk assessment, facility allocation, plumbing system upgrading and site signing and security.
- **Enhanced management efficiency:** The implementation of the water harvesting and reuse system has led to improved operational efficiency within SLHD. By effectively managing and repurposing the RO reject water, the kidney centre has optimised its water management practices. This improvement in efficiency contributes to the overall operational resilience of the hospital, ensuring that it can continue to provide high-quality healthcare while minimizing its environmental footprint (Agar, 2015).
- **Improved community relations:** The collaboration between SLHD and CoS has strengthened community relations by demonstrating a commitment to sustainability and resource stewardship (see Appendix 3 - Successful Sustainability Initiative Endorsement Letter-RPA). The local community has positively received the project's success, enhancing the reputation of both the hospital and council. This outcome is particularly important in fostering public trust and support for future sustainability initiatives.
- **Scalability and replication:** The project's outcomes have provided a solid foundation for its potential scaling and replication across other healthcare facilities within SLHD and beyond. The data and insights gained from this initiative serve as valuable evidence that similar projects can be successfully implemented in different contexts, leading to broader regional and even national benefits in water sustainability.



Figure 7 - CoS Street Sweeper Truck Collecting Water from RPAH





Figure 8 - CoS Sweeper Truck Working on Street (photo from CoS)

In conclusion, this project provides compelling evidence of its successful outcomes, including substantial gains in environmental benefit, cost saving and improved community relations. These outcomes not only highlight the project's immediate impact but also support its potential for wider application, contributing to long-term sustainability efforts in the healthcare sector and beyond.

5. Striving for Best Practice

This project demonstrates a commitment to excellence by adopting innovative approaches, adhering to the highest standards, and continuously seeking opportunities for improvement. Its success relies on balancing supply and demand and making it both practical and cost-effective. The collaborative efforts in between the SLHD CIE teams in designing and constructing the system have ensured its viability, with continuous monitoring and adherence to health and environmental risk assessments supporting its sustainability and regulatory compliance.

- **Innovative byproduct water management:** This project represents a forward-thinking approach to byproduct water management within a healthcare setting. By repurposing RO reject water, SLHD has embraced an innovative solution to reduce the waste of water resources and enhance water sustainability. By finding a valuable use for this resource, SLHD is setting a new standard of water conservation within the healthcare sector. This project not only reduces the hospital's environmental footprint but also contributes to the well-being of the local community by promoting sustainable resource use.
- **Adherence to industry standards and compliance:** Throughout the project, SLHD has maintained strict adherence to industry standards and guidelines related to water quality, environmental protection, and healthcare operations. In collaboration with CoS, the project team has ensured this water is viable for their needs, such as street cleaning, without compromising safety or compliance. This adherence to standards reflects SLHD's commitment to best practices in both healthcare delivery and environmental stewardship. Informed by the latest research, technology, and best practices, the project has engaged with organizations, such as the authority and water treatment specialist, to ensure it is grounded in expert knowledge and aligned with the highest standards of practice (Sydney Water, 2024).



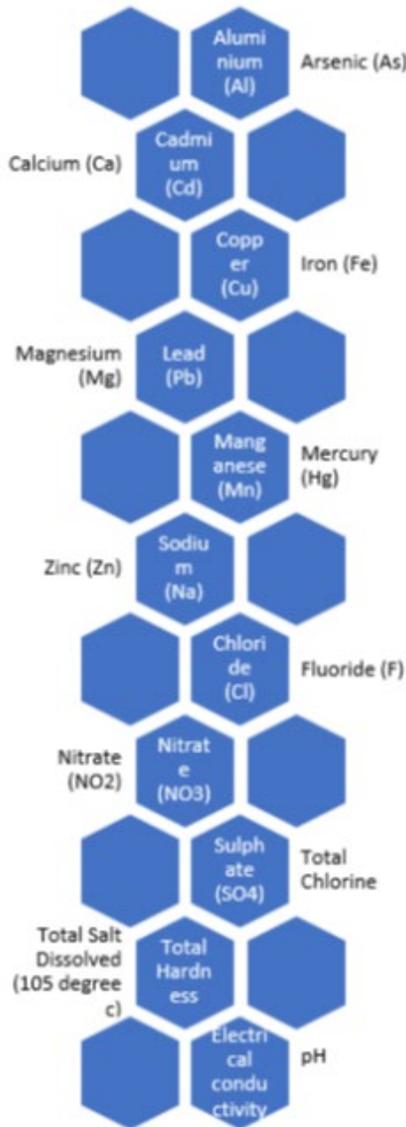


Figure 9 - Compliance parameters test of RO water

- Commitment to continuous development:** The project team will regularly participate in training, workshops, and industry conferences to stay abreast of the latest trends and advancements in water recycling and environmental management. This dedication to continuous learning ensures that the project evolves in line with emerging best practices and maintains its leadership position in the field.
- Recognition as a model project:** The project's success and adherence to best practice principles position it as a model initiative within the healthcare sector. It serves as an example of how hospitals and other institutions can integrate sustainability into their operations in a practical and impactful way. The project's potential for replication further underscores its role as a benchmark for best practice.

In conclusion, the SLHD RO Reject Water Harvesting and Reuse Project exemplifies a strong commitment to best practice through innovation, adherence to standards, continuous development, and potential for replication. By setting a high standard for sustainable byproduct water management, the project has achieved its immediate goals and contributes to increased environmental responsibility across the healthcare sector.



INNOVATION IN PRACTICE AND PROCESS

This project is a shining example of innovation in both practice and process, demonstrating how healthcare institutions can adopt creative solutions to address environmental challenges while enhancing operational efficiency. This initiative highlights the key aspects where innovation has been effectively integrated.

- **Repurposing RO reject water:** The core of this project is the innovative repurposing of RO reject water, a byproduct traditionally treated as waste, for environmentally friendly uses. It is crucial to understand the demand profile of RO reject water and ensure its sustainable application for the local community, guaranteeing the project's practicality and longevity. In most healthcare facilities, this RO reject water is typically discharged into the sewer system, representing a missed opportunity. The SLHD project reverses this narrative by collecting and reusing approximately 20,000 litres of RO reject water each week for street and footpath cleaning. This novel approach not only reduces water waste but also aligns with broader sustainability goals, setting a new precedent for resource management within the healthcare sector.
- **Integration with municipal services:** The collaboration between SLHD and CoS is another area of innovation. The project demonstrates how different public institutions can work together to achieve shared sustainability goals by integrating the hospital's water reuse initiative with municipal services. The CoS team uses the concentrated water for street cleaning, which is an application that does not require potable water. This approach provides the local council with an environmentally friendly resource and a sustainable solution. This cross-sector collaboration serves as a model of how public institutions can pool resources and expertise to create impactful environmental solutions.
- **Customised infrastructure solutions:** The project required the design and installation of specialised infrastructure to capture, store, and distribute the RO reject water. This included the development of custom-built tanks and plumbing systems capable of harvesting a large volume of water, as well as the logistical planning essential for water collection and transportation. These infrastructure solutions, primarily implemented by the hospital's engineering team and related contractors, were tailored specifically to the needs of the project, ensuring that the water reuse process is both effective and sustainable. The ability to design and implement such specialised systems is a testament to the innovative thinking that drives the project. Additionally, the monitoring and management of water quality are supported by advanced laboratory solutions, ensuring that the reused water consistently meets the required standards among the Australia and New Zealand (ANZ) area.
- **Environmental and economic benefits:** Innovation in this project is not limited to environmental sustainability, it also extends to economic efficiency. By reducing the reliance on potable water for non-potable water uses, the project generates significant cost savings for both SLHD and CoS. These savings, achieved through innovative resource management, demonstrate how sustainability projects can also provide a dual benefit that enhances the overall value of the project.
- **Scalable and replicable model:** The innovative practices and processes developed through this project are designed to be scalable and replicable. The success of the SLHD initiative has proven that the water reuse concept can be adapted and implemented in other healthcare facilities and municipalities. This scalability is a critical aspect of the project's innovation, as it allows the benefits of the initiative to extend beyond the immediate context, contributing to broader regional and even national efforts in water sustainability.





(a) - Project Site



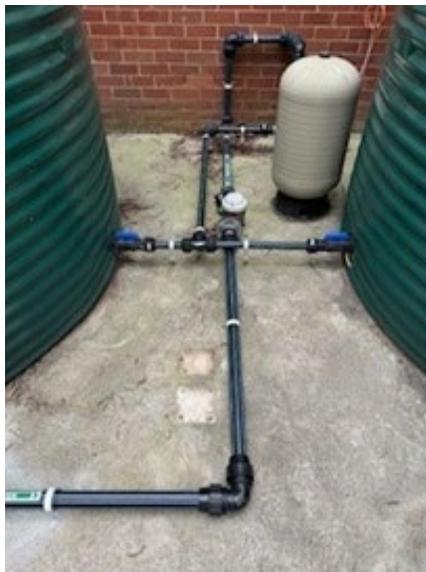
(b) - Tanks



(c) - Pump Controller



(d) - Water Pump



(e) - Pipes and Connectors



(f) - Output Hose



(g) - Water Meter

Figure 10 - On-site photos of SLHD RO Reject Water Harvesting and Reusing System



In summary, the SLHD RO Reject Water Harvesting and Reuse Project exemplifies innovation in practice and process through its creative approach to resource management, cross-sector collaboration, customised infrastructure solutions, and the use of techniques. These innovations not only address immediate environmental challenges but also create a scalable model that can inspire and inform others in the healthcare and environmental sectors, contributing to the broader adoption of sustainable practices in healthcare and beyond.

APPLICABILITY TO OTHER SETTINGS

RO reject water, often discarded, can be repurposed for various applications beyond street cleaning. This project presents a sustainable model that can be adapted and applied across a wide range of settings, both within the healthcare sector and beyond. The most direct application is within other healthcare facilities, particularly those with dialysis units. Hospitals that generate large volumes of RO reject water as part of their dialysis processes have the potential to adopt similar water reuse initiatives. It is highly recommended that these facilities follow key elements such as infrastructure for water capture and storage, partnerships with local municipalities, and compliance with health and environmental standards. However, future projects can be customised based on the facility's size, location, and available resources. The SLHD project provides a blueprint for how healthcare institutions can reduce their environmental footprint while achieving cost savings and operational efficiencies.

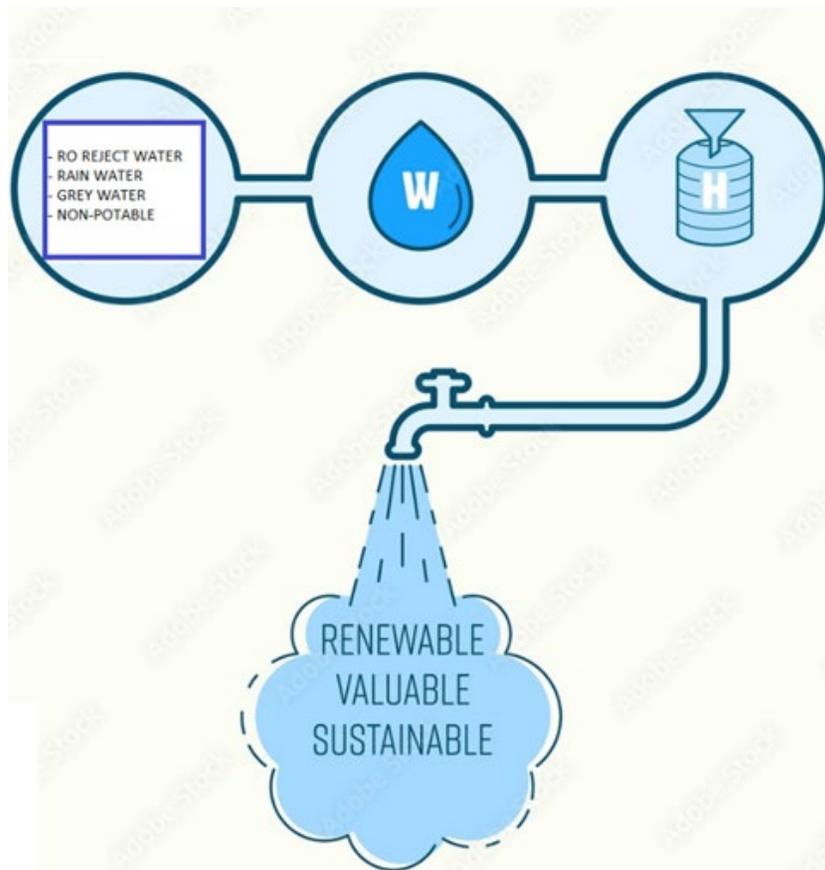


Figure 11 - Water Harvesting and Reuse

The successful implementation of this project demonstrates how similar initiatives can be tailored to meet the specific needs and conditions of different organizations and communities. Here are various potential applications to use RO reject water:



Other applications	Description	Example
<ul style="list-style-type: none"> Municipal and public services 	<p>The city authorities or utilities that operate wastewater treatment plants, swimming pools, or large public facilities can explore the reuse of water for street cleaning, irrigation, or other similar purposes.</p>	<p>Irrigation of city landscaping: This is an equal supply and demand ratio to make this a more well-established project. While demand may be seasonal and might not replace clean water if the garden is not watered with potable water, or if used offsite, additional regulatory compliance and consultation would need to be considered (Scholes, Stiegler, Anderson and Sedlak, 2021).</p>
<ul style="list-style-type: none"> Educational Institutions 	<p>Universities and research facilities are often engaging in activities generating wastewater, such as laboratory work and cooling processes. These institutions can implement water harvesting and reuse systems like the SLHD project, using the non-portable water for campus maintenance, landscaping, or heating and cooling systems.</p>	<p>Cooling water for a steriliser: This would be a great application for reusing RO reject water, serving as an alternative to installing a chiller for the steriliser cooling system (Melbourne Health, 2012). If a chiller is already in place, the demand for water will be minimal. This would be an all-year-round demand and can replace the solutions using potable water.</p>
<ul style="list-style-type: none"> Residential and commercial developments 	<p>Developers, particularly in areas facing water scarcity, can incorporate systems for capturing and reusing the non-portable water for irrigation, flushing toilets, or cleaning purposes on site. The SLHD project provides a practical example of how such systems can be designed, implemented, and maintained to achieve sustainability goals in urban and suburban settings.</p>	<p>Toilet flushing: For the new buildings in or near hospital range, the RO reject water would be in high demand to replace potable water for flushing toilets. The only requirement of infrastructure is to connect the flushing pipe with the water harvesting facility. This environmentally friendly approach will set a good example for neighbouring areas.</p>
<ul style="list-style-type: none"> Agricultural applications 	<p>Farm owners can apply similar water harvesting techniques to capture and reuse wastewater for irrigation, livestock, or other non-potable needs. This approach could be particularly valuable in regions where water resources are limited, helping to conserve potable water while maintaining agricultural productivity.</p>	<p>Water harvesting for farming: It captures and stores runoff or groundwater from areas with excess water or where these resources are not fully utilised, ensuring a supply during times of scarcity (Fu-Berlin, 2018). By storing water, it helps to mitigate the effects of droughts and dry seasons, making more water available for domestic, livestock, and agricultural needs. Rather than allowing runoff to lead to erosion, it is collected and put to productive use.</p>



In conclusion, the SLHD RO Reject Water Harvesting and Reuse Project offers a versatile and adaptable model that can be applied across various sectors and settings. Its success provides a valuable case study for organizations who are looking to enhance sustainability through innovative water management practices. By tailoring the project's principles to specific needs and conditions, other settings can achieve similar environmental, economic, and social benefits. Each application above has its unique demand profile and benefits, making them suitable for various settings within and beyond the hospital. Proper planning and design, regulatory compliance, and ongoing monitoring are essential to ensure the success and sustainability of these projects.

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APPENDIX

Appendix 1 - Local Operating Procedure (Vehicle or Plant water refilling at RPA) (from CoS)

Local Operating Procedure		CITY OF SYDNEY	
Work Task/Activity:	Vehicle or Plant water refilling at RPA		
Business Unit/Section Unit:	City Cleansing and Resource Recovery		
Work Location(s):	Off Site - Hospital Rd Camperdown		
Developed by:	Theresa McDonnell (WHS) and Paul Bowden (PTO)		
In consultation with:	Craig Clark, Walter Seymour, Diing Aher, Omar Fodda, Doug Smart, Daniel Brown, Andrew Webb.		
Authorised By:	James Whitney, Operations Manager		
Release Date:	9 th April 2024	Review Date:	9 th Oct 2024
Version No.	1	Date Authorised:	9 th April 2024
<p>In 2024 there is the introduction of a new water refilling point at Royal Prince Alfred (RPA) Hospital located on Hospital Road Camperdown.</p>			
1.	Prior to entering the RPA carpark, Turn off the auxiliary engine. <ul style="list-style-type: none"> Enter from Missenden Road, Camperdown. Building name should be The Professor Marie Bashir Centre. Situational hazard – avoid pedestrians and others as it is a shared zone and adhere to speed limits. 		
			
2.	Park and secure the vehicle within the yellow marked area next to Standpipe/Filling point. <ul style="list-style-type: none"> Turn your engine off to minimize noise. Minimise exhaust fumes. Do not regenerate engine at this location. 		
			
3.	Open the gate using the keypad lock – no key is required. (Pls Note: Align code to top line) <ul style="list-style-type: none"> Situation awareness, check the area for hazards – Slip, Trip, Falls or other unknown hazards. 		
			
4.	Check the pump panel and ensure the switch is in AUTO mode. <ul style="list-style-type: none"> Report any issues or damage to your Team Leader. Refer to Image #4 		
5.	Ensure the pump power indicator is on (green) and the pump fault indicator is OFF. <ul style="list-style-type: none"> Refer to Image #5 		
6.	Connect hose using Camlock fitting to tank on vehicle. <ul style="list-style-type: none"> Turn on vehicle flood lights if required. Refer to Image #6 		
7.	Turn the Isolation Valve to the Open position to commence filling. <ul style="list-style-type: none"> Refer to Image #8 		
			

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2024 224683 Local Operating Procedure - Water Truck Filling RPA v2 Page 2 of 2

Local Operating Procedure		CITY OF SYDNEY	
8.	Water starts topping up the vehicle tank automatically when there is no fault on the panel, and the pump is on Auto. <ul style="list-style-type: none"> Hazard: Fittings under pressure - Stand clear of the camlock fitting 2+ metres. 		
9.	Turn the Isolation Valve to the Closed position when the tank is filled.		
10.	Make sure the vehicle tank does not overflow.		
11.	Detach, hose (also known as lay flat hose) and return to hook/holder.		
12.	Close and reattach keypad lock to gate, mix numbers on keypad lock.		
PPE REQUIRED			
As Required	As Required	As Required	As Required



Appendix 2 - Water Quality Test - ID# W2023000679

Trace Inorganics Laboratory
Forensic & Analytical Science Service
PO Box 162 Lidcombe, NSW 1825
ABN 49 382 586 535
NSWPATH-FASS-CET-TI@health.nsw.gov.au



Certificate of Analysis

FASS Reference Number: W2023000679
Submitted By: Royal Prince Alfred Hospital
Sample Class: Dialysis Fluid
Analysis Commenced: 1/06/2023
Medical Centre
Newtown NSW - 2042

SAMPLE ID	CLIENT ID	SAMPLE INFO	SITE CODE	SAMPLE REMARKS	SAMPLING DATE	DATE RECEIVED
2023001197	Sample 1- SN12715	BME			31/05/2023	01/06/2023
2023001198	Sample 2- SN11508	BME			31/05/2023	01/06/2023
2023001199	Sample 3	HOLDING REJ WATER			31/05/2023	01/06/2023
2023001200	Sample 4	PRE REJECT WATER			31/05/2023	01/06/2023
2023001201	Sample 5- RpP 095				31/05/2023	01/06/2023
2023001202	Sample 6- RpP 0102				31/05/2023	01/06/2023

	2023001197	2023001198	2023001199	2023001200	2023001201	2023001202
Alkalinity (as CaCO ₃)	6	4	99	20	5	5
Aluminium	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
Ammonia	0.07	<0.05	1.50 ***	<0.05	0.09	<0.05
Antimony	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	<0.002	<0.002	0.006	<0.002	<0.002	<0.002
Bicarbonate as CaCO ₃	6	4	99	20	4	5
Boron	0.4	0.1	0.5	0.2	<0.1	<0.1
Bromide	<0.5	<0.5	48.3	7.0	<0.5	<0.5
Ca Hardness as CaCO ₃	0.7	0.7	37.7	0.6	<0.1	0.1
Cadmium	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Calcium	0.27	0.27	15.09	0.24	0.02	0.04
Chloride	<0.5	<0.5	48.3	7.0	<0.5	<0.5
Chromium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.005	<0.005	0.010	0.005	<0.005	<0.005
Fluoride	<0.10	<0.10	1.96 ***	0.40	<0.10	<0.10
Iodine	<0.001	<0.001	0.010	0.003	<0.001	<0.001
Iron	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium	0.02	0.03	6.09	0.05	0.01	0.02
Manganese	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrate	<0.6	<0.6	2.7	1.4	<0.6	<0.6
Nitrite	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pH	5.9 ***	5.9 ***	6.8	7.0	6.7	6.0 ***
Phosphate	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	0.15	0.11	3.52	0.08	0.10	0.12

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The results apply to the sample(s) as received.

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FASS Reference Number: W2023000679

	2023001197	2023001198	2023001199	2023001200	2023001201	2023001202
Selenium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silica as SiO ₂	<0.05	0.05	7.47	1.50	<0.05	<0.05
Silver	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Sodium	1	<1	37	13	1	1
Sulfate	<0.5	<0.5	11.7	1.2	<0.5	<0.5
TDS	<5	<5	152	24	<5	<5
Total Hardness as CaCO ₃	0.8	0.8	62.8	0.8	0.1	0.2
Total Phosphorous	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Turbidity	0.7	0.5	0.9	0.5	0.1	0.3
Zinc	<0.001	<0.001	0.756	<0.001	<0.001	<0.001

Remarks:
The Australian Drinking Water Guidelines (ADWG) apply for potable water samples only.

Additional Information:
Results in mg/L, except for Turbidity (NTU), Colour (HU), Conductivity (µS/cm) and pH.
*** Value exceeds Australian Drinking Water Guidelines.

Reported By: Invi ROUMELOTIS
Date: 14 June 2023

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Report Attachment for Method Reference and Australian Drinking Water Guidelines (ADWG), 2011

The list below shows the parameters which can be detected in water by the laboratory methodology. For any parameters not on the list or for targeted analysis please contact the laboratory.

Parameter	Unit	Guideline Value Aesthetic ⁽¹⁾	Guideline Value Health ⁽²⁾	FASS Method ⁽³⁾ Ref. Number
Alkalinity (as CaCO ₃)	mg/L		e	WC9
Aluminium	mg/L	0.2	e	TM167, TM168
Ammonia (NH ₃)	mg/L	0.5	e	WC3
Antimony	mg/L		0.003	TM167
Arsenic	mg/L		0.01	TM167
Barium	mg/L		2	TM167
Boron	mg/L		4	TM167
Bromide	mg/L		<0.005	TM167
Cadmium	mg/L		0.002	TM167
Calcium	mg/L		e	WC5
Chloride	mg/L	250	e	WC5
Chromium ⁽⁴⁾	mg/L		0.05	TM167
Colour (True)	PCU	15	1.4	WC1
Copper	mg/L		2	TM167
Fluoride	mg/L		1.5	WC7, WC5
Hardness (as CaCO ₃) ⁽⁵⁾	mg/L	200	e	TM168
Iodide	mg/L		0.5	WC8
Iodine	mg/L		e	TM166
Iron	mg/L		0.3	TM168
Lead	mg/L		0.01	TM167
Magnesium	mg/L		0.5	TM168
Manganese	mg/L		0.1	TM167
Mercury	mg/L		0.001	TM167
Molybdenum	mg/L		0.05	TM167
Nickel	mg/L		0.02	TM167
Nitrate	mg/L		5.0	WC5
Nitrite	mg/L		3	WC5
pH		6.5 - 8.5	e	WC1
Phosphorus	mg/L		e	TM168
Phosphate	mg/L		e	WC5
Potassium	mg/L		e	TM168
Selenium	mg/L		0.01	TM167
Silica (as SiO ₂) ⁽⁶⁾	mg/L	60	e	TM168
Silver	mg/L		0.1	TM167
Sodium	mg/L	180	e	TM168
Sulfate	mg/L	250	e	WC5
Total Dissolved Solids (TDS)	mg/L	500	e	WC1
Total Organic Carbon	mg/L		e	WC11
Turbidity	NTU	5	e	WC1
Uranium	mg/L		0.017	TM167
Zinc	mg/L		3	TM168

(1) Australian Drinking Water Guidelines, 2011, TM167C.
(2) Methods are based on Standard Methods for the Examination of Water and Wastewater, APHA.
(3) Health guideline is for Cr(VI).
(4) Hardness (as CaCO₃) expressed as Total Hardness as CaCO₃.
(5) Silica (SiO₂) water soluble silica is reported, calculate from Silicon result by ICP-OES.
(6) Refer to comments in Table 10.5 of the Australian Drinking Water Guideline, 2011.

Note: The analytical techniques used include one or more of the following: Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES), Ion Chromatography (IC), Manganese and Total Organic Carbon Analyser (TOC).
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Appendix 3 – Successful Sustainability Initiative Endorsement Letter – RPA (from CoS)



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2

Neil Palagedara
Executive Manager, Property Services
City of Sydney Council

Date: 04/09/2024

TRIM Number: 2024/508213

Jon Gowdy
Executive Director
Capital Infrastructure Engineering SLHD
Royal Prince Alfred Hospital,
Building 28, Susan St
Camperdown 2050

Dear Jon,

I am writing on behalf of the City of Sydney Council to express our appreciation for the successful collaboration between the Royal Prince Alfred Hospital and our organisation in developing a pioneering sustainability initiative.

This collaboration, which commenced with the installation of infrastructure to capture side stream water from the new kidney dialysis unit at the hospital, represents a significant milestone in our shared commitment to sustainability. The initiative to repurpose this water for filling our street cleaning trucks and sweepers, which began in March 2024 after careful optimisation, risk assessment, and trials,

The project is a testament to what can be achieved when two organisations unite with a common goal. By utilising water that would have otherwise gone down the drain, we have reduced water wastage and reduced carbon emissions by reducing vehicles' travel time to refill and set a powerful example of innovative resource management.

This project dramatically benefits our organisation, as it aligns perfectly with our sustainability objectives and enhances our ability to maintain the city's cleanliness in an environmentally responsible manner. The initiative showcases a collective approach to shaping a bold solution towards sustainability—a model that we hope will resonate widely, especially in these unprecedented times when resource conservation is more critical than ever.

Thank you once again for your partnership and support.

Warm regards,

Green, Global, Connected.



NON-CLINICAL SERVICE DELIVERY

HIGHLY COMMENDED

Child and Adolescent Health Service, WA

Research Department

Improve children's access to novel and emerging treatments, ensuring equity of access for our patients

Simone Knab and Alexandra Robertson

AIM

Child and Adolescent Health Service (CAHS) goal is to become a leading academic paediatric health service that integrates research into every aspect of clinical care and conducts world-class, transformational research in Western Australia (WA). CAHS recognises that by investing in research they can:

- Offer more children and young people access to novel and emerging treatments.
- Ensure equity of access for WA patients so those clinical trial therapies commonly available interstate and internationally.
- Ensure CAHS is a national leader in clinical trial governance to attract national and global clinical trials sponsors, to open more clinical trials at CAHS.

SUMMARY ABSTRACT

CAHS Research community has many exceptionally talented and compassionate individuals whose pursuit of quality health and medical research is accelerating the enhancement of care for children and young people in WA. During 2023-2024, research across CAHS attracted funding of more than \$29 million which helped our researchers continue their mission to make medical breakthroughs both on the local, national, and international stage.

Access for WA patients to local clinical trials however is still a major problem. For example, as reported by CAHS Rare Care Centre (RCC) in April 2024, 76% of available rare disease clinical trials are located at international institutions, with 21% more located at various interstate institutions all requiring interstate or overseas travel for parents.

CAHS Executive team solicited feedback from CAHS key stakeholder focus groups at the beginning of 2023. This consisted of over fifty CAHS Research Clinicians, CAHS Heads of departments and CAHS Executive Directors. At the time, a recurring theme was that research was not seen as a priority at the CAHS institutional level, both in terms of status and resource allocation. Other barriers identified included: bureaucratic processes and administrative burdens; lack of governance and transparency in resource allocation; research under-representation in strategy and funding models; lack of protected research time; difficulty attracting and developing research talent; and conflicting interests and lack of agreement in partnerships. CAHS executive decided a change is needed.

The identified challenges were further investigated and as a result, CAHS through the CAHS Research Department (CAHS Research) launched two immediate strategic initiatives as priority, working towards their aim of offering more emerging treatments and therapies to WA Children, by developing its research capacity and capability by targeting the Clinical Trial governance area. One early achievement was applying for and receiving a Telethon grant providing research infrastructure support for over 7 years to help implement the change initiatives, further supported by a second grant from WA DoH, which will be delivered over 4 years.

The funding enabled the successful restructure of CAHS Research, whereby new dedicated experienced roles were introduced to offer greater governance support and capability to the research community. Strengthening CAHS



Research provides the operational support needed in building the operational capacity of excellence to attract and manage more national and international pharmaceutical sponsors of clinical trials.

The implemented restructure plan incorporated new positions and more clearly defined roles across three core functional areas listed below. The changes implemented have bridged gaps in expertise, created a more streamlined and effective operation, and enhanced a more focused approach on research governance at CAHS.

1. CAHS Research Ethics and Governance (REG Team): with role clarity and training for existing staff; addition of senior and experienced governance staff; additional monitoring and compliance function included.
2. CAHS Clinical Research Facility (Clinic Team): led by a clinical nurse manager who has oversight of all nursing staff treating patients in our clinical research facility. Bringing together the clinical and non-clinical research support staff to create a community of practice and set quality and safety standards.
3. CAHS Research Support and Development (RSD Team): roles to provide research education, grants support, clinical research development, biostatistics support, and database development.

These key decisions, proved to be instrumental in commencing the improvements needed. This led to the implementation of the second successful initiative of the CAHS Research ethics and governance operational reforms, reducing the time taken for CAHS Human Research Ethics Committee (HREC) to review and approve proposed research projects. The changes made in the process have drastically slashed average approval turnaround times - with applications now averaging a 22-day turnaround, well shy of the 90-day average prior to the new arrangements and significantly better than our KPI target of 30 days (Child and Adolescent Health Services, 2024, p. 8).

Some initiatives are still ongoing and are planned to be completed 2025-6, which are included in the refined current 2024-2026 CAHS Research Strategy (Research Strategy) giving clear directions in priorities of their short-term and long-term initiatives to drive the change. The Research Strategy also draws from the current CAHS consumer engagement strategy.

Pleasingly, some initiatives that the original focus groups identified to improve the CAHS research offering have also been successfully implemented. These include, adopting research activities to the CAHS Institution Frameworks, policies and procedures allowing the research practices to support wider health priorities, increased research support and training for Research Clinicians and development of clear CAHS Research policy and processes.

In July 2024, CAHS Research community participated in their first Short Notice Accreditation Assessment Pathway (SNAAP) against the National Clinical Trial Governance Framework (NCTGF). They received outstanding feedback with a final maturity level score of 2.92 out of 3.0 by the Australian Council on Healthcare Standards (ACHS) (The Australian Council on Healthcare Standards, 2024, p. 2). This score being the highest in the country at the time.

The SNAAP feedback received was excellent, providing independent validation that the current purpose-led CAHS Research model of service of excellence, is to be benchmarked against and very effective. The result demonstrates that CAHS is now a national leader in embedding research into CAHS clinical day-to-day standard of care for children and young people. It also acts as a reference to the quality of governance standards being introduced that new and existing local, interstate, and global clinical trials sponsors are seeking. This maturity level score rating did not happen overnight. It was the result of rigorous strategy planning in 2023 and continuous focused improvement actioning over the previous 18-months.

CAHS participated in the 27th ACHS Quality Improvement Awards to acknowledge and showcase the excellent progress they made towards building Clinical Trials capacity within their institution. They are attracting more research sponsors' interest, working towards their objective of increasing the number of advanced therapies or treatments accessible to WA children, without parents needing to travel interstate or overseas. Since 2022 CAHS have both increased their number of new clinical trials open each year and doubled the number of patients accessing treatments for rare care diseases at PCH, demonstrating that the decision to restructure CAHS Research and reform research ethics and governance, is having an immediate impact on patient outcomes in WA.



NON-CLINICAL SERVICE DELIVERY

TABLE OF SUBMISSIONS

BlueCare, QLD

Community Malnutrition and the BlueCare Journey: embracing an annual awareness campaign 'Malnutrition Week' to identify, manage and treat malnutrition

Julie Clarke-Bates and Caitlin Fulford

Child and Adolescent Health Service, WA

Improve children's access to novel and emerging treatments, ensuring equity of access for our patients

Simone Knab and Alexandra Robertson

Hunter New England Local Health District, NSW

Dhuruulin yabangka yimamulin "Leading the way to healing"

Bron Rose

Hunter New England Local Health District, NSW

Armidale Refugee Health Complex Care Team

Ashley Young

ICON Cancer Centre Concord, NSW

Aged Care Screening Project

Fiona Mallon

Mercy Health, VIC

A new paradigm: engaging the community to enhance end of life care through volunteering

Jim Creaner and Alexandra Armstrong-Young

Monash Health, VIC

Innovative Graduate Mentorship Program - Attracting Local Graduate into Public Dental Workforce

Dr Ramini Shankumar, A/Professor David Goode, Professor Rodrigo Marino, Jessie Young, Dr Parul Marwaha, Kelsey Ingram and Dr Justin Mathews

NT Health, NT

PGC Reporting Dashboard - Making Policy a Priority

Eleni Hatzilaou, Katie Pratt and Katalin Horompo

Primary and Community Health, NSLHD, NSW

Needle Syringe Program's Hepatitis C Testing Integration at a Homelessness Service in Hornsby

Peter Ellis-Jones and Melanie Stuart

Royal North Shore Hospital, NSW

A Statistical Picture is Worth a Thousand Words: Big Dots, Pictures of Performance and Posters

Helen Ganley, Valerie Elsmore and Sharyn Rose



<p>Royal North Shore Hospital, NSW</p> <p><i>Revolutionising Outpatient Services at NSLHD: Digital Transformation Through the electronic referral (eReferral) System</i></p> <p>Irene Chen</p>
<p>Sir Charles Gairdner Osborne Park Hospital Care Group, WA</p> <p><i>Enhancing Mandatory Training Compliance of Patient Support Services Staff SCGOPHCG</i></p> <p>Brenton Moyle, Linda Davies and Pearl Kennon</p>
<p>South Western Sydney Local Health District, NSW</p> <p><i>Innovative Exit Interview Process for Organisational Improvement</i></p> <p>Prof Josephine Chow, Jason Lawrence and Courtney Troughton</p>
<p>South Western Sydney Local Health District, NSW</p> <p><i>Transforming the experience in nursing and midwifery research - Quarantine Research Time Program (QRTP)</i></p> <p>Prof Josephine Chow, Prof Valerie Wilson, Prof Steve Frost, Gregory Melbourne, Dr Louise Collingridge, Marida Ritha, Nutan Maurya and Shivani Mani</p>
<p>Sydney Local Health District, NSW</p> <p><i>Harnessing Byproduct Water: Advancing Sustainable Water Management in Local Community</i></p> <p>Ryan Lu, Kesh Chand, Chin Voon, Rodney Staughton, Shane Oakes, Tegan Roper, Mufid Noufal and Nicole Webb</p>
<p>West Gippsland Healthcare Group, VIC</p> <p><i>A collaborative review of food provision at West Gippsland Healthcare Group</i></p> <p>Nicole Boyer</p>
<p>Western Health, VIC</p> <p><i>Taking the L.E.A.P</i></p> <p>Rebecca Barbara, Alex Potter and Jodie Lydeker</p>
<p>Western Sydney LHD - Westmead Hospital, NSW</p> <p><i>The implementation of Schwartz Rounds at Westmead Hospital and supporting the roll out in other NSW Health Facilities as a demonstration site</i></p> <p>Anabel de la Riva, Kiran Lele, Kim Hobbs, Alison Griffiths, Amy Malik, Kelvin Leung, Kate Bradford, Andrew Bleasel, Jessica Elliott, Robbie Villahermosa, Tegan Dawson, Alexander Nash and Natalie Crino</p>
<p>Western Sydney LHD - Oral Health Services, NSW</p> <p><i>Introduction of T-DOC system in Oral Health to enhance traceability and tracking of dental instruments</i></p> <p>Dr Herdeza Verzosa, Dr Geeta Indramohan and Junuz Djulamerovic</p>





HEALTHCARE MEASUREMENT

WINNER

Western Health, VIC

Nutrition

Piloting a Power Shift through Food

Allison Lauder, Kathryn Marshall and Vicki Barrington

AIM

- To develop and implement a person-centred framework to optimize the food, nutrition and dining outcomes for residents at Grant Lodge (GL).
- To enhance resident's well-being and dining experience related to meals & the mealtime in accordance with best practice standards.
- To facilitate effective and empowering resident participation.
- To engage and communicate effectively with key stakeholders to develop strategies to optimise the nutritional care of residents.

SUMMARY ABSTRACT

Piloting a Power Shift through Food

Background

Enjoyable food and mealtime delivering respectful care and facilitating social interactions is paramount to overall quality of daily living of residents in aged care.

A mealtime audit conducted in a 30-bed residential aged care unit identified high food wastage and limited assistance at mealtimes. The established menu had not been reviewed for many years. Many residents were socially isolated, eating in their room and nutritionally fragile.

Approach

This dietitian-led project developed and implemented a person-centred framework to enhance and optimise the food experience for all residents. This project focused on three key areas - Governance, Individualised Care and Cultural Change.

The establishment of a Menu Review Committee engaged residents along with advocates, nursing and food services staff, giving residents a voice in their menu and dining experience.

Outcome

- A resident-led menu provides 30% more energy and protein. Wastage has reduced by 12% and total energy and protein intake has increased statistically significantly ($p < 0.001$) across the cohort.
- Staff engaged collaboratively to enhance their knowledge and foster a daily focus on the importance of food, nutrition and in creating a home-like dining experience for residents.
- Other food focus activities including storytelling about favourite foods and recipes, establishment of a vegetable garden and cookbook have stemmed from this work.

Implications for Practice

Dietitians can champion and empower the resident's voice to promote positive nutrition outcomes. Connecting all staff and residents to work together to make dining an enjoyable social experience and improving dignity in care. This work is an exemplar for the inclusion of the resident voice in decision-making.



REPORT

Food and nutrition have a major role in meeting the physical, mental and functional needs of residents living in aged care facilities and contributes significantly to quality of life. Enjoyable food and mealtime, which deliver respectful care of residents and facilitates social interactions, are paramount to overall quality of daily living.

An initial Menu and Mealtime Quality Assessment was conducted in Grant Lodge (GL), a 30-bed residential aged care facility (RACF) in late 2021 following feedback from residents and their carers. This identified poor food intake, high food wastage and meals served in insufficient quantities to be nutritionally adequate. The established menu had not been reviewed for many years. It was repetitive with many poor nutritional quality items and limited alternative options for those with therapeutic needs.

Beyond the menu, many residents were socially isolated, eating in their room and limited assistance at mealtimes was provided. The residents were not actively engaged in the processes that contributed to their nutritional care, resulting in a reduced involvement in the decision making for their daily living. Some of these routines were introduced to address COVID-19 requirements in RACF's but had become habitual.

Despite significant improvement made to the physical aspects of the dining room to improve the ambience during early 2022, the meal and dining experience needed improvement to support person-centred care. This required a compassionate and respectful approach to maximise food and nutrition outcomes for residents, rather than the existing model of care, which appeared task focused.

Limited access to a dietitian reduced the ability to provide the full range of nutritional services: resident nutrition care, menu and mealtime review and audits, staff education, and effective operational processes.

In November 2022, a dietitian-led project developed and implemented a framework to optimise the food, nutrition and dining outcomes for residents at GL. The project focused on 3 key areas - Governance, Individualised focus of Care and Cultural Change.

Governance

The dietitian led the implementation of processes and procedures to meet State, National and International standards. Those considered of high importance to ensure compliance were:

- a. The International Dysphagia Diet Standard Initiative (IDDSI) (1) that delivers improved safety and reduces aspiration risk and choking for patients with dysphagia.
- b. The Nutrition and quality food standards for adults in Victorian public hospitals and residential aged care services Victorian (2) to deliver improved nutritional quality of meals
- c. The Australian Government Aged Care Quality and Safety Commission (ACQSC) Quality Standards (3) and the National Disability Insurance Scheme (NDIS) Quality and Safeguard's Commission Standards (4). The new draft Aged Care Quality Standards include a separate Food and Nutrition standard, Standard 6. This standard focuses on the importance of food and nutrition and how they impact quality of life for older people, and promoting a more inclusive and supportive dining experience that allows personal choice and preference.

Individualised Focus of Care

- a. Individualised menu plans have been developed for residents with significant cognitive decline and residents with a disability, in partnership with them and their relatives/carers.
- b. Menu cards and meal information on all dining room tables
- c. All available staff in the Dining Room to engage with and +/- provide meal assistance to individual residents.
- d. Specialized crockery and cutlery to meet individualised resident capabilities and promote independence with eating.

Cultural Change

This project has engaged with residents and given them agency in improving the menu and dining experience. This includes:

- a. A Menu Review Committee including consumer representatives (residents, relatives and advocate) alongside key stakeholders from the nursing/care team and foodservices staff has been established. The number of



consumer members on the Menu Review Committee has increased due to the enthusiasm of residents participating and having their voice heard.

- b. A food-first menu approach to allow residents to enjoy the taste and textures of freshly cooked food with less reliance on frozen foods and oral nutritional supplements.
- c. A resident designed menu developed with residents involved in providing recipes, taste testing and feedback.
- d. All residents encouraged to be in the Dining Room for meals.
- e. Food focused Lifestyle Activities chosen by residents.
- f. Mealtimes at times to suit residents rather than staff.

APPLICATION OF ACHS PRINCIPLES

1. Consumer Focus

This project's primary focus was to implement a resident-led change. Hearing the resident's voices and empowering them to engage and give them agency to improve the menu and dining experience was the cornerstone of the project. It was acknowledged that all residents' needs are individual, and residents were given the opportunity to contribute at their own pace. The success of consumer focus change through reading the patient story is shown by the case study below.

Case Study - Empowering Pearl through food and dining transformation

Meet Pearl who is a remarkable 102-year-old resident who has been calling GL her home for the past 6 years. She has seen a century unfold before her eyes.

In late 2021 when we first met Pearl, she was sitting in a princess chair in the Dining Room during breakfast and lunch or eating her dinner in her bed. It was noted she did not like assistance with meals and could get agitated and hit out if staff tried to assist her. Left to her own devices, she would play with her meal without purpose, but little food reached her mouth. Her meal was taken from her tray table within 20 minutes of serving. She wasted over 60% of her meals and fluids. Previous dietitian assessment had recommended regular oral nutritional supplements for Pearl, which she would rarely drink.

Despite the efforts of staff, Pearl's intake was minimal, she was frail, with a Body Mass Index (BMI) of 16 kg/m², signalling a high risk of malnutrition.

In November 2022, with the introduction of the Dietitian-led food and dining experience project, staff embarked on a mission to empower residents, like Pearl, and revolutionise their mealtime experience. They learned to provide encouragement from afar giving Pearl the space, and the time, she needed to eat at her own pace. Special cutlery and crockery were provided to assist Pearl's independence. The Dining Room was refurbished, becoming a warm and inviting space where residents gathered for mealtimes. All nursing staff were present at mealtimes to assist with meals, encourage or talk with residents. The menu was redesigned with a food-first approach to ensure both nutrition and safety.

As Pearl began to eat and drink more, she smiled and laughed at mealtimes. Within the year, her intake doubled, no longer does she need routine nutritional supplements and her weight has been gradually increasing. Pearl's journey serves as a testament to the power of person-centred care through food and innovative approaches in enhancing the lives of older adults.

2. Effective Leadership

The project dietitian undertook a leadership role which developed and implemented a framework to optimise the food, nutrition and dining outcomes for residents at GL. The project focused on 3 key areas, Governance, Individualised Care and Cultural Change, to facilitate the change. The excellent support from GL Management, Western Health Managers from Health Support Services, Aged Care Division and Allied Health also enabled effective leadership to occur.



The dietitian role also allowed for further consolidation of the person-centred approach to food & mealtime experience for residents, continued role modelling and advocacy. This leadership role ensures ongoing facilitation of the resident's menu committee, promotion of the importance of nutrition care by nursing and care staff, seasonal adaptation of the menu and the initiation of further strategies dedicated to empowering residents in their nutritional care. The nutritional care of residents will have a proactive approach to minimise weight loss and enhance resident's health and wellbeing.

3. Continuous Improvement

Ongoing strategies have been incorporated to ensure continuous improvement. This includes:

1. Quarterly menu review meetings with Residents, Relatives, Advocates, Foodservice staff and Nursing staff which also includes taste testing of new recipes and collaboration in other food focus activities.
2. A new pre-shaped textured modified menu compliant with the International Dysphagia Diet Standardisation Initiative (IDDSI) was introduced and audited six-monthly.
3. Education sessions for foodservice staff on nutrition in aged care, International Dysphagia Diet Standardisation Initiative (IDDSI) and assistance with recipe ideas.
4. Regular menu review based on resident and foodservice staff feedback and audited six-monthly.
5. Bimonthly education sessions for nursing staff on food, nutrition and dining topics.
6. Education sessions for foodservice staff on nutrition in aged care and the International Dysphagia Diet Standardisation Initiative (IDDSI).
7. Lifestyle Activities with a positive food focus such as development of a recipe book, growing a herb and vegetable garden with the produce used by the kitchen, "takeaway" lunches and hands on cooking activities e.g., making bliss balls, lemon curd.
8. Refer to Appendix 1

4. Evidence of Outcomes

- This food-first approach to optimise the nutritional quality of the menu has seen a significant improvement in the nutritional quality of the menu which now provides 30% more energy & protein.
- Increased resident satisfaction with the menu and food provided.
- Meal wastage has reduced 12%, with residents now consuming 70% of all their meals.
- Post-project, there was a significant increase in the percentage of residents meeting their energy requirements, across all resident meals and within the prescribed diets of: regular meals, soft and bite sized meals, pureed meals ($P < 0.05$).
- The percentage of residents who met their protein requirements showed an increase trend across the prescribed diets. This increase was significant across all resident meals and the prescribed diet of pureed meals ($P < 0.05$).
- Eleven residents resided within GL at two time points during the project (April 2023-Jan 2024). 81% of these residents maintained body weight or increased body weight during this time. This indicates in this small resident cohort that losing weight or becoming malnourished is not inevitable as you age or if you are a resident living in a RACF. Note the only two residents who experienced weight loss during this time both had a deterioration in medical condition & change in their Goals of Care.
- See Appendix 2 for results so far.

5. Striving for Best Practice

The project has implemented the following best practice guidelines:

- The 2022 Victorian Government NQFS and the ACQSC Quality Standards
- The 2021 Nutrition and quality food standards for adults in Victorian public hospitals and residential aged care services that ensures optimum food and nutrition to meet individual nutritional requirements (2).
- The 2019 International Dysphagia Diet Standard Initiative (IDDSI) that delivers improved safety and reduce aspiration risk and choking for patients with dysphagia (1).
- Aged Care quality and Safety Commission "Food, Nutrition and Dining Fact Sheet"(3)
- Dietitians Australia Age Care Quality Standards Toolkit for APD's "[Aged Care Quality Standards Toolkit for APD's](#)" (5)



INNOVATION IN PRACTICE AND PROCESS

This innovative project has empowered a resident-led menu redesign with a food-first approach. Hearing the residents' voice has allowed staff to respond with respect and compassion, acknowledging the needs of each individual and develop an improved appreciation of the role of food in the quality of life for residents.

One of the main challenges for this project related to change management for staff at GL and foodservice staff at Bacchus Marsh Hospital, who appeared to be fatigued and at times resistant to change. A collaborative, person-centered approach, involving new key roles of a GL nurse nutrition champion who, with excellent support from the Clinical Nurse Educator, ensured continuity of key messaging amongst residents and staff and an ongoing focus on food, dining, and nutrition. Open communication including staff education sessions was crucial in driving the project's progress and success. The project also benefited from excellent support from GL Management, Western Health Managers from Health Support Services, the Aged Care Division, and Allied Health.

The process involved some key tasks:

1. Establishing the menu review committee and capturing the enthusiasm of several residents and relatives in the development of the new menu.
2. Regular open forums, education sessions and informal opportunistic discussions with nursing staff from the beginning of the project enabled interested nurses to be champions and assist with change.
3. The taste testing session of the new textured modified meals with nursing staff was a key success with effective change and improvement in the meals for those vulnerable residents.
4. Working closely and collaboratively with foodservice staff and cooks in trialing and taste testing new meals for all meal times and establishing a workable new menu.

Dietitians can champion and empower the resident's voice to promote positive nutrition outcomes. They can connect all staff, from nursing to foodservices and residents to work together to make dining an enjoyable social experience and improve dignity in care. Dietitians have the expertise to ensure the relevant Nutrition best practice and quality standards are achieved and interpreted to ensure nutritious meals are provided with a strong focus on resident choice.

Patience and support are required to give the frail and vulnerable residents the opportunity to express their desires. Respecting and valuing the contribution residents can make in decision making about their care, requires proper planning with adequate time and sensitivity. This project is an exemplar for the inclusion of the resident voice in decision making.

APPLICABILITY TO OTHER SETTINGS

This project focused on developing a framework to optimise food and nutrition through menu planning and the dining experience. The three pillars – Governance, Individualised Focus of Care, and Cultural Change are adaptable to other care settings, particularly for individuals living with disabilities in Disability Care Homes, where issues of dignity, independence, and choice are similarly paramount.

The role of the dietitian in empowering individuals to make informed choices about their nutritional care and dining experiences, as well as in educating and supporting staff like disability support workers, is highly transferable to other vulnerable settings, such as those in mental health or correctional facilities. The dietitian reinforces a person-centred approach to food and mealtime experiences, supports a food-first approach in menu development, and is dedicated to empowering individuals in their nutritional care. The nutritional care framework aims to proactively promote good nutrition, prevent weight loss or prevent weight gain, depending on what is appropriate and can enhance the health and well-being of individuals. The importance of nutrition in the role of mental health is an emerging area.



REFERENCES

1. International dysphagia diet initiative <https://iddsi.org/>
2. Nutrition and quality food standards for adults in Victorian public hospitals and residential aged care services Victorian Menu Guidelines for Hospitals and Aged Care www.health.vic.gov.au/quality-safety-service/nutrition-and-food-quality-standards-for-health-services
3. Aged Care Quality and safety Commission www.agedcarequality.gov.au/providers/quality-standards
4. National Disability Insurance Scheme (NDIS) Quality and Safeguard's Commission Standards www.ndiscommission.gov.au/providers/registered-ndis-providers/provider-obligations-and-requirements/ndis-practice-standards
5. Dietitians Australia Aged Care Quality standards toolkit for APDS. www.membersdietitiansaustralia.org.au



APPENDIX

Appendix 1

The new normal

Menu - Monday

- Hot Breakfast**
 - High Protein Pancakes
- Soup Lunch**
 - Lentil
- Lunch Main Course**
 - Pork & Apple Casserole
 - Apricot Chicken
- Lunch Dessert**
 - Orange Syrup Pudding
- Soup Dinner**
 - Cream of Chicken
- Dinner Main Course**
 - Macaroni Bolognese + Herb Bread
 - Fried Rice
- Dinner Dessert**
 - Fresh Fruit Salad



More than a meal



“ The menu review meeting was brilliantly organised and superbly presented.

Watching the participants, it was wonderful to hear their comments and watch their body language signaling how positive and engaged they felt. It also moves us all to a perception of shared values and common goals.

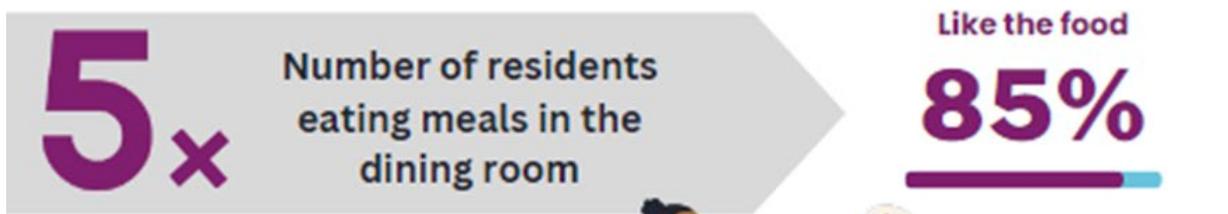
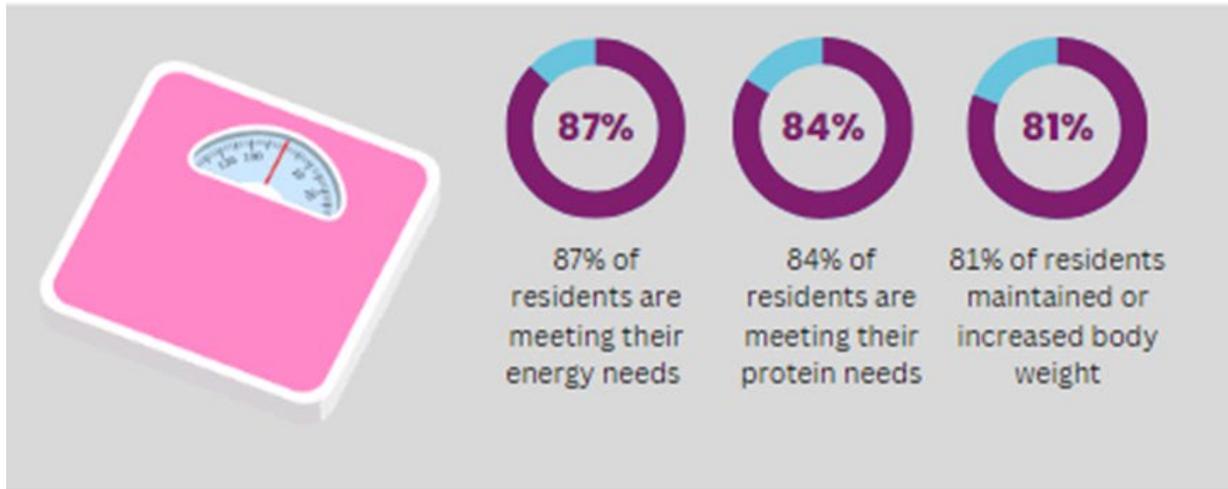
It especially enhances self esteem because these Elders are now able to be conscious that they represent those less fortunate, less cognisant at Grant Lodge- it's a social responsibility that they are capable of shouldering and sharing- that's what communities do. ”

Robyn Yaul
Advocate Grant Lodge and Menu Review
Committee Member

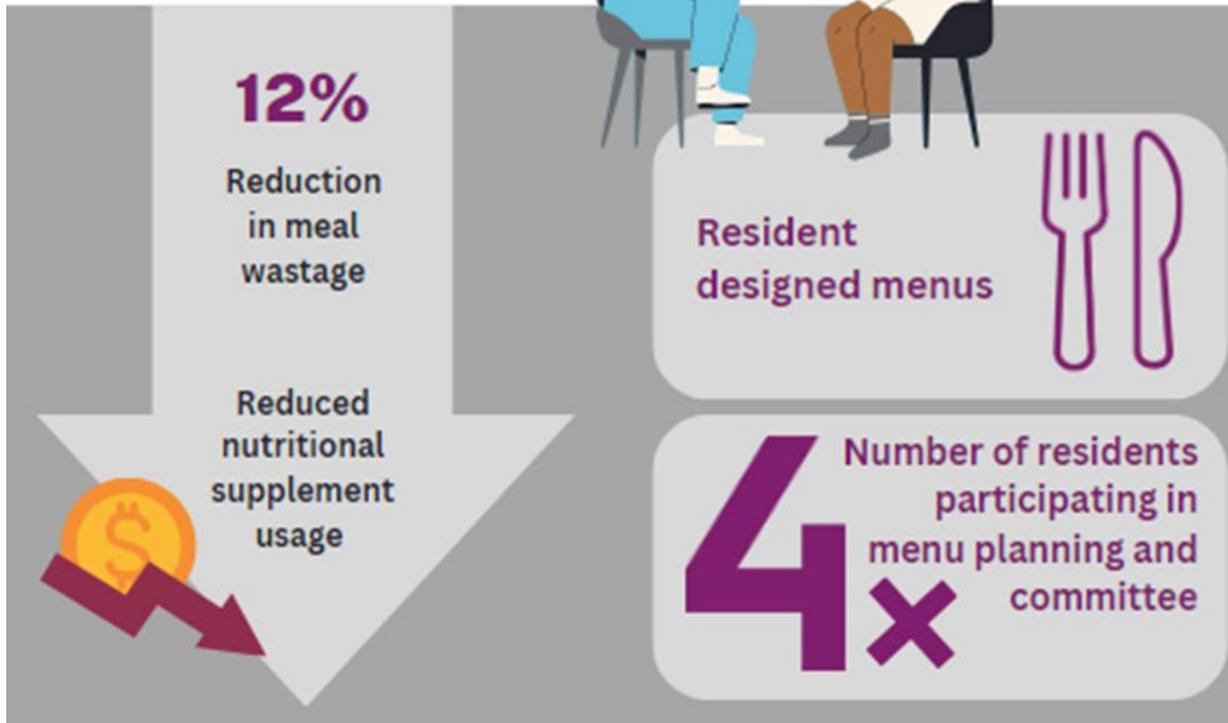
Western Health Inspirational Story Video
<https://vimeo.com/885025772/4ed2c1a6ed?share=copy>



The Results So Far..



Food focus lifestyle activities
Growing herbs and vegetables
Story telling of favourite foods and recipes



HEALTHCARE MEASUREMENT

HIGHLY COMMENDED

Townsville Hospital and Health Service, QLD

Clinical Governance Directorate

Improving rates of VTE prophylaxis prescribing at Townsville University Hospital

Dr Kunwarjit Sangla, Dr Stephen Perks and Rebecca Furlong

AIM

To improve the rates of Venous Thromboembolism (VTE) prophylaxis prescribing for inpatients within Townsville Hospital and Health Service (THHS).

SUMMARY ABSTRACT

VTE prophylaxis is an important part of patient care. The VTE Clinical Care Standard outlines the best practice prevention strategies to reduce the risk of VTE development, including assessment of VTE risk, development of a prevention plan, patient information, ensuring the plan balances the risk of thrombus and bleeding, ongoing monitoring and re-assessment of VTE risk status, and communications of VTE risk at transitions of care.

Townsville University Hospital (TUH) is the major tertiary referral hospital outside of metropolitan Brisbane, is one of the most geographically dispersed catchments within Australia and supports a population of almost 700,00 people across Northern Queensland.

VTE episodes per 10,000 bed days is an important Hospital Acquired Complication (HAC) indicator that Townsville Hospital and Health Service (THHS) monitors and reports regularly against. In October 2022, Health Roundtable data demonstrated an increasing incident of VTE in Townsville, peaking at an incident rate of 9.9 episodes per 10,000 bed days, well above the peer group median in Health Roundtable organisations. This data, in addition to several clinical incident reviews following significant harm or mortality, was escalated, and identified as a patient safety risk via Medication Safety governance pathways.

To address the problem, a multidisciplinary group of clinicians, clinical informatics specialists and Information Technology (IT) officers came together to develop a local clinical VTE dashboard, pulling VTE risk assessment and prophylaxis prescribing data from the integrated electronic medical record to allow for real time monitoring and reporting of VTE assessment and prescribing practices within clinicians at Townsville University Hospital. In addition, a supportive education model was implemented, with pharmacists providing at the elbow support and advice to clinicians in best practice VTE prophylaxis. The implementation of the dashboard and dedicated support has seen a 24% increase in VTE prophylaxis prescribing for inpatients within TUH, going from an average of 57% of inpatients with VTE prophylaxis prescribed to a consistent rate of 80-85% of inpatients with appropriate prophylaxis. In real terms, this is an increase of 96 patients per day to have best practice VTE prophylaxis strategies implemented, significantly improving the safety and quality of care provided to patients at TUH.



HEALTHCARE MEASUREMENT

HIGHLY COMMENDED

Royal North Shore Hospital, NSW

RNSH Hip Fracture Committee

Excellence in Hip Fracture Care

Bonnie Liu, Dr Andrew Ellis, Stephanie Laurent and Saskia Lonsdale

AIM

Providing excellent hip fracture care, in alignment to the Australian Clinical Care Standards leads to improved patient health outcomes and experiences of care, and is associated with fewer complications, reduced morbidity and aids recovery (Australian Commission on Safety and Quality in Health Care (ACSQHC), 2023). Royal North Shore Hospital (RNSH) has a strong commitment to providing excellent care for patients who have hip fracture care by regular monitoring and review of activity, quality and performance using data from the clinical quality registry, the Australian and New Zealand Hip Fracture Registry (ANZHFR). This has led to improvement in care outcomes to improve patient experience, reduce time to surgery and length of stay. Of note, in 2023 **RNSH was the highest performer** in the time to surgery indicator (n=117 hospitals), with **97% of patients having surgery within recommended timeframes, with RNSH having the shortest average time to surgery in Australia.**

SUMMARY ABSTRACT

The effective management of older patients with hip fractures remains central to modern care. Processes of assessment and communication alongside means of identifying poor performance are vital to improving care in this population. The ACSQHC have developed Clinical Care Standards for Hip Fracture (2023) to help support the delivery of evidence-based clinical care and promote shared decision making between patients, carers and clinicians. They aim to ensure that people receive best-practice care for a specific clinical condition or procedure, regardless of where they are treated.

Royal North Shore Hospital (RNSH) hip fracture steering committee meets regularly to monitor data specified by the Australia and New Zealand Hip Fracture Clinical Care Standards (2023). The prompt and effective management of these patients and the accurate recording, analysis and reporting of care metrics is fundamental to provision of quality care. Central to this process is that the committee evaluates care and drives service improvement using a clinical quality registry, the Australian and New Zealand Hip Fracture Registry (ANZHFR). Central to the RNSH's success in hip fracture care was an early decision that the completeness and quality of data would be maximized if those charged with its collection could immediately see the fruits of their work.

This steering committee has broad and diverse stakeholders that represent every point of the patient's journey. Multidisciplinary staff include representation from the emergency department (ED), orthopaedics, geriatric, nursing, operating theatres, allied health, fracture liaison services and anaesthetics. This leads to a hospital wide effort with invested clinicians who monitor and review service delivery using objective data to monitor patient outcomes. The standard of continuous quality improvement has been set, and there is drive and passion to provide excellence in care to our patients and remain vigilant at all times.

A salient example of the impact of this committee is highlighted by the achievements in the time to surgery indicator, which is a significant focus and commitment for the group. Timely surgical care for hip fractures improves patient outcomes and experiences, and is associated with fewer complications, reduced morbidity and aids recovery (ACSQHC, 2023). For every day surgery is delayed, two days are added to the length of stay, demonstrating cost effectiveness. The 2023 ANZHFR Annual Report showed **RNSH was the highest performer** in this key performance indicator (KPI) (n=117 hospitals) in ANZHFR, with **97% of patients having surgery within recommended timeframes** (Appendix-Figure 1.a). RNSH had the **shortest average time to surgery in Australia** (23 hours). Due to the



importance of the time to surgery KPI, the most recently released revised version of the clinical care standards had reduced this time to <36 hours. When measuring against the updated indicator, RNSH was still ranked number 1 (Appendix-Figure 2). This achievement is significant to note given that Australian hospitals averaged only 76% of patients having surgery within 48 hours (range 49% to 97%).

Timely surgical care impacts on long-term outcomes. When reviewing hip fracture patient outcomes for 2023, of the patients contacted, only 1 patient required surgical revision. Nearly **60% returned to their preadmission walking ability**, being the third highest in Australia (Appendix-Figure 3). **85% had returned to the usual place of residence**, with the Australian average being 78%.

There has been a **reduction in the average length of stay (ALOS)** for patients who have had a hip fracture at RNSH (Appendix-Figure 4). Prior to the hip fracture guidelines in 2014 and use of the ANZHFR, the ALOS was 10.28 days. In 2023, the ALOS has decreased to 9.06 days. Prior to Covid-19, the ALOS was 8.11 days. This demonstrates **significant cost savings and bed days saved** for the hospital, particularly as the volume of patients has nearly doubled over time, allowing for greater throughput.

These achievements are possible by ensuring there is smooth, consistent and coordinated care for a patient throughout their journey, with the care the patient needs integrated across all relevant services yet tailored to the needs of the individual patient. By prioritising timely access, care has been rearranged which has created efficiencies for staff e.g. staggered orthogeriatric assessment to ensure rapid access, reduced length of stay, leading to better staff experience.

The benefits of timely surgical care are clear to patients, carers and staff.

The success of this committee highlights two important findings. Firstly, continuous regular monitoring of care outcomes for patients can lead to refinement of care process, without the need for infrastructure change. Secondly, the willingness and enthusiasm of staff to review and develop processes that are focused on patient care. This has led to significant improvements in patient care and hospital efficiency, leading to better health outcomes, improved patient and staff experiences in providing and receiving care, as well as saving money at the same time.



HEALTHCARE MEASUREMENT

TABLE OF SUBMISSIONS

Armadale Kalamunda Group, WA

AKG Pre-Term Birth Project

Dr Sangeeta Malla Bhat and Kaela Cornell

Hunter New England Local Health District, NSW

Gloves Off! Clean Hands. Safe for all.

Tina Wilkie, Amy Bernotas, Dr Sarah Browning, Dr Stanley Chen, Emma Downey, Cath Kirkman, Patricia Knight, Sally Munnoch and Dr Rachel Ng

Redcliffe Hospital, QLD

Evaluation of a pathway to address take own leave events for First Nations peoples presenting for emergency care: The Deadly RED project

Dr Michelle Davison, Meg Clarke, Caroline Mitchell, Alan Yan and Elwyn Henaway

Royal North Shore Hospital, NSW

Excellence in Hip Fracture Care

Bonnie Liu, Dr Andrew Ellis, Stephanie Laurent and Saskia Lonsdale

Royal North Shore Hospital, NSW

Development of Software for Managing Morbidity and Mortality Meetings in Anaesthesia

Stephan Aichner, Malhar Soni, Gene Lee and Andrea Santoro

RPA Virtual Hospital, NSW

Virtual Rehabilitation: Enabling safe, effective and timely supported discharge home

Olivia Martin, Dr Aaron Mehta, Dr Chui Kiong (Purdy) Lau, Bryan Durkin, Sharon Lam, Natalie James

Townsville Hospital and Health Service, QLD

Improving rates of VTE prophylaxis prescribing at Townsville University Hospital

Dr Kunwarjit Sangla, Dr Stephen Perks and Rebecca Furlong

Western Health, VIC

Piloting a Power Shift through Food

Allison Lauder, Kathryn Marshall and Vicki Barrington

Western Sydney LHD - Blacktown and Mount Druitt Hospitals, NSW

Building Evaluation Capacity among Health Staff using a Learning by Doing Approach

Dr Stephanie Fletcher-Lartey, Prof Ben J Smith and Western Sydney Local Health District Research and Education Network



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QUALITY INITIATIVES

ACHS International
Quality Improvement
Awards 2024



Quality Initiatives: Entries in the ACHS International Quality Improvement Awards 2024.

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Introduction

The ACHS International Quality Improvement Awards 2024

The annual ACHS International Quality Improvement (QI) Awards recognise and celebrate outstanding quality improvement initiatives, programs, or strategies implemented in healthcare organisations. These awards honour organisations that demonstrate excellence and innovation in clinical care, organisation-wide practices, service delivery, performance measurement and patient-focussed innovation.

The QI Awards are open to submissions from all ACHS International member organisations.

Judging is conducted by a judging panel for each of the QI Award categories:

Clinical Excellence and Patient Safety

This category recognises innovation and demonstrates quality improvement in the delivery of safe, effective patient care.

Non-Clinical Service Delivery

This category acknowledges a demonstrated outcome of improvement and innovation in patient and/or consumer services and organisation-wide practice including services provided by community and allied health organisations.

Healthcare Measurement

This category recognises organisations that have measured an aspect of clinical management and/or outcome of care, taken appropriate action in response to that measurement, and demonstrated improved patient care and organisational performance upon further measurement. Healthcare measurement can include data collected from the ACHS Clinical Indicator program or other methods of monitoring patient care processes or outcomes. Both quantitative and qualitative data can be used, however this category must describe the initial measurement, the analysis of that measurement, the action(s) implemented, and the improved measurement(s).



Winner Submissions by Category

The ACHS International Quality Improvement Awards 2024

CLINICAL EXCELLENCE AND PATIENT SAFETY

Island Hospital, MALAYSIA

Cancer Centre

Advancing Patient-Centred Care through Tattooless Radiotherapy - A Quality Improvement Project Innovative Practice

Mr Gim Chee Ooi, Ms Syahida Nafisyah, Mr Swee Yee Yong and Ms Bee Kean Chuah

Full submission page 4

NON-CLINICAL SERVICE DELIVERY

Mouwasat Hospital Riyadh, SAUDI ARABIA

Performance Improvement Department in Collaboration with Haemodialysis Unit

Enhancing Patient Engagement in Dialysis Unit

Ms. Alaa M. Abdeen, Mr. Khalid Al Saleem, Dr. Alani I. Alagha, Dr. Sameh A. Abouelkher, Dr. Saida A. Hajri, Dr. Marwa Z. Mansour, Dr. Aiman M. Ibrahim, Ms. Micheline T. Challita, Dr. Mayada M. Moustafa, Ms. Aswathy S. Asokan, Ms. Sabah M. Ibrahim and Mr. Faisal Fasiludeen

Full submission page 12

HEALTHCARE MEASUREMENT

KIMS Healthcare Management Limited, INDIA

Imaging & Interventional Radiology

Prediction of Pre-eclampsia at 18-24 weeks of gestation using maternal Ophthalmic artery Doppler - A prospective observational study

Dr. Divya Saikumar, Dr. Madhavan Unni, Dr. Deepthi and Dr. K. Manikandan

Full submission page 27



Highly Commended Submissions by Category

The ACHS International Quality Improvement Awards 2024

CLINICAL EXCELLENCE AND PATIENT SAFETY

Hung Vuong Hospital, VIETNAM

Infection Control Department

Quality Improvement Program in the Prevention of Ventilation - Associated Pneumonia at the Neonatal Department of Hung Vuong Hospital

Ms Anh Nguyen, Dr. Phan Thi Hang, Mrs. Tran Thi Thuy Hang, Dr. Bui Thi Thuy Tien, Mrs. Dinh Pham Phuong Anh, Mrs. Ngo Thi Thanh Tham, Mr. Nguyen Khanh Duy, Mr. Vu Quyset Thang, Nurse, Dr. Le Anh Thi, Mrs. Nguyen Thi Hong Phuc, Mrs. Tran Thi My Hanh and Mrs. Tran Dang Thuy Vi

NON-CLINICAL SERVICE DELIVERY

Hung Vuong Hospital, VIETNAM

Quality Management Department

Journey of Patient Safety Culture Improvement at Hung Vuong Hospital

Ms Anh Nguyen, Dr. Phan Thi Hang, Ms. Dien Ngoc Trang, Ms. Nguyen Thi Lan Anh, Ms. Le Dang Uyen Vy, Dr. Hoang Thi Diem Tuyet, Dr. Huynh Xuan Nghiem, Phr. Huynh Thi Ngoc Hanh, Mrs. Luc Boi Ngoc, Ms. Nguyen Thi Quynh Nhu and Mrs. Nguyen Thi Hoa

HEALTHCARE MEASUREMENT

Hong Kong Baptist Hospital, HONG KONG

Pharmacy Department

Improvement in the appropriate use of IV Paracetamol in the underweight patient

Mr Fan Chun Yik, Ms Yeung Tak Chi Ada and Mr Law Wai Leung





CLINICAL EXCELLENCE AND PATIENT SAFETY

WINNER

Island Hospital, MALAYSIA

Cancer Centre

Advancing Patient-Centred Care through Tattooless Radiotherapy - A Quality Improvement Project Innovative Practice

Mr Gim Chee Ooi, Ms Syahida Nafisyah, Mr Swee Yee Yong and Ms Bee Kean Chuah

AIM

This project introduced a paradigm shift in radiotherapy by replacing permanent tattoo skin markings with Surface-Guided Radiation Therapy (SGRT). The goal was to implement a 100% tattoo-less radiation therapy practice that enhances patient comfort and aligns with patient-centred care principles. Key objectives included:

- Allocating budgets for the acquisition and installation of SGRT equipment, software, and imaging systems.
- Partnering with vendors and manufacturers to ensure comprehensive staff training.
- Integrating SGRT technology into routine workflows through collaboration between medical physicists and radiation therapists.

This initiative not only addresses patient discomfort and psychological impact but also provides a competitive advantage by offering a cutting-edge, evidence-based, patient-friendly alternative to traditional tattoo-based alignment methods and best practice treatment outcomes.

SUMMARY ABSTRACT

Background:

Traditional tattoo markings for radiation therapy can cause discomfort, emotional distress, and lasting cosmetic effects. To enhance the patient experience, Island Hospital introduced a tattoo-less approach using SGRT.

Method:

The project involved a literature review, quality assurance testing, and data collection to evaluate the congruence of SGRT with traditional physical laser alignment. Activities included staff training, equipment installation, and a full implementation of tattoo-less practices for all patients.

Results:

SGRT ensured accuracy and precision in treatment setup, complemented with Image-Guidance system (IGRT), achieving up to 1.0 mm and 0.1° resolution for image registration and couch corrections. This innovative approach delivered safe, effective treatment while eliminating the need for permanent skin markings.

Conclusion:

SGRT enabled a paradigm shift in radiotherapy, enhancing patient satisfaction and maintaining high standards of accuracy and safety.



REPORT

APPLICATION OF ACHS INTERNATIONAL (ACHSI) PRINCIPLES

This quality improvement (QI) initiative aligns with the ACHSI principles by introducing SGRT to enhance patient-centred care, improve quality, and ensure safety while promoting innovation in cancer treatment.

1. Consumer Focus

- Patient-reported experience measures (PREMs) were continuously collected and analysed, driving the development and implementation of this initiative.
- Feedback from patients highlighted the importance of eliminating permanent markings, especially for individuals with cultural, religious, or personal concerns.
- The program enhanced patient experience, comfort, and emotional well-being.

2. Effective Leadership

- Leadership teams championed the initiative, securing funding, selecting the most appropriate technology, engaging stakeholders, including patient advocacy groups and medical staff and ensuring a smooth implementation of this innovative approach.
- Comprehensive training of staff and radiation therapists ensured the seamless integration of SGRT, with ongoing refresher programs to maintain competency.
- Leadership maintained alignment with global best practices through benchmarking and active collaboration with leading radiation therapy centres.

3. Continuous Improvement

- Weekly reviews of PREMs and ongoing radiotherapy staff feedback ensured the initiative's success. Any identified deviations were promptly addressed with targeted interventions. Ensuring these high standards are maintained across the board.
- SGRT introduced enhanced safety features, including beam-hold monitoring, which pauses treatment if patient movement exceeds 3.0 mm, ensuring precision during therapy.
- Continuous benchmarking against other leading radiation therapy centres was undertaken to ensure that the institution remains at the forefront of best practices and a leader in patient-centred innovation.

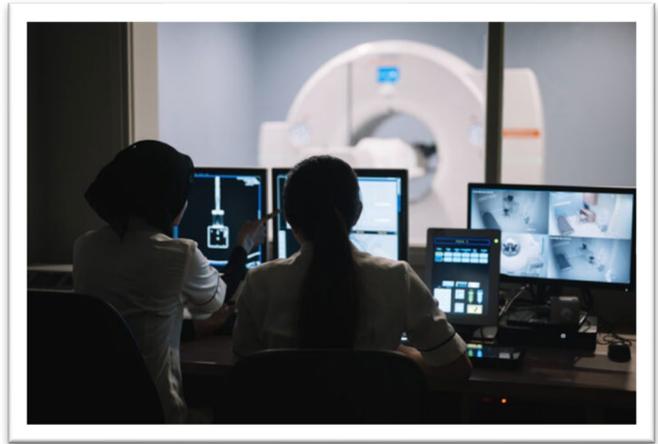
4. Evidence of Outcomes

- Treatment accuracy and precision were maintained with SGRT, complemented with Image-Guidance System (IGRT), achieving up to 1.0 mm alignment accuracy and 0.1° precision in couch corrections which directly increased patient safety and quality of care.
- Patients reported improved comfort and reduced psychological distress, reinforcing the success of the tattoo-less approach.
- Data confirmed that the shift to SGRT did not compromise clinical outcomes, demonstrating the method's reliability and effectiveness.



INNOVATION IN PRACTICE AND PROCESS

This initiative transformed traditional radiotherapy practices by replacing tattoo-based alignment methods with a non-invasive, surface-guided approach. SGRT represents a forward-thinking innovation in cancer care, balancing clinical excellence with enhanced patient experiences. By addressing both technical precision and emotional well-being, this project set a new benchmark for patient-centred care in radiation therapy.



APPLICABILITY TO OTHER SETTINGS

The interventions implemented at Island Hospital are highly applicable to other settings equipped with Surface-Guided Radiation Therapy (SGRT) technology and supported by leadership commitment. Key elements of the project demonstrate the potential for broader adoption:

- **Technology Integration:** The SGRT approach can be replicated in any facility with access to the necessary technology. By tailoring the implementation to fit institutional resources and workflows, other hospitals can modernise their radiotherapy practices.
- **Leadership Commitment:** Island Hospital's dedication to staff training, patient-centred care, and continuous quality improvement highlights the critical role of leadership in driving successful adoption. Similar leadership support is essential for replicating the initiative in other settings.
- **Customisation and Flexibility:** The SGRT framework can be adapted to meet the unique needs of various healthcare institutions, ensuring flexibility in implementation across diverse patient populations and operational contexts.
- **Global Relevance:** With the increasing availability of advanced radiotherapy technology worldwide, the SGRT model provides a scalable and sustainable approach to improving patient care standards.

Island Hospital's innovative initiative serves as a blueprint for healthcare facilities aiming to adopt modern, patient-focused radiotherapy practices, ensuring enhanced patient experience, safety, and clinical outcomes.

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CLINICAL EXCELLENCE AND PATIENT SAFETY

HIGHLY COMMENDED

Hung Vuong Hospital, VIETNAM

Infection Control Department

Quality Improvement Program in the Prevention of Ventilation - Associated Pneumonia at the Neonatal

Department of Hung Vuong Hospital

Ms Anh Nguyen, Dr. Phan Thi Hang, Mrs. Tran Thi Thuy Hang, Dr. Bui Thi Thuy Tien, Mrs. Dinh Pham Phuong Anh, Mrs. Ngo Thi Thanh Tham, Mr. Nguyen Khanh Duy, Mr. Vu Quyet Thang, Nurse, Dr. Le Anh Thi, Mrs. Nguyen Thi Hong Phuc, Mrs. Tran Thi My Hanh and Mrs. Tran Dang Thuy Vi

AIM

To reduce the incidence of ventilator-associated pneumonia (VAP) in the Neonatal Department of Hung Vuong Hospital through targeted interventions, training, and system improvements aimed at enhancing prevention practices for mechanically ventilated infants.

SUMMARY ABSTRACT

Background:

Ventilator-associated pneumonia (VAP) is a significant healthcare-associated infection that adversely impacts neonatal outcomes, leading to increased mortality, complications, and antibiotic resistance. The Neonatal Department of Hung Vuong Hospital initiated a quality improvement program to mitigate VAP risks and improve patient outcomes.

Objective:

To reduce the incidence of VAP in mechanically ventilated infants following a systematic intervention program.

Method:

- A situational analysis of VAP incidence.
- Comprehensive training for healthcare workers led by local and international experts.
- Expansion of Kangaroo care facilities and integration of non-invasive respiratory support methods.
- Implementation of a VAP prevention checklist.
- Provision of improved tools and equipment to enhance compliance with best practices.
- Ongoing monitoring and feedback to assess progress and adjust interventions.'

Results:

The VAP rate decreased significantly from 14.2 episodes per 1,000 ventilator days in 2021 to 5.4 in 2023 and 4.7 in the first five months of 2024. Compliance with VAP prevention practices improved from 0% (pre-intervention) to 64.4% after intervention.

Conclusion:

The program successfully reduced VAP incidence but highlighted the need for sustained monitoring and continued improvement efforts to achieve optimal compliance and align with best practices observed in developed countries.



REPORT

APPLICATION OF ACHSI PRINCIPLES

1. Consumer Focus

- VAP is a critical concern in neonatal intensive care, contributing to significant morbidity and mortality.
- The Neonatal Department serves a high volume of vulnerable patients, with 400 intubated infants annually, underscoring the need for effective infection prevention.
- Patient safety was prioritised by integrating evidence-based practices and ensuring that interventions addressed cultural, logistical, and clinical barriers to implementation.

2. Effective Leadership

- VAP prevention was embedded in the hospital's patient safety plan, demonstrating institutional commitment.
- Leadership ensured alignment with global best practices by collaborating with experts from the UK and the National Children's Hospital in Hanoi.
- Systemic changes were supported, including facility upgrades, acquisition of specialised equipment, and the development of a VAP prevention checklist.
- Continuous engagement with healthcare workers fostered accountability and sustained motivation.

3. Continuous Improvement

- Monthly monitoring of VAP incidence and compliance rates informed iterative changes to intervention strategies.
- Practical measures included providing sterile swabs, redesigning the prevention checklist for usability, and implementing a structured oral hygiene schedule.
- Feedback mechanisms ensured timely identification and resolution of implementation challenges.

4. Evidence of Outcomes

- VAP incidence per 1,000 ventilator days decreased by more than 50% from 2021 to the first five months of 2024.
- Compliance with checklist-based practices improved significantly, with notable gains in suctioning before position changes (from 17.7% to 76.1%) and daily ventilator weaning assessments (from 0% to 19.1%).
- The results reflect the effectiveness of integrating training, tools, and monitoring into routine neonatal care practices.

INNOVATION IN PRACTICE AND PROCESS

This program introduced several innovations:

- Incorporation of evidence-based VAP prevention bundles into daily practice.
- Structured training programs tailored to address specific neonatal care challenges.
- Development and deployment of practical tools, such as redesigned checklists and upgraded ventilator circuits.
- Establishment of a feedback loop to track progress, identify gaps, and refine interventions.

These innovations improved neonatal care quality by fostering a safer, more effective environment for mechanically ventilated infants.



APPLICABILITY TO OTHER SETTINGS

The success of this program demonstrates its adaptability for use in other neonatal intensive care units. Key interventions, such as staff training, evidence-based bundles, and systematic monitoring, are transferable and can significantly improve patient safety and care quality across diverse healthcare settings.

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CLINICAL EXCELLENCE AND PATIENT SAFETY

TABLE OF SUBMISSIONS

Gleneagles hospital Hong Kong, HONG KONG

New Initiative Infrared Bed Exit Sensor with Voice Prompt Messages (Luna Cat) to Prevent Inpatient Falling: A Quasi-Experimental Study

See Kee Fok

Hemas Hospitals (Pvt) Ltd, SRI LANKA

Optimising Incident Reporting Systems: A Quality Improvement Initiative to Enhance Patient Safety and Reporting Accuracy

Charitha Wickramasinghe

Hoan My Cuu Long Hospital (HMCL), VIETNAM

Using qSOFA and SIRS scores in treatment of patients with sepsis in Emergency Department

Toan Nguyen Van

Hoan My Cuu Long Hospital (HMCL), VIETNAM Paediatrics Department

Improvement project application of bedside ultrasound in assessing umbilical venous catheters in neonates at NICU- Paediatrics Department in 2024

Phuc Quach Thi Kim

Hoan My Sai Gon Hospital (HMSG), VIETNAM

Prevention of pressure injuries as strategy for quality of care in nursing care at ICU and inpatients ward to increase awareness of clinical staff

Nam Nhu Tran Nguyen

Hoan My Sai Gon Hospital (HMSG), VIETNAM

Addressing gaps between quality measurement and clinical improvement

Nam Nhu Tran Nguyen

Hung Vuong Hospital, VIETNAM

Enhancing adverse drug reaction (ADR) monitoring and reporting for cancer patients at Hung Vuong Hospital

Anh Nguyen

Hung Vuong Hospital, VIETNAM

Supporting Intervention to help mothers with inverted nipples practice breast milk feeding at Hung Vuong Hospital

Anh Nguyen

Hung Vuong Hospital, VIETNAM

Progress in management of postpartum haemorrhage at Hung Vuong Hospital, Ho Chi Minh City

Anh Nguyen



Hung Vuong Hospital, VIETNAM
Infection Control Department

Quality Improvement Program in the Prevention of Ventilation - Associated Pneumonia at the Neonatal Department of Hung Vuong Hospital

Ms Anh Nguyen, Dr. Phan Thi Hang, Mrs. Tran Thi Thuy Hang, Dr. Bui Thi Thuy Tien, Mrs. Dinh Pham Phuong Anh, Mrs. Ngo Thi Thanh Tham, Mr. Nguyen Khanh Duy, Mr. Vu Quyet Thang, Nurse, Dr. Le Anh Thi, Mrs. Nguyen Thi Hong Phuc, Mrs. Tran Thi My Hanh and Mrs. Tran Dang Thuy Vi

Island Hospital, MALAYSIA

Cancer Care

Advancing Patient-Centred Care through Tattooless Radiotherapy - A Quality Improvement Project Innovative Practice

Mr Gim Chee Ooi, Ms Syahida Nafisyah, Mr Swee Yee Yong and Ms Bee Kean Chuah

Mouwasat Hospital Riyadh, SAUDI ARABIA

Reducing the risk for acute kidney injury and the need for Continuous Renal Replacement Therapy (CRRT) in critically ill patients

Sameh Abouelkher

Royal Bahrain Hospital, BAHRAIN

Discharge Process Re-engineering Through Human Factors

Raghavi Damodaran

Sunway Medical Centre, MALAYSIA

The use of EMPATHIC-30 as a satisfactory measurement tool in a Family-Centred Care (FCC) Paediatric Intensive Care Unit (PICU) in Malaysia

Mageswari Veloo

Sunway Medical Centre, MALAYSIA

Computerised Physician Order Entry (CPOE): A Digital Transformation Initiative to Improve Safety, Quality and Efficiency

Mageswari Veloo

Sunway Medical Centre, MALAYSIA

Reduce the High Risks of VTE (Venous Thrombus Embolism) in Post-TKR (Total Knee Replacement) Surgery Patients with Effective Early Interventions in A Multi-Collaborative Care Hospital

Mageswari Veloo

Sunway Medical Centre, MALAYSIA

Enhancing MRSA Infection Control: Implementing Rapid Polymerase Chain Reaction (PCR) Screening and Comprehensive Management Strategies at a Tertiary Healthcare Facility

Mageswari Veloo





NON-CLINICAL SERVICE DELIVERY

WINNER

Mouwasat Hospital Riyadh, SAUDI ARABIA

Performance Improvement Department in Collaboration with Haemodialysis Unit

Enhancing Patient Engagement in Dialysis Unit

Ms. Alaa M. Abdeen, Mr. Khalid Al Saleem, Dr. Alani I. Alagha, Dr. Sameh A. Abouelkher, Dr. Saida A. Hajri, Dr. Marwa Z. Mansour, Dr. Aiman M. Ibrahim, Ms. Micheline T. Challita, Dr. Mayada M. Moustafa, Ms. Aswathy S. Asokan, Ms. Sabah M. Ibrahim and Mr. Faisal Fasiludeen

AIM

Our project aimed to achieve the following goals within six months (December 2023–May 2024):

- Improve patient experience to exceed 90% in all aspects, with a specific target of over 95% in engagement and education.
- Utilise Patient-Reported Outcomes (PROMs) to assess and address patient educational and engagement needs.
- Improve patients' average potassium and phosphorus levels to fall within accepted ranges.
- Reduce interdialytic weight gain (IDWG) between sessions to less than 1,000 grams.
- Achieve a 50% reduction in patient readmissions and emergency room visits.

SUMMARY ABSTRACT

Background:

This project sought to prioritise patient engagement within a dialysis care setting, enhancing outcomes for dialysis patients, reducing healthcare costs, and fostering a more patient-centred care environment. A multidisciplinary care model was implemented, combining efforts of healthcare professionals to address the holistic needs of patients, including physical, psychological, social, and spiritual aspects.

Method:

Key interventions included:

- Monthly multidisciplinary meetings to involve patients in care management.
- Communication boards for patients to express their preferences and needs.
- Educational materials, videos, and patient safety and reported outcomes surveys to enhance understanding and regularly gather feedback.

Results:

The initiatives led to significant improvements:

- Overall patient satisfaction increased from 78% to over 95%, with engagement and education satisfaction reaching 98%.
- Enhanced adherence to dietary and lifestyle recommendations improved potassium levels by 19%, phosphorus levels by 28%, and reduced IDWG by 60%.
- Healthcare utilisation declined with a 50% reduction in hospital readmissions and a 60% decrease in emergency room visits.



Conclusion:

The project demonstrated the effectiveness of patient engagement initiatives, resulting in improved clinical outcomes, reduced healthcare utilisation, and enhanced patient satisfaction.

Furthermore, the PROMs results were instrumental in enhancing patient experience with fluid and dietary restrictions. The collaborative efforts of the dietician and health educator, along with patient involvement in choosing suitable diets, led to improved adherence to dietary and lifestyle changes. This translated into significant improvements in average potassium and phosphorus levels, as well as interdialytic weight gains. In conclusion, these results collectively highlight the effectiveness of the patient engagement initiatives in fostering a more patient-centred approach to dialysis care.

REPORT

APPLICATION OF ACHSI PRINCIPLES

1. Consumer Focus

This project addressed critical challenges faced by dialysis patients, including adherence, quality of life, and self-management. By prioritising patient engagement, the project aimed to:

- Improve health outcomes through increased adherence to treatment and lifestyle modifications.
- Enhance patient experience and satisfaction through active involvement in care.
- Reduce healthcare costs by minimising unnecessary readmissions and emergency visits.
- Enhance patient self-management skills: Empowering patients to take an active role in their care can improve their self-management skills.

Evidence-based resources such as ACHSI Dialysis Service Standards informed the design of interventions, ensuring a focus on patient-centred care.

Within this section are examples of patient-centred initiatives, such as patient education programs and Multidisciplinary Teams activation that prioritise individual patient needs and preferences.

- (1) Acquiring input from our patients - Patient Safety & Experience Survey (Appendix 1): To assess patient needs and experiences, we conducted a comprehensive Patient Health & Safety Survey. Based on evidence-based resources like the ACHSI Dialysis Service Standards, the survey addressed a range of topics, including cultural competency (CALD), patient knowledge and engagement, satisfaction, and safety aspects such as medication, fall prevention, identification, and early warning signs. We collected data from patients in the Second quarter of 2023 and used it to inform our understanding of patient needs. This information helped us identify areas for improvement and tailor our staff training and support to better meet patient requirements. We continued collecting survey data throughout our improvement and sustainability phases to ensure ongoing alignment with patient needs.
- (2) Created Patient Reported Outcome Measures (PROMS) Survey (Appendix 2): We developed a Patient Reported Outcome Measures (PROMs) Survey tailored to kidney disease patients. This evidence-based questionnaire provided valuable insights into our patients' health status, treatment goals, and individualised care needs. PROMs surveys were first presented to our patients in the Second Quarter of 2023, in the unit throughout their treatment journey. Since then, the survey is collected monthly and analysed quarterly to track patient outcomes and identify areas for improvement.

2. Effective Leadership

Leadership played a pivotal role in driving the initiative:

- Defined staff roles for physicians, nurses, dieticians, social workers, and clinical pharmacists in patient engagement.
- Developed a comprehensive training curriculum on effective communication, active listening, and needs assessment.



- Ensured the provision of tools and resources, such as educational materials and redesigned communication boards.
- Facilitated multidisciplinary meetings where patients actively contributed to care planning.

Staff training & involvement - In 3rd Quarter of 2023, We Identified the role of each staff member in Patient Engagement: physicians, nurses, social workers, dietitians, clinical pharmacist, developed a comprehensive training curriculum, effective communication techniques, active listening skills, understanding patient perspectives, patient Interviewing and needs assessment.

Implemented Staff Training Programs: In-person workshops, online modules, case studies, role-playing exercises

Gathered Staff Feedback and Insights: surveys, staff Interviews, collaboration to select patient engagement techniques, group discussions & brainstorming sessions and evidence-based practices.

Adopt patient engagement techniques - Multidisciplinary Team Formulation A well-coordinated multidisciplinary team (MDT) for providing comprehensive care to dialysis patients was introduced. This team consisted of various healthcare professionals who work together to address the patient's physical, psychological, spiritual, and social needs in a holistic Approach. The team was composed of Nephrology Physicians, Dialysis Nurses, Dieticians, Social Workers, Health Educators, and a clinical pharmacist assigned to the unit, to continuously follow up with the patients.

Multidisciplinary Team Meeting with the Patient/caregiver (Appendix 3) On monthly basis, following the Monthly lab results of each patient, each team member reviews the results and together, the team personalises the plan of care accordingly in the Patient Multidisciplinary Conference Sheet (Hard Copy). The team then calls for a meeting with the patient on his/her first session following the Lab tests. The team gathers by the patient side where each member explains their assessment and plan of care, if the patient has any input, the plan of care is discussed, and best options are taken. This Multidisciplinary Conference sheet is co-signed by all the team members as well as the patient and the care plan are entered in HIS and the manual form sent to Medical Records department to upload into the patient's file.

3. Continuous Improvement

- Ongoing monitoring of patient satisfaction and PROMs ensured alignment with patient needs.
- Adjustments based on feedback included redesigning the communication board and providing both QR code-based and printed educational resources.
- Regular updates to training modules and multidisciplinary team processes, maintained engagement and adherence to best practices.

Communication Board (Appendix 4) A lightweight communication board, a visual tool that facilitates effective communication among healthcare providers, patients, and their families within a dialysis unit, was posted with a magnetic bar in each cubicle, to serve as a central hub for sharing information, updates, and important needs by the patient on every visit. The patients were trained on filling up the board in every visit and discussing with the team members on their arrival/round.

The communication board aimed to help reduce misunderstandings and improve communication among all stakeholders, increase Patient Engagement by providing patients and their families with relevant information, the board can help them feel more involved in their care. Moreover, the board helped staff members stay informed and efficient in their daily tasks. By promoting better communication and understanding, we believed that a communication board could contribute to improved patient outcomes.

Educational Materials (Appendix 5), Videos & Wall Posts, a patient booklet was initiated for the patient, in English and Arabic, with introduction to the unit, the services provided as well as Safety precautions, contact information and Early warning signs detection. In addition, a general dialysis educational booklet was created by our team to help guide the patient through the day either while in the Hospital or at home. Various other Educational Materials according to patient needs were created from evidence-based resources and were made in QR codes that could be accessed by the patient anywhere. In addition to these booklets and handouts, Video about the Building safety, Infection Control practices, and other aspects were displayed on the patient's screen during the sessions. Wall posters of early warning signs, prevention of fall and calling bell was also posted in each cubicle. (Appendix 6). HIS Documentation & Multidisciplinary Communication (Appendix 7). The team was trained on using



the Multidisciplinary care plan for Monthly plan of care and the Haemodialysis Care plan for each patient visit, where patient assessment is entered in a common form so could be seen by all the team and be considered in their care plan.

Documentation - Documentation of the Patient teaching was also done in a multidisciplinary form (Patient Teaching Form) Outcomes of Transition to Patients centred System Within this section are Data on specific outcome measures that demonstrate improved health outcomes e.g. Phosphorus and Potassium Levels in CKD (chronic kidney disease) patients, Rate of interdialytic weight gain (IDWG), patient-reported outcome measures (PROMs), Clinic relevant data such as readmission rates, Visits to ER and Patient Satisfaction Rate. Our patient-centred care approach, which actively involves patients in their treatment decisions, was fully implemented in November 2023 with the strong support of hospital leadership. To assess the impact of these initiatives, we compared key performance indicators (KPIs) from before implementation to data collected in December 2023 and beyond.

4. Evidence of Outcomes

Key performance indicators demonstrated significant improvement:

- Patient Satisfaction: Increased from 78% to 95.5% overall, with engagement and education satisfaction at 98%.
- Clinical Outcomes: Potassium and phosphorus levels improved by 19% and 28%, respectively, while IDWG reduced by 60%.
- Healthcare Utilisation: Readmissions decreased from 11% to 5%, and emergency visits dropped by over 60%.
- Overall Patient Experience improved from Average of 78.7% in second Quarter of 2023 to an Average of 95.5% by the end of the project time frame (i.e. First Quarter of 2024) and was sustained quarter to date to an average of 96.8%.
- Patient Experience in relation to Engagement and various educational activities improved from 76.5% in the Q2 2023 to 95.8% in Q1 2024, end of project time. The improvement is sustained in the Second Quarter of 2024 with an Average of 98% Satisfaction with the Engagement and Education provided to our dialysis patients. Appendix 8

Patient Reported Outcomes (PROMs):

Data from PROM Surveys are analysed every six Months. Whenever one of the questions show problem from the patient's point of view, a corrective action is implemented to improve this Outcome in the future. The primary PROMs analysis in Q3 2024 showed that our patients had issues with the fluid restrictions, Dietary restrictions and feeling calm. Therefore, during our project there was special personalised diets made with the patients according to their preferences and cultural assessment as well, Health Educator also engaged the patients in educational and promotional activities on improving lifestyle and diets to control their interdialytic weight gain. In addition, Patient education to take ice water, to avoid staying long time out of home, Patient advised to collect their urine - if urine - 100ml - less restriction given, and Ice Cold water was prepared for the patients before their arrival.

The outcomes of the improvement done for the identified needs of engagement for our patient from our PROMs analysis was measured through their Potassium and Phosphorus levels as well as their Average interdialytic Weight. Results showed that Average potassium level has improved by about 19% from the beginning of the project and is sustained with its normal ranges of 3.5-5.2 mmol/L until the month of August 2024 Average Phosphorus level also improved by about 28% from August 2023 till August 2024, and the results are sustained within the normal range of 2.5-4.5 mg\dl. In addition to Potassium and Phosphorus levels, Average Interdialytic Weigh showed a remarkable improvement of about 60% from the starting point of the project till Month of August 2024.

Patients sustained an average Interdialytic weight gain (IDWG) of 1000 gm. between sessions, whereas previously the average IDWG exceeded 4000 gm. Healthcare Utilisation: The Rate o readmissions to Hospital was reduced from average of 11% before the project to 5% after improvement initiatives of patient engagement This is a great indication of the power of patient engagement in reducing unnecessary costs for patients and our hospital. N.B.: Accepted Hospital Re admissions for CKD patients: <15- 20%. Moreover, the ER visits reduced from an average of



2.23 visits per patient year to an average of 0.84 visits per patient year, a marked improvement of more than 60% reduction in Average Dialysis patients ER Visits due to patient engagement in his self-care at home and in their care during sessions. N.B. Accepted ER Visits for CKD patients: 1.5-2.0 per Patient Year (i.e. 0.125-0.16 Per Patient Month).

Implementing patient engagement initiatives within the dialysis care setting significantly positively impacted various patient outcomes. By fostering open communication, providing personalised care plans, and empowering patients to actively participate in their treatment, these initiatives collectively contributed to:

- Improved patient satisfaction: The overall satisfaction rates among dialysis patients increased substantially, indicating a more positive experience with the care provided.
- Enhanced clinical outcomes: The interventions led to notable improvements in key laboratory parameters, such as potassium and phosphorus levels, as well as a reduction in interdialytic weight gains.
- Reduced healthcare utilisation: The implementation of patient engagement strategies resulted in a significant decrease in readmission rates and emergency room visits, ultimately leading to cost savings for the healthcare system.

In conclusion, these findings highlight the importance of prioritising patient engagement in dialysis care. By empowering patients and fostering a collaborative care environment, healthcare providers can achieve better clinical outcomes, improve patient satisfaction, and ultimately enhance the overall quality of care.

INNOVATION IN PRACTICE AND PROCESS

The project introduced several innovative practices:

1. Multidisciplinary Conference Sheets: Facilitated patient involvement in care planning and strengthened communication between staff and patients.
2. Customised Communication Boards: Co-designed with patient input, enabling better engagement and information sharing.
3. Educational QR Codes: Provided accessible information, supplemented with printouts for less tech-savvy patients.

Leadership's commitment to these innovations ensured their successful implementation, enhancing both patient outcomes and staff-patient relationships.

The project was marked by a remarkable display of innovation and creativity from our staff. One notable example was the introduction of the Multidisciplinary Conference sheet, which was collaboratively completed and reviewed with patients during their sessions. This not only fostered patient engagement but also strengthened the staff-patient relationship. Another innovative approach was the customisation of the Communication Board. While a template was available, our team actively involved patients in the design process, incorporating their valuable suggestions. The board was further enhanced with magnetic bars for easy relocation, ensuring efficient logistics among patients and staff. The QR Codes for Educational Materials proved to be a user-friendly resource for many patients. However, we recognised the needs of those less technologically inclined and provided printouts upon request. Leadership's unwavering commitment to the implementation of these innovations was instrumental in their success.

APPLICABILITY TO OTHER SETTINGS

The project's success underscores its potential for scalability to other departments and healthcare settings. The patient-centred initiatives, such as multidisciplinary care planning and enhanced communication tools, are transferable and have already been expanded across all dialysis units in the Mouwasat network.

REFERENCES

Advanced Person Centred Systems (PCS) Module- ACHS International.



APPENDIX

Appendix 1 - Patient Safety & Experience Survey

Mouwasat
Mouwasat Medical Services Co.  المواصلات
Mouwasat Medical Services Co.  المواصلات

لتحسين خدماتنا في وحدة غسيل الكلى، يرجى الرد على استبيان صحة وسلامة مرضى غسيل الكلى



To improve our services in the hemodialysis unit, Please respond to this dialysis Patient CALD & Health & Safety questionnaire

CONTACT US
Tel.: 011-413-0000
Fax: 011-411-0011

التصل بنا
هاتف: 0000-413-011
الفن: 0011-411-011



Comprehensive PREMS, survey available.



Mouwasat Hospital
Hemodialysis Unit



Patient Health & Safety Survey

استبيان لصحة وسلامة مرضى الغسيل الكلوي

At MOUWASAT Hospitals, We are interested in knowing what you think about our services, Your answers to all questions in this survey will remain confidential. Any information that might identify you will be kept private. Non of your doctors, nurses or any one at your dialysis center will see your answers.

Instruction:

Remember that a family member, friend or the staff at your dialysis center can help read the survey and mark your answers. But they shouldn't tell you how to answer any of the questions.

في مستشفيات المواصلات، يهمنا معرفة رأيك في خدماتنا.

سنظل إجاباتك على جميع الأسئلة الواردة في هذا الاستطلاع سرية. سيتم الاحتفاظ بسرية أي معلومات قد تحدد هويتك. لن يتمكن أي من أطبتك أو ممرضاتك أو أي شخص في مركز غسيل الكلى الخاص بك من رؤية إجاباتك

تعليمات

تذكر أنه يمكن لأحد أفراد العائلة أو الأصدقاء أو الموظفين في مركز غسيل الكلى الخاص بك مساعدتك في قراءة الاستبيان ووضع علامة على إجاباتك. لكن لا ينبغي لهم أن يخبروك بكيفية الإجابة على أي من الأسئلة.

معلومات المريض Patient Information

1. Patient Name: الاسم

2. Hospital: المستشفى

- Dammam الدمام
- Jubail الجبيل
- Madina المدينة
- Riyadh الرياض

30. Did you receive sufficient and useful infection Control educational/ Information materials? هل حصلت على مواد تعليمية/إعلامية كافية ومفيدة لمكافحة العدوى?

- Yes نعم
- No لا

31. Did you participate in any Educational Activities that helps in changing your lifestyle, Diet Habits and Activities? هل شاركت في أي أنشطة تعليمية تساعد في تغيير نمط حياتك وعاداتك الغذائية وأنشطتك?

- Yes نعم
- No لا

32. Do you have enough information about Fall prevention precautions? هل لديك معلومات كافية عن احتياطات الوقاية من السقوط?

13. The staff here asks me and my family to fill out forms that tell them what we think of the place and services.

يطلب مني الموظفون هنا ومن عائلتي ملء النماذج التي تخبرهم عن رأيي في المكان والخدمات

- Strongly Disagree - غير موافق بشدة
- Disagree - غير موافق
- Natural - متزن
- Agree - موافق
- Strongly Agree - موافق بشدة

14. There is material for cultural awareness always given.

هناك نوعية دائمة بالمفاهيم الثقافية للمراجعين

- Strongly Disagree - غير موافق بشدة
- Disagree - غير موافق
- Natural - متزن
- Agree - موافق
- Strongly Agree - موافق بشدة

15. If I need it, There are translators or interpreters easily available to assist me and /or my family.

عند الحاجة هناك مترجمون أو مترجمون فوريون متاحون بسهولة لمساعدتي وأو عائلتي



Appendix 4 - Communication Board

أهلاً بك في مستشفى المواساة بالرياض Welcome to Mouwasat Hospital Riyadh			YOUR CARE PATH CARE BOARD مسارك العلاجي مفصلاً		
Patient Name: اسم المريض: MRN: رقم الملف: Phone: رقم الهاتف:		PLEASE TELL US IF YOU HURT أخبرنا إذا كنت تشعر على مقياس الألم من 0 إلى 10			
Today's Date: تاريخ اليوم: SUN MON TUE WED THU FRI SAT		Session Hours: سانسك اليوم هو		My Current Level of Function Is: مقدار الحركة	
Your Care Team فريقك الطبي لليوم هو		My Pain Scale Goal: هدف من مقياس الألم		1 2 3 4 5	
Doctor: الطبيب:	Nurse: الممرضة:	Medications: أدويةك في المنزل For: لـ		Bed Rest: Bed Rest	
Pharmacist: الصيدلي:	Dietician: أخصائي التغذية:	Available Every: أوقات الدواء: Hours: ساعات		Walker: Walker	
Educator: أخصائي تعليمي:	Social Worker: أخصائي اجتماعي:	Last Given: AMP/PM		My Toileting Needs Are: كيفية قضاء الحاجة	
Ask your care team during rounds أسأل فريقك الطبي أثناء الجولات		Next Planned Dose: AMP/PM		Bedpan: Commode: Bathroom	
Goals for this session أهدافك العلاجية لجلسة اليوم			Your Goals For Discharge أهدافك العلاجية أثناء الخروج		
What do you prefer أخبرنا ماذا تفضل			Family Communication التواصل مع العائلة		
Preferred Language: لغة المفضلة: Diet: طعامك المفضل		Family Contact: التواصل مع العائلة Phone: رقم الهاتف		Questions/Comments: الأسئلة والتعليقات للعائلة	
My Idea of Excellent Care Is: أفكاري عن الرعاية المثيرة					

Appendix 5 - Educational Materials

Hemodialysis Unit وحدة الغسيل الكلوي



Patient Handbook



Dietary Guide



Infection Prevention



Blood Transfusion



Dialysis Educational Booklet



نقل الدم لمرضى الكلى

Mouwasat مستشفى المواساة

Appendix 6 - Wall Posters of Early warning Signs, prevention of fall and Calling bell

Falls Can Be Prevented يمكن منع السقوط

Please CALL staff for help if you are:

- Feeling dizzy
- or —
- Unsure that you can get up safely

يرجى استدعاء الممرضة للحصول على المساعدة إذا كنت:

- ← تشعر بالدوار
- أو —
- ← غير متأكد من أنه يمكنك النهوض بأمان



CALL, DON'T FALL

قم باستدعائنا، نفيك خطر السقوط

Mouwasat Hospital مستشفى المواساة



Appendix 7 - HIS Documentation & Multidisciplinary Communication

- The team was trained on using the Multidisciplinary care plan for monthly plan of care:

MULTIDISCIPLINARY CARE PLAN FORM

DIAGNOSIS

Goal

PHYSICIAN NOTES

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

NURSES NOTES

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

DIETICIAN NOTE

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

RESPIRATORY NOTE

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

NICHA VEKRIAN NARA

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

Need Other Discipline

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

Molwasat Medical Services Co Riyadh
ASSESSMENT

Patient ID	1	Patient Name	1
Gender	1	Age	1
Encounter ID	1	Encounter Type	1
Admission Date	1	Discharge Date	1
Location	1	Attending Practitioner	1
Specialty	1		

MULTIDISCIPLINARY CARE PLAN FORM

PHYSICIAN NOTES

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

NURSES NOTES

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

DIETICIAN NOTE

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

RESPIRATORY NOTE

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

NICHA VEKRIAN NARA

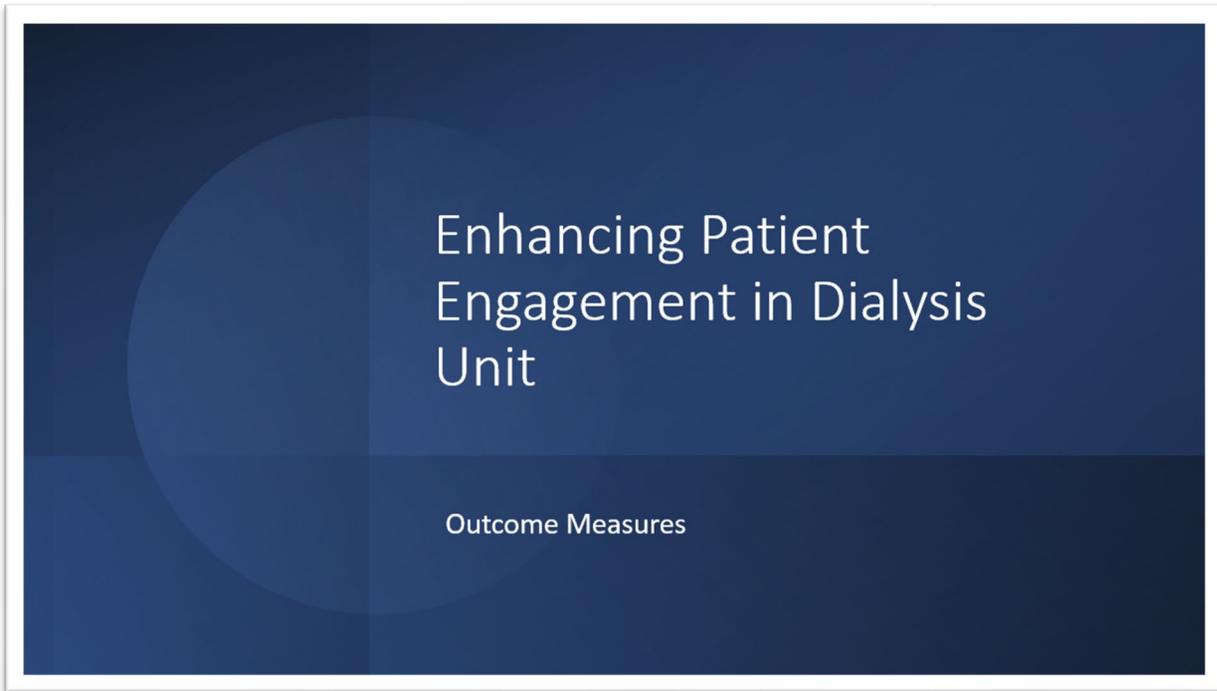
DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

Need Other Discipline

DATE/TIME	Problem(s) List	Plan of Management	Name and Title	Approved by
08/09/2024 14:30				

- And the Hemodialysis Care plan for each patient visit, where patient assessment is entered in a common form so could be seen by all the team and be considered in their care plan.





NON-CLINICAL SERVICE DELIVERY

HIGHLY COMMENDED

Hung Vuong Hospital, VIETNAM

Quality Management Department

Journey of Patient Safety Culture Improvement at Hung Vuong Hospital

Ms Anh Nguyen, Dr. Phan Thi Hang, Ms. Dien Ngoc Trang, Ms. Nguyen Thi Lan Anh, Ms. Le Dang Uyen Vy, Dr. Hoang Thi Diem Tuyet, Dr. Huynh Xuan Nghiem, Phr. Huynh Thi Ngoc Hanh, Mrs. Luc Boi Ngoc, Ms. Nguyen Thi Quynh Nhu and Mrs. Nguyen Thi Hoa

AIM

Hung Vuong Hospital (HVH) aims to foster and maintain a robust patient safety culture, ensuring a safe and high-quality environment for all patients. The hospital targets achieving a positive response rate of $\geq 83\%$ in the AHRQ (Agency for Healthcare Research and Quality) Patient Safety Culture Survey and a quality assessment score of 4.4/5.0 based on Vietnam's Hospital Quality Criteria (Decision No. 6858/QĐ-BYT).

To accomplish this, HVH has implemented comprehensive and sustainable solutions, including staff training, patient safety programs, advanced incident reporting systems, risk management strategies, and international models such as ISO, AIDET, and ISBAR. These efforts aim to create a continually improving healthcare system that benefits both patients and healthcare workers.

SUMMARY ABSTRACT

Title: Building and Sustaining a Patient Safety Culture at Hung Vuong Hospital

Introduction:

Patient safety culture is essential for continuous quality improvement and patient-centred care. Since 2016, HVH has prioritised the development of a sustainable safety culture as a core strategy. This initiative integrates comprehensive programs, international standards, and innovative practices to enhance patient and staff safety.

Methods:

The hospital implemented:

- WHO's six patient safety goals.
- International standards such as ISO and ACHS.
- Advanced communication models (AIDET, ISBAR).
- Non-punitive reporting and risk management systems.

Results:

Between 2016 and 2023, the positive response rate in the AHRQ survey increased from 75.7% to 83.5%, while the quality assessment score rose from 3.9 to 4.78. HVH ranked first among 120 hospitals in Ho Chi Minh City for four consecutive years.

Conclusion:

HVH's integrated approach successfully improved patient safety culture, demonstrating that comprehensive strategies can lead to sustainable advancements in healthcare quality and safety.



REPORT

APPLICATION OF ACHSI PRINCIPLES

1. *Consumer Focus*

- **Patient-Centred Care:** HVH prioritises transparency by providing clear and accessible information to patients and their families. Feedback is actively collected via surveys, hotlines, and incident reports to drive improvements.
- **Facility Renovations:** Upgraded infrastructure ensures patients receive care in a safe and comfortable environment.
- **Incident Reporting System:** QR code-enabled reporting simplifies incident submissions, fostering openness and accountability.

2. *Effective Leadership*

- **Leadership Commitment:** The Board of Directors defines clear strategies and actively participates in safety initiatives. Leadership rewards outstanding staff contributions, enhancing engagement and morale.
- **Departmental Leadership:** Department Heads are empowered with leadership training, ensuring consistent implementation of safety measures across the hospital.
- **Strategic Goals:** Annual patient safety objectives are integrated into departmental action plans to align with the hospital's vision.

3. *Continuous Improvement*

- **PDCA Cycle:** Continuous evaluation and refinement of safety measures ensure adaptability to evolving medical environments.
- **Training Programs:** Regular courses on patient safety, risk management, and communication ensure staff remain updated on best practices.
- **Standardised Communication Models:** Implementing AIDET and ISBAR reduces errors and enhances patient and staff satisfaction.
- **Non-Punitive Culture:** Encouraging open reporting of incidents fosters a learning environment and minimises repeated errors.

4. *Evidence of Outcomes*

- **Survey Results:** Positive responses in the AHRQ survey increased from 75.7% in 2016 to 83.5% in 2023.
- **Quality Scores:** The hospital's quality assessment score improved from 3.9 in 2016 to 4.78 in 2023, demonstrating continuous progress.
- **Accreditation Achievements:** HVH achieved ACHS Certification at the Accreditation level, reflecting international standards of quality and safety.

5. *Striving for Best Practice*

- **International Standards:** Adoption of ISO and ACHS standards ensures HVH remains at the forefront of global healthcare quality practices.
- **Collaborative Learning:** The hospital integrates lessons from leading medical organisations to continually enhance its practices.



INNOVATION IN PRACTICE AND PROCESS

HVH has introduced multiple innovations to strengthen its safety culture:

- **Advanced Reporting Systems:** QR code-based incident reporting encourages transparency and simplifies submission processes.
- **Communication Models:** AIDET improves patient interaction, while ISBAR minimises communication errors during emergencies.
- **Training and Technology:** Regular staff training and integration of IT tools optimise safety processes and risk management.

Periodic assessments and performance indicators ensure these innovations are effective and contribute to sustained improvements in patient safety.

APPLICABILITY TO OTHER SETTINGS

The strategies and successes of Hung Vuong Hospital in improving patient safety culture are transferable to other healthcare facilities. Key principles such as patient-centred care, fostering a non-punitive culture, and continuous improvement processes are universally applicable.

By creating a supportive environment and promoting cross-departmental collaboration, other hospitals can replicate HVH's model to enhance care quality, safety, and patient satisfaction.

In summary, Hung Vuong's journey exemplifies the importance of prioritising patient safety as a cornerstone of healthcare excellence. Through leadership commitment, innovative practices, and continuous improvement, the hospital has set a benchmark for quality care that can inspire other institutions worldwide.

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Hoan My Sai Gon Hospital (HMSG), VIETNAM

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Hoan My Sai Gon Hospital (HMSG), VIETNAM

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Nhu Tran Nguyen

Hung Vuong Hospital, VIETNAM

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Anh Nguyen

Hung Vuong Hospital, VIETNAM Quality Management Department

Journey of Patient Safety Culture Improvement at Hung Vuong Hospital

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Mini Prabhakumar

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Abbadon Abyss Vega Fegarido



Mouwasat Hospital Riyadh, SAUDI ARABIA

Performance Improvement Department in Collaboration with Haemodialysis Unit

Enhancing Patient Engagement in Dialysis Unit

Ms. Alaa M. Abdeen, Mr. Khalid Al Saleem, Dr. Alani I. Alagha, Dr. Sameh A. Abouelkher, Dr. Saida A. Hajri, Dr. Marwa Z. Mansour, Dr. Aiman M. Ibrahim, Ms. Micheline T. Challita, Dr. Mayada M. Moustafa, Ms. Aswathy S. Asokan, Ms. Sabah M. Ibrahim and Mr. Faisal Fasiludeen

Sunway Medical Centre, MALAYSIA

Brave the Cancer-Free Cancer Screening

Mageswari Veloo





HEALTHCARE MEASUREMENT

WINNER

KIMS Healthcare Management Limited, INDIA

Imaging & Interventional Radiology

Prediction of Pre-eclampsia at 18-24 weeks of gestation using maternal Ophthalmic artery Doppler - A prospective observational study

Dr. Divya Saikumar, Dr. Madhavan Unni, Dr. Deepthi, Dr. K. Manikandan

AIM

The aim of this study was to determine the role of maternal ophthalmic artery Doppler at 18-24 weeks of gestation in predicting pre-eclampsia. The study evaluated the effectiveness of maternal ophthalmic artery Doppler parameters independently and in combination with established biomarkers, such as Mean Arterial Pressure (MAP) and Uterine Artery Pulsatility Index (UtPI), to predict pre-eclampsia.

SUMMARY ABSTRACT

Introduction:

Pre-eclampsia (PE) is a significant pregnancy-related hypertensive disorder, contributing to maternal and perinatal morbidity and mortality. Existing predictive models rely on MAP, UtPI, and maternal factors. This study evaluated maternal ophthalmic artery Doppler, a non-invasive and cost-effective tool, to predict PE.

Methods:

A prospective observational study was conducted on 408 pregnant women at 18-24 weeks of gestation. Ophthalmic artery Doppler parameters, including the Peak Systolic Velocity ratio (PSV ratio), were measured alongside MAP and UtPI. Patients were followed until delivery to track PE development. Statistical analysis included sensitivity, specificity, predictive values, and area under the ROC curve (AUC) for these variables.

Results:

The ophthalmic artery mean PSV ratio showed the highest sensitivity (93% detection rate for 10% false positive rate) with an AUC of 0.98, outperforming UtPI (AUC 0.9).

Conclusion:

Maternal ophthalmic artery Doppler, particularly the mean PSV ratio, is a promising predictive marker for pre-eclampsia and may complement existing predictive models.

Ophthalmic artery Doppler is a cheap and non-invasive alternative tool for evaluation of central hemodynamic changes in pregnancy.

We studied the Peak Systolic Velocity ratio (PSV) of the ophthalmic artery during the second trimester to predict the risk of developing PE (Pulmonary Embolism).

Objectives:

To evaluate the role of maternal ophthalmic artery Doppler on its own and in combination with established biomarkers like Mean Arterial Pressure and Uterine artery pulsatility index in the prediction of Pre-eclampsia. To examine the potential value of maternal Ophthalmic artery Doppler parameters at 18-24 weeks of gestation in the prediction of subsequent development of Pre-eclampsia.'



Materials and Methods:

This is a prospective observational study conducted on pregnant women who came for a routine 2nd trimester antenatal scan in our institution. After taking informed consent, ophthalmic artery PSV ratio was recorded from both eyes. All patients were followed up till term to look for development of PE. The sensitivity, specificity, positive and negative predictive values (PPV, NPV) of this investigation modality were calculated using SPSS software. Area under the ROC curve (AUC) of ophthalmic artery PSV ratio and UtPI in the prediction of PE was calculated using regression analysis.

Inclusion criteria:

All pregnant women of 18-24 weeks of gestation attending the Radiology department of the tertiary care institution for their routine second trimester antenatal scan.

Exclusion criteria:

Pregnant women with pre-existing hypertension at the time of scan, non-consenting patients and those who were lost to follow up. Calculated sample size - 408.

Data Collection and Follow Up:

Data collection was done using a structured proforma to collect demographic details from each pregnant woman who came for a routine antenatal scan and provided consent for the study. Ophthalmic artery and uterine artery Doppler parameters of these women were recorded. They were then followed up till 2 weeks after delivery to find out those who subsequently developed Pre-eclampsia by collecting data from their electronic medical records.

Statistical Analysis:

Data was expressed as median (interquartile range [IQR]) for continuous variables and n (%) for categorical variables. Students T-test was used for comparing outcome groups for continuous data. The outcome variables that were measured includes mean arterial pressure (MAP), mean uterine artery pulsatility index (UtPI) and ophthalmic artery Doppler parameters like mean pulsatility index (PI), mean of 1st peak systolic velocity (PSV1), mean of 2nd peak systolic velocity (PSV2) and mean ratio of 2nd to 1st peak systolic velocities (PSV2:PSV1 or PSV ratio). Univariate and multivariate logistic regression analysis were done using the above outcome variables. Receiver operating characteristic curve (ROC) was plotted with the above variables and the area under ROC for each variable was calculated. SPSS software was used for data analysis. Results or Findings: Study participants Out of the study population of 408 pregnant ladies who were followed up till 2 weeks after delivery, 15 developed PE (3.6 %). Outcome All the independent variables (UtPI, PI, PSV1, PSV2, PSV ratio) except MAP were normally distributed. The difference in means of each independent variable in women with PE versus normal were calculated using Students T-test. This difference was found to be statistically significant for MAP (p value < 0.001), mean UtPI (p value < 0.001), mean PSV2 (p value - 0.001), mean PSV ratio (p value < 0.001) and mean PI (p value < 0.001). Among the above independent variables, only ophthalmic artery mean PSV ratio (PSV2:PSV1) was found to have an independent association with the outcome of developing PE with a p value <0.05. This was calculated using multivariate logistic regression analysis. ROC was plotted with the above variables. Ophthalmic artery mean PSV ratio [93% Detection rate (DR) for 10% false positive rate (FPR) for a PSV ratio of 0.59] was found to have the highest sensitivity in predicting PE. This was followed by mean UtPI which had the second highest sensitivity [67% DR for 10% FPR for a mean UtPI of 1.37] for PE prediction. Area under the curve (AUC) for mean PSV ratio was maximum and was found to be 0.98 (95% CI: 0.96-1). This was followed by mean UtPI with an AUC of 0.9 (95% CI: 0.86-0.95).

Methods of measurement:

Uterine artery Doppler: The ultrasound probe was placed lateral to the uterus and the transducer gently tilted medially till the uterine artery was identified where it crossed over the external iliac artery. The sample gate was placed over the entire diameter of the artery and pulsed wave Doppler was to obtain three consecutive waveforms. The pulsatility index (PI) will then be measured bilaterally. Ophthalmic artery Doppler: The pregnant lady was in supine position and at the end of the routine antenatal scan after obtaining consent, a 6-15 MHz linear transducer was placed transversely and gently over her closed upper eyelid after application of conduction gel. Color flow was used to identify the ophthalmic artery which is found superior and medial to the hypoechoic



band representing the optic nerve. Pulsed wave Doppler was then used to record 3-5 similar waveforms. Doppler Indices used for assessment:

1. First peak systolic velocity (PSV1)
2. Second peak systolic velocity (PSV2)
3. Ratio of second to first peak systolic velocity (PSV2:PSV1 or PSV ratio)
4. Pulsatility index (PI)

Outcome Measures:

Outcome was development of PE at any time during the pregnancy or < 2 weeks after delivery on follow up. Diagnosis of PE was based on the finding of new onset hypertension (BP \geq 140/90 on two or more occasions four hours apart in a previously normotensive woman) and at least one of the following: proteinuria (\geq 300 mg/24h or protein to creatinine ratio \geq 30 g/mmol or \geq 2+ on dipstick testing), renal insufficiency with serum creatinine $>$ 97 micromol/L in the absence of underlying renal disease, hepatic dysfunction with concentration of serum transaminases more than twice the upper limit of normal, thrombocytopenia (platelet count $<$ 1,00,000/microL), neurological complications (cerebral or visual symptoms) or pulmonary oedema.

The outcome variables that were measured were mean arterial pressure (MAP), mean uterine artery pulsatility index (UtPI) and ophthalmic artery Doppler parameters like mean pulsatility index (PI), mean of 1st peak systolic velocity (PSV1), mean of 2nd peak systolic velocity (PSV2) and mean ratio of 2nd to 1st peak systolic velocities (PSV2:PSV1 or PSV ratio). Univariate and multivariate logistic regression analysis were done using the above outcome variables. Receiver operating characteristic curve (ROC) was plotted with the above variables and the area under ROC for each variable was calculated. SPSS software was used for data analysis

Results & Discussion:

A total of 15 pregnant women out of 408 who completed follow up, developed PE. Out of 15, 14 had elevated PSV ratio in our study. Ophthalmic artery mean PSV ratio [93% Detection rate (DR) for 10% false positive rate (FPR) for a PSV ratio of 0.59] was found to have the highest sensitivity in predicting PE. This was followed by mean UtPI which had the second highest sensitivity [67% DR for 10% FPR for a mean UtPI of 1.37] for PE prediction. Area under the curve (AUC) for mean PSV ratio was maximum and was found to be 0.98 (95% CI: 0.96-1). This was followed by mean UtPI with an AUC of 0.9 (95% CI: 0.86-0.95).

Conclusion:

Maternal ophthalmic artery mean PSV ratio was found to be a statistically significant independent predictive marker for the subsequent development of Pre-eclampsia. Ophthalmic artery mean PSV ratio was found to have a higher sensitivity than uterine artery pulsatility index, which is currently used as one of the biomarkers in the prediction of Pre-eclampsia. Rest of the ophthalmic artery Doppler parameters like PI and mean PSV2 were found to have a univariate association with the outcome of developing Pre-eclampsia. However further studies in different demographic settings are required to validate these findings. The limited sample size and cases of Pre-eclampsia were some of the limiting factors in this study. Studies on the efficacy of combined utility of these Ophthalmic artery Doppler parameters and their predictive.

Maternal ophthalmic artery Doppler during second trimester maybe used as a potential alternative investigation modality in predicting PE.



EPOS

Prediction of Pre-eclampsia at 18-24 weeks of gestation using maternal Ophthalmic artery Doppler - A prospective observational study

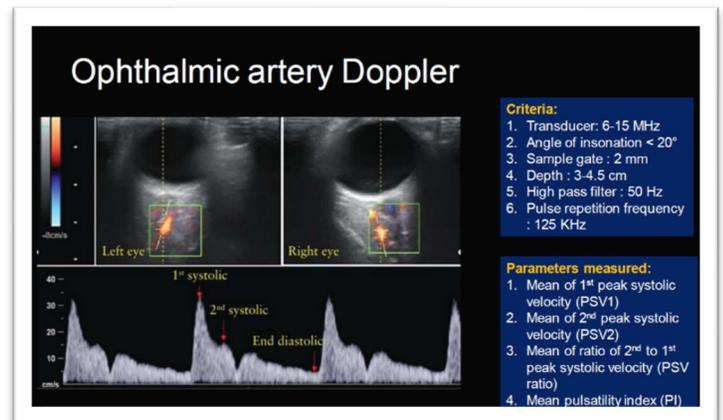
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Keywords: Arteries / Aorta, Eyes, Obstetrics (Pregnancy / birth / postnatal period), Ultrasound-Colour Doppler, Ultrasound-Power Doppler, Ultrasound-Spectral Doppler, Outcomes analysis, Haemodynamics / Flow dynamics, Hypertension, Obstetrics

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Please note: Links to movies, ppt slideshows and any other multimedia files are not available in the pdf version of presentations.

Purpose or Learning Objective:
The main objective of this study is to examine the potential value of maternal Ophthalmic artery Doppler parameters at 18-24 weeks of gestation in the prediction of subsequent development of Pre-eclampsia.



Prediction of pre-eclampsia at 18-24 weeks of gestation using maternal Ophthalmic artery Doppler – a prospective observational study

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REPORT

APPLICATION OF ACHSI PRINCIPLES

1. Consumer Focus

Pre-eclampsia is a leading cause of adverse maternal and fetal outcomes. This study focuses on enhancing maternal care through the early prediction of PE, enabling timely intervention and improving healthcare delivery.

2. Effective Leadership

The research demonstrates leadership in adopting innovative diagnostic tools and methods. By integrating ophthalmic artery Doppler into routine second-trimester scans, the study aligns with international efforts to advance maternal care.

3. Continuous Improvement

Findings support the inclusion of ophthalmic artery Doppler parameters in clinical practice for PE prediction. Continuous refinement of prediction models, incorporating diverse biomarkers, ensures ongoing improvement in diagnostic accuracy.



4. Evidence of Outcomes

- Sensitivity and Predictive Value: The ophthalmic artery mean PSV ratio had the highest sensitivity (93%) for PE detection.
- Accuracy: The AUC for the mean PSV ratio was 0.98, demonstrating superior predictive ability compared to UtPI.
- Impact: Early identification of high-risk pregnancies supports targeted prenatal care, reducing adverse outcomes.

INNOVATION IN PRACTICE AND PROCESS

This study highlights the potential of ophthalmic artery Doppler as a non-invasive, affordable, and effective alternative for predicting PE. The innovation lies in:

- Identifying a novel biomarker with higher sensitivity than traditional methods.
- Integrating this tool into routine antenatal care to improve early detection and intervention.

Maternal ophthalmic artery mean PSV ratio was found to be a statistically significant independent predictive marker for the subsequent development of Pre-eclampsia. Ophthalmic artery mean PSV ratio was found to have a higher sensitivity than uterine artery pulsatility index, which is currently used as one of the biomarkers in the prediction of Pre-eclampsia. Rest of the ophthalmic artery Doppler parameters like PI and mean PSV2 were found to have a univariate association with the outcome of developing Pre-eclampsia.

APPLICABILITY TO OTHER SETTINGS

The findings are highly applicable to other healthcare settings, particularly in regions with limited resources, as ophthalmic artery Doppler is a cost-effective and non-invasive tool. Its integration into existing antenatal care models can enhance PE prediction globally, provided appropriate training and equipment are available. Further studies in varied demographic settings are recommended to validate these findings and standardise the protocol for broader implementation.

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HEALTHCARE MEASUREMENT

HIGHLY COMMENDED

Hong Kong Baptist Hospital, HONG KONG

Pharmacy Department

Improvement in the appropriate use of IV Paracetamol in the underweight patient

Mr Fan Chun Yik, Ms Yeung Tak Chi Ada and Mr Law Wai Leung

AIM

The primary objective of this project is to sustain improvements in the safe use of intravenous (IV) paracetamol for underweight patients by monitoring the impact of implemented actions and tracking changes in prescribing practices.

SUMMARY ABSTRACT

Title:

Improving the Safe Use of IV Paracetamol in Underweight Patients: A Medication Safety Initiative

Introduction:

IV paracetamol is a commonly used medication for pain management and fever reduction. However, incorrect dosing, particularly in underweight patients, can lead to paracetamol-induced liver toxicity. Historically, dosing guidelines did not account for patient weight, posing safety risks for patients under 50 kg.

Methods:

The project introduced a weight-based dosing protocol recommending a single maximum dose of 15 mg/kg per administration for patients weighing less than 50 kg. Key steps included:

- **Literature Review** of clinical guidelines.
- **Stakeholder Engagement** to gather feedback.
- **Protocol Development** for weight-based dosing.
- **Education and Implementation** for relevant staff.
- **Monitoring and Evaluation** via audits comparing prescribing patterns from February 2021 to February 2024.

Results:

- Non-compliance rates for IV paracetamol prescriptions decreased significantly from 21.7% in 2021 to 6.0% in 2024 ($p < 0.05$).
- For patients under 50 kg, non-compliance dropped from 100% in 2021 to 27% in 2024.
- Pharmacy interventions to correct non-compliant prescriptions achieved a 100% acceptance rate.

Conclusion:

This initiative demonstrates the importance of tailored interventions, collaboration, and monitoring in enhancing medication safety. Lessons learned can be extended to other high-alert medications.



REPORT

APPLICATION OF ACHSI PRINCIPLES

1. Consumer Focus

The project exemplifies patient-centred care by addressing the specific needs of underweight patients, adapting dosing protocols to minimise risks, and ensuring safe and effective treatment. Patients benefit from tailored interventions that reduce the likelihood of adverse drug events.

2. Effective Leadership

Leadership support was critical, with the Medication Safety Committee championing the initiative under the Hospital Chief Executive's guidance. Clear communication and consistent stakeholder engagement facilitated adoption of the new protocols. The use of the Plan-Do-Study-Act (PDSA) cycle ensured data-driven decision-making and continuous improvement.

3. Continuous Improvement

The project employed a structured approach:

- **Key Drivers Diagram:** Focused on prescriber knowledge, pharmacy intervention, and monitoring through regular audits.
- **Education:** Staff training on weight-based dosing protocols.
- **Rapid PDSA Cycles:** Iterative improvements to achieve near-zero non-compliance.

4. Evidence of Outcomes

- **Baseline Audit (2021):** 21.7% non-compliance with IV paracetamol prescriptions.
- **Follow-Up Audit (2024):** Reduced non-compliance to 6.0%, with a 73% improvement for underweight patients.
- **Pharmacy Interventions:** 100% acceptance of corrective recommendations.

5. Striving for Best Practice

This initiative aligned dosing practices with the latest evidence-based guidelines, enhancing patient safety. Collaborative efforts across disciplines promoted consistency and established a culture of proactive medication management.

INNOVATION IN PRACTICE AND PROCESS

Key innovations include:

1. **Standardised Dosing Protocols:** Developed based on comprehensive literature review and stakeholder input.
2. **Cloud-Based Decision Support Tools:** Enhanced accessibility to dosing guidelines for staff via smartphones.
3. **Educational Initiatives:** Emphasised continuous learning and adaptation to ensure sustained compliance.
4. **Targeted Interventions:** Pharmacy-led actions to correct non-compliance and prevent recurrence.

These innovations demonstrate a forward-thinking approach to improving safety and efficiency in medication management.



APPLICABILITY TO OTHER SETTINGS

The strategies and outcomes from this initiative are transferable to other healthcare organisations and can be applied to additional high-alert medications, such as look-alike-sound-alike drugs. Key elements include:

- **Standardised Protocols:** Tailored for local requirements while adhering to international best practices.
- **Cloud-Based Tools:** Scalable to other drugs and accessible in diverse healthcare settings.
- **Key Driver Approach:** Applicable to medication safety initiatives such as HLA-B*5801 testing before prescribing allopurinol to prevent adverse reactions.

By leveraging the lessons learned, healthcare facilities can create a culture of continuous improvement, ensuring patient safety and optimal medication management across various clinical scenarios.

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HEALTHCARE MEASUREMENT

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House Of Initiatives - A novel approach to Continuous Quality Improvement

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Improvement in the appropriate use of IV Paracetamol in the underweight patient

Mr Fan Chun Yik, Ms Yeung Tak Chi Ada and Mr Law Wai Leung

Hung Vuong Hospital, VIETNAM

Application of Six Sigma criteria in improving laboratory quality and efficiency

Anh Nguyen

Island Hospital, MALAYSIA

Patient-Reported Outcomes Measures Implementation

Bee Kean Chuah

KIMS Healthcare Management Limited, INDIA

Imaging & Interventional Radiology

Prediction of Pre-eclampsia at 18-24 weeks of gestation using maternal Ophthalmic artery Doppler - A prospective observational study

Dr. Divya Saikumar, Dr. Madhavan Unni, Dr. Deepthi, Dr. K. Manikandan

Mouwasat Hospital Riyadh, SAUDI ARABIA

Value based healthcare strategy

Sameh Abouelkher

Sunway Medical Centre, MALAYSIA

Age-Specific Patterns in Pulmonary Tuberculosis (PTB) Epidemiology: Insights from Malaysia's Private quaternary Healthcare Sector

Mageswari Veloo

Sunway Medical Centre, MALAYSIA

The impact of new version of Ventana Benchmark Ultra machine on Immunohistochemistry stain (IHC) test efficiency and cost effectiveness

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