QUALITY INITIATIVES

Entries in the 20th Annual ACHS Quality Improvement Awards 2017
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The Australian Council on Healthcare Standards  
20th Annual ACHS Quality Improvement Awards 2017
Introduction

The ACHS Quality Improvement Awards

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 2017, the 20th Annual ACHS QI Awards were open to submissions from all domestic ACHS and international ACHSI member organisations following the ACHS NSQHS (National Safety and Quality Health Service) Standards Program, EQuIP5 (Evaluation and Quality Improvement Program), EQuIPNational, EQuIPNational Corporate Health Services, EQuIPNational Day Procedure Centres, EQuIP6, EQuIP6 Day Procedure Centres, EQuIP6 Oral Health Services, EQuIP6 Haemodialysis, EQuIP6 Healthcare Support Services, and the ACHS Clinical Indicator Program.

This year 61% were submitted in the Clinical Excellence and Patient Safety category, 24% in the Non-Clinical Service Delivery category and 15% in the Healthcare Measurement category.

Judging was conducted externally with separate panels of three 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 surveyor 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.
# The 20th Annual ACHS QI Awards 2017

## Winner Submissions

### Clinical Excellence and Patient Safety

Royal Brisbane Women’s Hospital  
Metro North Hospital and Health Service, QLD  
Kidney Health Service  

**Kidney Supportive Care – our patients, our care**  

Full Submission page 5

### Non-Clinical Service Delivery

North Eastern Community Hospital, SA  

**First demonstration in an Australian healthcare setting of an in-line electrochemical water treatment system for optimising potable water quality**  
Scott Williams, Antony Amorico, Associate Professor Erica Donner  

Full Submission page 20

### Healthcare Measurement

Nepean Blue Mountains Local Health District, NSW  
Blue Mountains District Anzac Memorial Hospital  

**Breathe Better at Blue Mountains – a multidisciplinary approach to reducing length of stay for Chronic Obstructive Pulmonary Disease patients at Blue Mountains Hospital**  
Penny Lees, Andrea Williams, Therese Underwood, Alicia Gordon, Luke Bellman, Rachell Greentree, Jamieleigh Petersen, Dorothy Clampett  

Full Submission page 35

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

The 20th Annual ACHS QI Awards 2017

Highly Commended Submissions

Clinical Excellence and Patient Safety

Melbourne Health, VIC
Transformation and Quality

Improving the management of sepsis with a hospital-wide sepsis pathway

Kelly Sykes, Karin Thursky, Cate Kelly, Tristan Vasquez, Lizzie Summers, Dominic Gasparini, Robert McCubbin

Summary Abstract page 13

North Metropolitan Health Service, Mental Health, WA
Clinical Research Centre

Sleep Well, Feel Well With a Mental Illness: Implementation of a specialised Sleep service in North Metro Health Service Mental Health

Flavie Waters, Melissa Ree, Vivian Chiu, Danny Rock, Aleksandar Janca

Summary Abstract page 14

Non-Clinical Service Delivery

Western Sydney Local Health District, Energesse, MES, NSW
Clinical Governance and Quality & Accreditation

Patient Experience: Real Time, Real Engagement, Real Improvement

Kay de Ridder, Kay Babalis, Jessica Evans, Vesna Janjic, Avnesh Ratnanesan, Kiran Nair

Summary Abstract page 28

The Mater Hospital North Sydney, NSW
Food Services

Room Service - Enhancing the patient meal-time experience

Carmel Lazarus, Tamsyn Gardner

Summary Abstract page 29

Our Lady of Maryknoll Hospital, Hong Kong
Community Services

Connecting with Community – Achieving Better Health and Wellbeing to Community

Dr T C Wong, Jenny Tsoi, Kathy Chow, Chui Han Yiu, Eric Wong, Dr Winnie Chan

Summary Abstract page 30
A. AIM
Patients with advanced kidney disease experience high symptom burden requiring complex health care decision making, e.g., benefits of dialysis, declining quality of life, etc. At its core, the Kidney Supportive Care program aims to educate and coach our patients, their families and carers in discovery of patients’ preferences, expectations, and decisions about their health care and how it will be delivered, contoured to their specific values framework. The fully integrated specialist kidney and palliative care teams then work to remediate symptom burden on the one hand and activate specific care pathways on the other, e.g., progress dialysis, community centered supportive care, palliative care, etc. Of note, these care pathways are not mutually exclusive.

B. SUMMARY ABSTRACT
Severe chronic kidney disease (CKD) is experienced as emotionally and physically distressing in an increasing number of Australians. This cohort does not experience the advantages that the standard practice of dialysis delivered when it was introduced. What has changed in the intervening decades is the patient cohort, with a shift in the demography to older, frailer Australians with high co-morbid loads of diseases, all markers of poor survival. Clinicians grapple with the boundaries of benefit of dialysis, a care pathway that has not been tested in randomized control trials comparing other care pathways nor in patient demographics that are materially different from the early patient groups. Observational and small cohort studies find that care pathways that do not include dialysis do not disadvantage survival in some cohorts with end stage kidney disease and offer superior quality of life.

The Kidney Supportive Care program (KSCp) was developed to resolve this clinical equipoise. It is a product of the innovation space in the Metro North Hospital and Health Service, funded initially through its SEED Innovation program. The KSCp addresses the dual challenges of clinical equipoise through shared decision making with our patients and their communities of families and carers and patient distress through a focus on remediating symptom burden.

The program is modeled off similar work at St George Hospital, Sydney. We adapted the model, focusing on the process work patients do in the discovery and articulation of what they expect their healthcare to deliver. We retained the outstanding work the St George team does in remediating symptom burden and acknowledge and thank them for their generous sharing of processes and tools. Patients report on the performance of the program, using the patient reported outcome measures (PROMS) and patient reported experience measures (PREMS) suite of tools. System level PROMS and PREMS reporting is new business in our Kidney Health Service. We introduced the change in practice using a research framework.

The Kidney Health Service, MNHHS includes clinician scientists who are Chief Investigators in several research collaborations. Relevant to this submission are NHMRC funded Centres of Research Excellence in CKD (CKD.CRE) and End of Life CRE (EoL CRE). A collaboration of these investigators and Senior Executives of the Royal Brisbane and Women’s Hospital (RBWH) were awarded a competitive Australian Centre for Health Services Innovation (AUSHSI) grant to research the implementation of the KSCp. The Investigators selected the methodology of the Consolidated Framework for Implementation Research (CFIR) from the emerging field of Implementation Science. The method was selected because it sampled both qualitative and quantitative variables and captured PROMS and PREMS. We are analyzing the first 12 months of data and present some of these results.

There was good acceptance of the program with nephrologists referring 129 patients (mean age 71.6 years [range 27–91], 52% men, 53% on dialysis) compared with 27 referrals to palliative care in the preceding 12 months. Patients who had attended at...
least one KSCp appointment (n=101) were in the program for a median of 203 days (range 1-350). At 12 months 82 patients were attending the KSCp with a median time of 189 days (range 42-350) and 25% have left the program.

Changes in overall symptom burden were assessed in all patients. Of those who attended more than one KSCp appointment, 59% experienced improvement. 41% did not report improvement in overall symptom burden although individual symptoms may have improved.

Of the 39 patients exploring the dialysis pathway of care, 10 elected to proceed with dialysis, 10 chose to withdraw from dialysis and 19 elected not to accept a dialysis pathway of care.

19 patients died during these 12 months. Of these, 14 died at their place of choice (75%). Of those who died in their place of choice 3 died at home, 7 in community facilities and 4 in the acute care sector. Those who chose to die in an acute hospital did so because it was where they routinely attended for dialysis. Of the 5 who did not die in their place of choice, all died in the acute care sector. Significance testing is not done because of the small sample size in some of these cohorts.

The PREMS found high levels of satisfaction with the program with 95% of patients and 100% of carers highly satisfied. We are still evaluating the qualitative data from deductive thematic analyses of interviews and conducting more mature health economic evaluations.

Collectively the outcomes of the program and its evaluation are a compelling case, from patients’, clinicians’ and health systems perspectives. Our Executive Champion Dr Amanda Dines, Executive Director RBWH, recognises the importance of the work the program does with vulnerable patients, ranking it amongst the top candidate programs for new funding in 2017 and championing it in the competitive pitching for HHS funding.

C. REPORT

APPLICATION OF ACHS PRINCIPLES

1. Consumer Focus

Chronic Kidney Disease (CKD) is common, affecting more than 10% of the world’s adult population, increasing in prevalence with age (Hill et al., 2016). CKD is harmful, accounting for 10% of all deaths in the National Mortality Database, an excess of premature mortality and confimation of the likelihood of cardiovascular events, including cardiac death (Australian Institute of Health and Welfare, 2009).

Treatment pathways of severe kidney disease, dating from the 1980s, focus on life sustaining dialysis. However the patient population entering End Stage Kidney Disease (ESKD) has shifted in the intervening years to an older demographic, with multiple co-morbidities and symptom burdens that we are now understanding are greater than cancer sufferers (Murtagh et al., 2010). People with CKD say their experience of healthcare in the last weeks and months of life is of poor quality, notwithstanding a high utilization of the acute sector (Murtagh et al., 2010, Wang et al., 2016). Patients, carers, families and clinicians struggle with defining the boundaries of care where technologies, like dialysis, may have no survival benefit and negatively affect quality of life (Murtagh et al., 2007, Verberne et al., 2016, Hussain et al., 2013). The ethical impossibility of conducting randomized controlled trials of these technologies adds to uncertainty and equipoise.

The Kidney Supportive Care program (KSCp) addresses this uncertainty through shared decision making with our patients and their community, anchored in open disclosure of all care pathways and exploration of the expectations of the patient. Key activities include information sharing, coaching in self-discovery of patient expectations and supporting patients, families and carers making complex health decisions, including advanced care planning, suitability of dialysis, withdrawal from dialysis and what to do when a new diagnosis of a second life limiting disease is made. Concurrently the KSCp team focuses on remediating and alleviating patients’ emotional and symptom distress.

“I think knowing the support’s there really helps. I can ring up and ask opinions even if it’s just to make sure that I’m doing the right thing.”
~Carer 4

Importantly our patients and their communities of families and carers evaluate the performance of the program through the patient reported outcome measures (PROMS) and patient reported experience measures (PREMS) suite of tools. These are part of the Consolidated Framework for Implementation Research (CFIR) methodology that we are using to evaluate the implementation of the program. Program reports are submitted to the KSCp Steering...
The KSCp is delivering a care pathway that matches the right resources to meet individual patient needs. 129 patients were referred to the KSCp in its first 12 months of operation, compared with 27 referrals to a palliative care service in the preceding 12 months. Patients/carers were highly satisfied (95% and 100% respectively) with the care they received. Thematic analysis revealed the key reasons for both groups’ satisfaction were feeling supported, receiving personalized care and the clinic’s focus on wellbeing rather than biochemical markers. Symptom burden decreased in 69% of patients. Further outcome measures are reported in section 4, evidence of outcomes. Patients continue to evaluate the program through structured feedback that is now embedded in business as usual.

2. Effective Leadership

The KSCp is providing direction in Queensland by offering our patients with end stage chronic disease choices that focus on wellbeing in addition to the biological construct models in clinical practice. In the applicability to other settings section we describe how the KSCp is influencing the development of like programs in our HHS, other Hospital and Health Services in Queensland, nationally and internationally. Please note this influencing and translation into other healthcare settings is a work in progress. Dr Amanda Dines, Executive Director of the Royal Brisbane and Women’s Hospital (RBWH), recognises the importance of the work the program does with vulnerable patients, ranking it amongst the top candidate programs for new funding in financial year 2017-2018 and championing it in the competitive pitching for HHS funding.

The KSCp continues to develop. In addition to the directional work we describe in the previous paragraph and building collaborations outlined in the next section on continuous improvement, we are using the principles of research to further develop the program. The KSCp brings together clinicians who are Chief Investigators in NHMRC funded Centres of Research Excellence in CKD (CKD.CRE) and End of Life CRE (EoL CRE). A collaboration of these investigators and Senior Executives of the RBWH were awarded a competitive Australian Centre for Health Services Innovation (AusHSI) grant that mobilized the resources needed to systematically study the implementation of the KSCp. The methodology used in this work is the novel CFIR from the emerging field of Implementation Science. The method was selected because it samples both qualitative and quantitative variables and captures PROMS and PREMS. Our HHS recognized the quality of the research in the KSCp at the 2017 MNHHS Research Excellence Awards, winning in the category Health Services and Implementation Research Award.

KSCp has been the vision of a group of clinicians for a number of years, led by a senior kidney nurse, Ms Ilse Berquier. In 2015 our leader successfully pitched for proof of concept funding through the MNHHS SEED Innovation funding program, an initiative of the Senior Executive of our organization. The KSCp commenced in February 2016 in a community health facility. Ms Berquier recruited the Metro North Kidney Health Service (MN KHS) Executive in successfully pitching to MNHHS for two further cycles of funding to extend the proof of concept out to 12 months. Ms Berquier influenced into Queensland Health through the Clinical Senate, presenting our work at a day long workshop on health needs at the end of life attended by key thinkers across the health jurisdictions in Queensland. Members of the team have now presented at a number of health planning and key clinician meetings in Queensland and nationally—see applicability to other settings section for a comprehensive list of briefings, workshops, think tanks, conferences and other meeting formats. In addition our methodical approach to developing the KSCp and systematic reporting of its outcomes is building workforce capacity in evaluating implementations of health services, including two early career postdoctoral Fellows - one in models of care research and one in health economics – funded through the research collaborations.

The KSCp is a product of the innovation space in the Metro North Hospital and Health Service, funded initially through its SEED Innovation program. We turned to the emerging field of Implementation Science to inform us on how to evaluate the implementation of this new service and in particular the novel methodology of CFIR. We adapted the processes in the methodology to expand the sampling of patient expectations, experiences and outcomes. Importantly we extend sampling into the patient community ie their families and their carers. This approach was endorsed by AusHSI who
awarded the program a competitive grant to conduct the evaluation. The research approach has left a legacy of processes and tools that are sustainably embedded into the business as usual of the clinical program. We are publishing the outcomes of the evaluations widely.

3. Continuous Improvement
The KSCp systematically measures, analyses, reports and acts on patient outcomes and the performance of the program.

Our innovative approach to measuring patient expectations, and the expectations of their communities, is described in the previous section. These are analysed individually by the KSCp team using a case conference methodology and the outcomes communicated to the patients’ kidney clinician and GP. Formal documentation of these care expectations are recorded in tools such as Statement of Choice. PROMS and PREMS are also analysed at group level. Important measures like stakeholder engagement, health economics, etc not covered by the patient centricity evaluations are similarly being sampled as part of the implementation research of the performance of the program.

The performance of the program is monitored regularly and reported in a number of forums that include the KSCp Steering Committee, KSCp Research and Operational meetings, KHS Management Advisory Group and monthly KHS scorecard to the funders. Activity and budget measures were reported to the initial SEED funders at MNHHS for the life of the funding and have now transitioned to business as usual reporting to management of the RBWH. These reports are in the organizational template formats. Collectively the results of the monitoring activities over the first 12 months are the subject of reports to AushSI, presentations nationally and internationally and of manuscripts in preparation for publication. Extracts of these reports and summaries in the format of infographics are used to brief stakeholders.

The first tranche of analyses have already led the KSCp clinical team to rethinking the model, with the commencement of nursing outreach into the four dialysis units across the MNHHS. In mid-2016 KSCp alerts were added to the Patient Admission System (PAS - Hospital Based Corporate Information System) so that the Palliative Care team is informed of admissions of patients of the program to the RBWH, resulting in improved communication between specialties particularly of patients’ expectations. Further, the clinical team is planning mobile clinics, moving between community health centres. In the next year the reach of this highly specialized, small team will be extended into additional fixed clinics in the northern part of MNHHS with the aim of bringing the service into the local communities of more of our patients. We continue to process the themes from our qualitative analyses of patients, carers and stakeholders’ surveys and the outputs will inform further service redesign.

Into the future we are extending our collaborations with early adopters/adaptors of this model in Australia and linking them with leading researchers in Australia (CKD.CRE and End of Life CRE) and internationally for the purposes of evaluating the impacts of differences in the models practiced at different sites – see section striving for best practice. This work will bring our patients and/or consumers into the collaborations where they will be present at earlier points in the service planning cycle. Their presence is particularly important given there are no universally agreed targets of care and the collaborations will be valuable opportunities to set benchmarks for quality of care. The intellectual scrutiny and thinking of these collaborations will be injected into future planning of the program.

An early observation is an interesting change in how the multidisciplinary KSCp team works, to a model of interaction that looks more like transdisciplinary. We are planning on studying the impact of team functioning – see section innovation in practice and process. One small example of this observation is continuing to staff the KSCp with advanced trainees in renal medicine with the aim to build the capacity of future generations of nephrologists to deliver these services. Our plans will extend the workforce evaluation to other professions and be conducted within a rigorous methodology.

4. Evidence of Outcomes
The evaluation of the KSCp provides robust evidence of individual, service and community level benefits. The infographic at appendix 1 lists headline qualitative and quantitative outcomes of the KSCp.

In brief, our nephrologists referred 129 patients (mean age 71.6 years [range 27–91], 52% men, 53% on dialysis) into the program compared with 27 referrals to palliative care in the preceding 12 months. Patients who had attended at least one KSCp appointment (n=101) were in the program for a median of 203 days (range 1-350). At 12 months 82 patients were attending the KSCp with a median time of 189 days (range 42-350) and 25% had left. Patients remain under the care of their nephrologist throughout the KSCp pathway of care.
Changes in overall symptom burden were assessed in all patients. Of those who attended more than one KSCP, 59% experienced improvement (Figure 1). 41% did not report improvement in overall symptom burden although individual symptoms may have improved.

![Change in symptom scores between visits](image)

Figure 1

**Decision-making**

Of 39 people who have made decisions around dialysis options:

- 19 chose not to start dialysis
- 10 chose to withdraw from dialysis
- 10 chose to continue dialysis

![Decision-making Diagram](image)

Figure 2

"The time before last when I went [to the KSCP] the question was: where do you want to die? And that was one question that I had never thought about because—what, there’s a choice?"

-Patient 6

Of the 39 patients exploring the dialysis pathway of care, 10 elected to proceed with dialysis, 10 chose to withdraw from dialysis and 19 elected not to accept a dialysis pathway of care (Figure 2).

19 patients died during these 12 months. Of these, 14 died at their place of choice (75%). Of those who died in their place of choice 3 died at home, 7 in community facilities and 4 in the acute care sector. Those who chose to die in an acute hospital did so because it was where they had routinely come for dialysis. Of the 5 who did not die in their place of choice, all died in the acute care sector. Significance testing is not done because of the small sample size in some of these cohorts.

We describe high levels of satisfaction with the program in the section on consumer focus – 95% of patients and 100% of carers were highly satisfied. We are still evaluating the qualitative data from deductive thematic analyses of interviews.

Early economic analyses are shown in the infographic. More mature analytics, including more complete data capture of utilisation of the acute hospital sector through data linkage protocols made possible with a recently formed partnership with the Data Linkage Unit, Department of Health, Queensland, are planned.

5. **Striving for Best Practice**

Given the ethical impossibility of conducting randomized controlled trials of different pathways of clinical care where dialysis is one option we looked at what others are doing in Australia and around the world. Although not an exact replica, our KSCP is based on the work of Mark Brown and Frank Brennan, Kidney and Palliative specialists respectively, at St George Hospital in Sydney. Powerful elements we incorporated included separation of biochemical from PREM based consultations and the primacy of the skillsets of a palliative care specialist. We acknowledge St George’s leadership in the field and its generosity in sharing processes and tools.

Secondly we embedded systematic measuring of processes and outcomes into the KSCP as outlined in the continuous improvement section. Importantly we have brought the measures of PROMS and PREMS into the suite of clinical reporting, reflecting the person centred ethos of the program, in contrast to usual business practices in many healthcare settings. We are pleased that a consumer is part of our work and operates at the level of involvement (of the five elements of engagement – information, consultation, involvement, collaboration, empowerment) but are keen to both raise this element of engagement and expand the level beyond individual (Health Consumers Queensland, 2012).

Thirdly we are extending our collaborations with early adaptors of this model in Australia and linking them with leading researchers in Australia (CKD.CRE and End of Life CRE) and internationally for the purposes of rigorous research of the impacts of the models. Our research approaches will be based on re-evaluating the research methodology literature, including the emerging field of implementation...
science. We are aiming to benchmark between sites, comparing and contrasting processes, workforce functioning and outcomes (see continuous improvement section, pg 5). The results will inform further refinements of the KSCp and be published in international peer reviewed journals to influence a wider audience, including health planners. We shall be seeking competitive grant funding to progress this work. The observation that the KSCp team has responded by shifting to a transdisciplinary model of functioning raises questions about team functioning on impact on patients. We will continue to measure impact using the patient based tools described earlier - see consumer focus section– and system level analyses.

The KSCp strives to be a flagship program locally, nationally and internationally and we aim to do this through integrating service delivery with high impact research. To this end we are collaborating with world-leading researchers in the field in the development of conjoint research projects.

INNOVATION IN PRACTICE AND PROCESS
Models of care, even in like areas, differ as acknowledged in the implementation science literature. In kidney supportive care this partially reflects variations in local conditions but also a lack of a universally accepted definition. Some key innovations in how we practice kidney supportive care include:

- focus on patient self-discovery of preferences and expectations, using PROMS and PREMS
- extending person centred to include patients’ families and/or carers to explore community impact on patients
- acceptance of inclusivity of care pathways ie patient may be on a dialysis pathway and a KSCp pathway
- located outside the acute hospital sector in local communities, normalising the patients’ experiences
- team interactions are evolving into transdisciplinary eg medical mix is a palliative care consultant and kidney advanced trainee
- systematic evaluation of the implementation of a new service using scientifically validated methods

We are particularly interested in the workforce mix in the model and how operationalizing the model has influenced interactions in the team to move from the more traditional multidisciplinary format closer to a transdisciplinary format. To the best of our knowledge this has not been studied in an environment of patient empowerment.

Importantly the implementation of the KSCp has been, and continuous to be, rigorously evaluated using the CFIR framework methodology of the emerging field of implementation science. This integration of the research into the clinical focus of the KSCp accelerates cross fertilisation of each.

APPLICABILITY TO OTHER SETTINGS
The clarity of the processes and outcomes reported by this project has resulted in translation and adaption into other settings. The KSCp is being positioned as the benchmark model across Queensland and set to influence kidney supportive care nationally and internationally.

- We have hosted colleagues from the Gold Coast who are now commencing a new project in delivering kidney supportive care in that HHS
- We have had site visits, consultations and discussions with kidney services from other HHS from across Queensland who are deeply interested in the patient care delivered in the KSCp.
- Colleagues from our HHS who manage patients with chronic liver disease took our documents and adapted our SEED application. They were successful in obtaining funding for a like program that is being implemented in 2017. They share the palliative care physician with KSCp, aiding them in more rapid adaptation of the model.
- The research of the KSCp was used to fast track embedding rigorously tested metrics into service delivery and to critically evaluate the implementation of the program. We will now use these methodologies to compare and contrast different models operating in Australia and around the world as set out in this submission. World-leading researchers in this field are now approaching the team to collaborate in such research.
- We are influencing thinkers, planners and funders of health services and the delivery of programs. To date we have either delivered or are planning on delivering:
  - One-page executive briefings - see attached infographics as an example
  - 5 planned publications (2 close to submission)
  - Briefings for external stakeholders, including MNHHS Medicine Stream Leadership, Queensland Health Clinical Excellence Showcase Queensland Clinical Senate, the national patient advocacy group Kidney Health Australia and internal stakeholders amongst which are MNHHS Nephrologists, Statewide End
of Life Forum, End of Life Forum Sunshine Coast Committee, RBWH Supportive Palliative Care teams

- Presentations to diverse groups of clinicians, researchers and health care planners at national and international renal and palliative conferences (2016=5, 2017=10 so far), state and local meetings

F. REFERENCES


G. APPENDIX

Appendix 1: KSCp Infographic

Implementation of the Kidney Supportive Care program: A 12-month perspective

**Right place**
- Those have been 129 referrals to the KSCp over 12 months (average 10.8 per month)
- On average, there were 9.3 new and 9.0 review appointments per month
- 19 deaths were supported by the KSCp
- Final place of care: 19% home, 31% hospital, 50% palliative care unit
- 75% of deaths occurred at patients' preferred final place of care

**Right care**
- 59% of KSCp patients report improvement in overall symptom burden
- 58% of patients have advanced care planning documented
- 95% of patients and 100% of carers are satisfied with KSCp care

**Flexibility of models**
- Of 39 people who have made decisions around dialysis options:
  - 19 chose not to start dialysis
  - 10 chose to withdraw from dialysis
  - 9 chose to continue dialysis

**Economic management**
- In the first 12 months of the KSCp, there was a 470% increase in renal referrals to palliative care compared to the previous 12 months
- 29 patients opting for conservative management = 49.8 - 99.6 person-years of dialysis avoided
- Projected released dialysis costs:
  - Yearly = $1.5 - 2.9 million
  - Life time = $5.0 - 10.0 million

"The time before last when I want [to the KSCp] the question was: where do you want to go? And that was one questions that I had never thought about because—where, there's a choice?"
- Patient 6

"I think knowing the support it there really helps. I can ring up and ask opinions even if it's just to make sure that I'm doing the right thing."
- Carer 4

"You don't feel like it's a cattle station, you don't feel rushed. They provide you with information. They give you a sense of normality that what you're feeling is normal, without glossing over stuff."
- Patient 10

"I think at the core of everything that [KHS] is trying to achieve is focusing on what’s best for the patient but, at the same time, what’s best for the health service and society in general. This ethos is very big picture, but the patient is the one that we’re most concerned about in terms of providing the benefit."
- Stakeholder 9
Melbourne Health
Transformation and Quality

Improving the management of sepsis with a hospital-wide sepsis pathway
Kelly Sykes, Karin Thursky, Cate Kelly, Tristan Vasquez, Lizzie Summers, Dominic Gasparini, Robert McCubbin

A. AIM
This project translated evidence-based clinical guidelines for sepsis identification and treatment into practice, educated clinicians, promoted improved patient outcomes, and enhanced patient safety. The objective of this study was to evaluate the impact following the implementation of a hospital-wide sepsis pathway. The aim was to decrease sepsis related ICU admission, decrease length of stay for sepsis patients, improve time to first dose antibiotic therapy, reduce last line antibiotic therapy, decrease sepsis related mortality, and increase services utilising a standardised sepsis pathway.

B. SUMMARY ABSTRACT
Sepsis is a life-threatening dysregulated response to infection resulting in organ dysfunction (Cardoso, et al., 2010). There is significant variance in practice in relation to sepsis recognition and management across hospital wards and departments (Staff, 2017). A whole of hospital sepsis pathway was developed and implemented across all services (Appendix 1). The pathway standardised elements of care, promoted nurse initiation of sepsis, supported effective communication, enforced time critical components, and became an audit tool for evaluation. The sepsis pathway was piloted across three inpatient wards from November 2016 to January 2017. This was followed by a seven week phased rollout to all hospital wards, with exception to ICU. Prior to hospital-wide implementation, education was provided to all clinicians. A hospital-wide communications plan was developed and implemented in order to increase awareness of sepsis and the essential elements for proper management.

Between 30 January 2017 and 2nd March 2017, 167 patients received care guided by the sepsis pathway. For these patients, 86.2% had lactate collected compared to 66.9% in the historical cohort and 72.5% had two or more blood cultures compared to 42.7% in the historical cohort. Median time to antibiotic administration was 67.7 minutes hospital-wide compared to 120 minutes in the historical cohort demonstrating a 43.6% reduction. The median length of hospital stay was reduced in patients managed with the sepsis pathway (3 days vs. 7 days). The percentage of patients with sepsis admitted to the ICU was lower in patients managed with the pathway (8.4% vs. 22.6%). The mortality rate for patients managed with the sepsis pathway was 4.2% compared with 12.9% in historical controls representing a 67.4% reduction in mortality for the pathway cohort. Further data collection and statistical analysis are ongoing.

Sepsis is a complex syndrome that is difficult to define, diagnose and treat. It is also responsible for significant mortality across all health services. A systemic and multidisciplinary quality improvement approach can produce compelling results. A standardised sepsis pathway along with education can be used to increase awareness of sepsis and improve management of septic patients across all hospital services. Translating evidence based clinical guidelines into hospital-wide practice is a complex task requiring sustained engagement from clinicians and stakeholders.

References

North Metropolitan Health Service Mental Health
Clinical Research Centre

Sleep Well, Feel Well With a Mental Illness: Implementation of a specialised Sleep service in North Metro Health Service Mental Health

Flavie Waters, Melissa Ree, Vivian Chiu, Danny Rock, Aleksandar Janca

A. AIM
The project aimed to implement and evaluate a specialized Sleep Clinic within the North Metropolitan Health Service Mental Health (NMHS MH) as a way of improving the sleep and wellbeing of consumers with severe mental disorders.

B. SUMMARY ABSTRACT

Background: Mental illness is the third largest cause of disease burden in Australia, and the largest single cause of poor health, and economic, social and productivity loss. Improving health systems requires a focus on consumer needs, together with access to a range of interventions that can address their multiple health issues (DoH, 2015).

One area in urgent need of attention is sleep. Between 40% to 90% of individuals with a mental illness have sleep disorders including insomnia, daytime sleepiness, disturbed timing of sleep, disturbing nightmare and sleep apnea % (Gruber et al., 2011; Cohrs, 2008). Sleep problems can be extremely debilitating and distressing. They cause significant health and relationship problems, have severe consequences on motivation and productivity, and have been linked to suicidal thoughts and completed suicides (Pigeon et al., 2012). Individuals with sleep problems also have significantly elevated risk of mental health relapse and greater hospital readmissions, consume 70% more healthcare resources, and have slower response to treatment (Fietze, 2011; Manocchia et al., 2001, Léger et al., 2002; Perlis et al., 1997).

Sleep therapy should be available to everyone with sleep disorders, yet mental health consumers have limited access to treatment options because of financial barriers, lack of local expertise, or because their level of functioning is considered too low for traditional sleep therapy options. This is an important oversight, because research shows that when sleep improves, psychiatric symptoms, medication usage and quality of life also improve (Freeman et al., 2015; Harvey et al., 2015; Waters et al., 2017). Treating sleep disorders can be as effective, and less costly, than medications, particularly over the long term (Morgan et al., 2004; Tannenbaum, 2015). Highly effective sleep therapy options (including cognitive behaviour therapy (CBT), ventilation devices or oral appliances for sleep apnea) should be part of the panoply of care for people with a severe mental illness.

Aim: This project sought to improve mental health patients’ access to sleep therapy options within North Metropolitan Health Service Mental Health (NMHS MH) services. NMHS MH provides public mental health services to people with mental health issues in Western Australia. Starting 2015, we implemented a specialist service, the ‘Sleep Well, Feel Well’ Clinic, providing psychological sleep therapy and service coordination to assist in the diagnosis and treatment of sleep disorders occurring in the context of mental illness.

Methods: In the development phase: Focus groups were conducted with mental health consumers to better understand their personal experience of sleep issues and preferred sleep treatment options, and an advisory group comprising consumers and clinicians was established to develop a model of care based on available and emerging empirical evidence.

In the implementation phase: A 0.2 FTE sleep psychologist was employed to deliver a range of services including screening for sleep disorders, sleep therapies including adapted CBT, and coordination of services with respiratory sleep physicians. Education and training was delivered different community mental health clinics which helped to facilitate detection and referrals.

In the evaluation phase: Consumer outcomes, service-related variables, and cost effectiveness were evaluated. Outcomes were evaluated in 135 consumers with sleep complaints (94 who received sleep CBT, 41 who received treatment as usual) in three domains: (i) sleep, (ii) psychiatric symptoms and (iii) wellbeing. Validated tools were administered at three time points (pre-treatment, post-treatment, 1-3 months follow-up). Cost effectiveness entailed a calculation of the estimated healthcare utilisation savings for each point improvement on the Insomnia Severity Index (ISI).

Results: Consumers who were treated showed (i) significant improvements across multiple measures of sleep (55% showed clinically significant changes); (ii) a significant drop in levels of depression, anxiety...
and psychotic symptoms; and (iii) measurable improvements in self-reported wellbeing. These improvements were not observed in the group who received treatment as usual. Progress also formed the basis of long-term changes, with good sleep persisting after 3 months in 78.1% of participants. The cost effectiveness analyses showed that, after taking into consideration the costs of the sleep psychologist, reductions in healthcare costs were estimated as total estimated savings of $180,919 over 18 months.

**Conclusions:** Mental health consumers report very high levels of sleep disturbances. Sleep therapy was clinically effective in reducing sleep problems, and improving psychiatric symptoms and wellbeing post treatment, and at 3 months follow-up. The cost-effectiveness analysis also suggested that sleep therapy is a potentially cost-effective intervention.

**References**


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North Eastern Community Hospital

First demonstration in an Australian healthcare setting of an in-line electrochemical water treatment system for optimising potable water quality

Scott Williams, Antony Amorico, Associate Professor Erica Donner

A. AIM
The aim of the project is to implement and independently test an electrochemical Water Management System in Australia to address chronic Legionella counts within North Eastern Community Hospital (NECH).

B. SUMMARY ABSTRACT
Established in 1973, NECH is a not-for-profit community owned private hospital and aged care facility some 10 kilometres north-east of Adelaide’s central business district. It currently comprises 60 hospital beds, eight day surgery beds, two operating theatres and a gastroenterology procedure room, along with an 84-bed residential aged care facility.

As the hospital and aged care facility covers a broad spectrum of patients and residents, from newborn babies to the elderly, the organisation is constantly on the lookout for ways to further improve patient and resident safety, particularly for those vulnerable groups.

Risk is, of course, always evident in healthcare, with water quality across the hospital an area of constant attention and efforts to mitigate and control the risk of Legionella and other waterborne bacteria a top priority.

Against this backdrop and with a Legionella issue identified in late 2013 when high counts of the bacteria were recorded in the aged care facility, NECH embarked on a program of rigorous monitoring and management in December 2013. The initial approach, from January 2014 to early 2016, saw the hospital conduct daily flushings of taps and shower heads while maintaining the heating of hot water at over 70 degrees Celsius.

Frequent water testing by an accredited commercial testing laboratory was also conducted.

In July 2014, the hospital began to explore options to install a continuous chlorine dosing system to decrease waterborne bacteria – including Legionella – in the NECH water distribution systems. This approach posed a number of potential issues, though, among them the capital and operating costs, the uncertainty surrounding the potential residual risks of bacteria and Legionella, and the use of a potentially hazardous chemical for dosing.

Early in 2016, the hospital first met with Ecas4, a company specialising in water sanitisation and surface disinfection systems. Its patented Ecas4-Anolyte technology produces a highly effective, genuinely pH neutral, electrochemically active, metastable disinfectant without the use of toxic chemicals.

The technology is particularly suitable for water reticulation systems and infection protection in hospital environments, one of its major features being its ability to eliminate pathogens such as bacteria, fungi, viruses and mono-cell algae, from main and drinking water. Crucially, it also limits the biofilm – a thin layer of organic material where bacteria like Legionella can bind and develop– commonly found in the piping of any material. These characteristics make it especially suitable for controlling Legionella species and associated risks.

The Ecas4 technology dates back some 10 years when it was introduced to treat drinking water in complex structures that have to fight against the presence of waterborne pathogens. Despite its relative newness to market, it has already replaced many alternatives and is extensively used within European hospitals, most notably in Italy, Germany and Spain, and in Asian countries such as China, Myanmar and Taiwan, where it is considered the technology of choice.

In all locations, the technology has been 100 per cent successful in controlling waterborne pathogens while in the process saving the hospitals money by allowing them to reduce safe water heating temperatures from around 80 degrees Celsius to
The Australian Council on Healthcare Standards

20th Annual ACHS Quality Improvement Awards 2017

Category: Non-Clinical Service Delivery

Winner

less than 50 degrees Celsius – thereby dramatically cutting electricity cost.

Given its impressive international track record – and the fact that NECH had typically heated its hot water to about 80 degrees Celsius so as to be delivered at about 70 degrees Celsius, at high cost and considerable risk to infrastructure and without wholesale success since different exceedances in Legionella counts had been registered in recent years – NECH engaged Ecas4 to implement its Ecas4-Anolyte technology.

The installation went live in May 2016, making NECH Ecas4’s first hospital application in Australia.

In order to acquire reliable and independent results and in addition to its own external laboratory monitoring program, NECH sought the collaboration of the University of South Australia (UniSA) as a super partes entity for data acquisition and analysis.

In particular, UniSA agreed to be involved with biofilm characterisation and the water sampling, as well as to carry out measurements of total carbon and total microbial charge, both in biofilm and water samples, together with dedicated Legionella testing (bacterial DNA analysis and qPCR quantification).

Monitoring data showed significantly reduced Legionella loads in NECH tap water within eight days of the Ecas4 installation and consistently thereafter.

This award submission, then, presents the independently verified results of Ecas4’s first Australian hospital installation in treating both hot and cold water systems at NECH after a year of continuous operation.

C. REPORT

APPLICATION OF ACHS PRINCIPLES

1. Consumer Focus

NECH has long enjoyed a strong and distinguished consumer-centric ethos, as evidenced by the three most recent full accreditation and re-accreditation exercises awarding the hospital the highest possible ‘Met with Merits’ classification, for elements within Standard 2 Partnering with Consumers, National Safety and Quality Healthcare Standards.

In line with this ethos and in its efforts to constantly review and improve its policies, procedures and technologies and so provide the safest possible environment in Australian health and aged care, NECH had conducted rigorous internal monitoring and management of its water supply and quality before engaging Ecas4 in 2016 to implement its Ecas4-Anolyte technology.

The hospital’s primary considerations were to achieve safety, quality and reliability of its water supply for all patients, residents, visitors and staff at the hospital and aged care facility – and do so in a manner that, while being compliant with all industry standards, was cost-effective.

With the consumer – primarily the patients and residents – as the key focus, a high-level and dedicated Ecas4-Anolyte team was established to oversee the implementation program, with NECH chief executive officer Scott Williams and Ecas4 Australia director Antony Amorico at the helm. Furthermore and reflective of its focus on consumer health and wellness, both parties agreed that for the success of the implementation to enjoy authenticity and veracity, the outcomes needed to be independently monitored and the results professionally documented.

This saw the University of South Australia’s Future Industries Institute contracted to monitor NECH’s Ecas4-Anolyte technology program and conduct regular and ongoing analysis of the water quality.

Led by the University’s Associate Professor of Environmental Science, Erica Donner, the UniSA team’s water quality analysis used both standard plate count methods as well as more advanced quantitative DNA-based analysis to add a further layer of detail and a far greater level of surety..

2. Effective Leadership

The NECH project is a case study in effective leadership across a number of fronts, among them the installation of leading edge technology, the commitment to environmental best practice and, of course, the team dynamics between hospital staff, Ecas4 personnel and academics from the University of South Australia who combined to ensure its successful implementation and independent expert evaluation.

From a leading edge perspective, the NECH is the first hospital in Australia to introduce the Ecas4 technology that continually controls Legionella in its water pipelines, thus providing patients, residents, staff and visitors to the hospital with the safest and cleanest water in the country.

Given that Legionella is a real risk for hospitals, aged care facilities and all other buildings with reticulated water systems, NECH chose to display leadership by investing in the best possible – and arguably most
environmentally-friendly – system available. Not only does Ecas4 boast a 100 per cent effective track record in the control of Legionella and the elimination of pathogens such as bacteria, fungi, viruses and mono-cell algae from mains and drinking water, but it does so without the use of toxic chemicals.

Bacteria are naturally present in water and are able to form biofilm on the internal surface of pipes. Crucially, the Ecas4 system is able to kill bacteria being released from biofilms and also help prevent Legionella biofilms from building or forming in the pipes in the first place.

Furthermore and in another display of effective leadership, Ecas4 is perhaps the most environmentally friendly approach to water treatment in the world today – and testament to NECH being conscious of its role in helping to create a more environmentally-friendly world.

The Ecas4 solution is not only non-toxic but is an energy-efficient way to ensure optimal water quality. In NECH’s case, all water was typically heated to 80 degrees Celsius so as to be delivered at about 70 degrees Celsius to control pathogens or bacteria that exist within its water system. This, of course, came at high cost, not to mention considerable risk to infrastructure.

With the new Ecas4 technology on board, NECH has been able to safely reduce its water heating temperatures to less than 60 degrees Celsius – thereby dramatically reducing energy consumption and cutting the hospital’s gas bill by half.

In terms of team leadership and under NECH CEO Scott Williams’ guidance, the hospital has a strong commitment to and embodies the community values which extend not only to the services provided but to corporate social responsibility leadership and innovation.

The team tasked with the successful implementation and subsequent evaluation comprised of individuals from NECH, Ecas4 and UniSA, each team member bringing a different strength and focus to the project.

Under Scott Williams’ stewardship, the NECH team comprised of Maintenance Manager David Walker and Infection Control Nurse Sharon Piro, with Daniel’s role to ensure there was no disruption to essential services throughout the installation and process, especially as, being a hospital, it runs 24 hours a day, seven days a week and 365 days a year and there couldn’t afford to be any downtime.

Sharon, in turn, brought her infection control lens to the entire project to ensure that nothing implemented or applied would increase the risk of infection or infection-control issues across the organisation. She also made sure that NECH was compliant with all regulations at all times.

Ecas4, led by Director Antony Amorico with support from National Business Manager Simon Crabb, showed a real passion for and commitment to the project. As the first hospital of its kind in Australia to apply its technology, Antony and Simon adopted an exemplary collaborative approach to working with NECH on all aspects of the planning and installation.

And finally, the UniSA team under Associate Professor Erica Donner added valuable scientific and technological expertise and knowledge to the project and provided the vital independence component that ensured the validity of the system and offered the essential evidence base.

3. Continuous Improvement
NECH views accreditation as an opportunity to identify not only what the organisation is doing well but where there may be opportunities to do even better. As such, the accreditation process is to be embraced as it presents an opportunity to open one’s mind to ideas from people outside the organisation and gain a better understanding of what is currently deemed best practice – and just as importantly, what needs to be done to achieve it.

The NECH philosophy centres on applying that lens to everything done within the organisation, which by definition means that all projects and initiatives are essentially about building on, fine-tuning and finessing the quality that already exists.

With regard to the Ecas4 initiative, the water at NECH was not bad. It was not an issue. But it also was not the very best it could be – and that is what drove the hospital to adopt something of a guinea pig approach and venture down a path no other Australian hospital had taken, buoyed by the knowledge that the product had delivered on its promise in other parts of the world.

When NECH's relentless commitment to continuous improvement identified Ecas4, it presented the hospital with an opportunity to enhance the water quality. And now that the water quality has been taken to the next level, NECH’s commitment to continuous improvement will ensure that all within the organisation regularly reflect on where this
technology may be five years from now, even further into the future.

NECH knows that in the future there may well be a better product on the market, opening new opportunities to do things even better.

That’s the crux of NECH’s understanding of continuous improvement – it’s about refining what you do and always aiming to do better. You never reach an end point in continuous improvement. It’s a daily focus...and if you appreciate that you’ll never reach the finish line, as NECH does, you will always be an ardent adherent to the concept of continuous improvement.

4. Evidence of Outcomes

The monitoring of NECH’s Ecas4-Anolyte technology program was carried out by a team at the University of South Australia’s Future Industries Institute led by the University’s Associate Professor of Environmental Science, Erica Donner, from May 2016 to May 2017. Its primary purpose was to monitor the water quality at the point of delivery throughout the hospital, identify the varying needs of the different areas of the hospital, and facilitate the Ecas4 team to tailor treatment – in the form of dosage – for these specific areas, thus optimising the quality of the water throughout the hospital.

In her report, Associate Professor Donner notes that the initial conditions in the NECH water supply system before the Ecas4 installation showed a history of Legionella plate counts in some areas of the hospital, and significant build-up of biofilms in the flexi/plastic piping used at the point of supply across the hospital.

Furthermore, heating hot water to in excess of 70 degrees Celsius, along with increased flushing, had failed to satisfactorily control Legionella.

Another notable factor identified at the outset was that the mixing of hot and cold water took place several metres before the taps, understandably to prevent patient scalding accidents. This was identified as a likely problem zone for Legionella growth which could not be accessed for heat treatment. The Ecas4 solution with constant in-line disinfection was therefore confirmed to be one of the only suitable treatment approaches for this water supply.

The test parameters adopted for Ecas4 process monitoring and diagnostic analysis included:

- Water temperature
- pH
- Electrical conductivity
- Redox potential (Eh)
- Total chlorine
- Active chlorine
- Total DNA
- Heterotrophic colony counts (HCC)
- Legionella plate counts and serotyping
- Total bacteria quantification (16S rRNA gene counts)
- Legionella quantification (qPCR genomic units)

The Legionella plate counting method was employed as it used as the standard approach in current Legionella Regulations and guidelines. The method is relevant to all Legionella strains associated with serious human infections and death, such as L.pneumophila, L.micdadei, L.longbeachae, L.feelei, and L.dumoffii. This approach has a number of challenges, among them the fact that a negative result does not necessarily indicate that Legionella bacteria is absent throughout the water system as bacteria are not evenly distributed in water samples and only a relatively small volume of water is used for plating. Furthermore, the presence of amoeba in the water, along with other bacterial species such as Pseudomonas spp. can confound plate count results.

Although variability and lack of sensitivity of results is a recognised issue with Legionella plate counts, plate counting is the standard regulatory method, and consistently negative results are meaningful as they indicate safe water quality at the point of use, with sinks and showers being the source of aerosols linked to human exposure by inhalation and ingestion.

To provide a higher level of detail on water quality at the point of delivery in patient rooms and facilitate more precisely tailored treatment, Associate Professor Donner and her team also conducted quantitative DNA-based analysis, which provides an added layer of detail and a far greater level of surety. Here, water is filtered through a membrane filter to collect the bacterial cells, and the total DNA is then extracted from the filter. DNA based analysis offers significant advantages over plating methods – firstly it is more specific than plating, thus allowing for more sensitive enumeration; secondly, it is more representative due to the larger volume of water sampled; and thirdly, the cost per sample is lower.

As successful treatment requires the taps at the point of use to be flushed regularly to ensure that the Ecas4 disinfection treatment reaches all outlets, nominated NECH staff members are required to
flush taps and showers each day as part of their normal duties. The highly sensitive DNA-based analysis then allowed the UniSA team to check and ensure that not only was the flushing adequate but that there was a high level of treatment efficiency in all monitored outlets.

By boosting the disinfection residual in the potable water as it enters the hospital supply network the Ecas4 technology helps ensure that all water in the hospital, wherever it occurs, is up to the required standard. This is especially important in showers as Legionella is conveyed through inhalation, the steam given off by the hot water being a key source of inhalation risk. In addition, Ecas4 dosing decreases all other waterborne pathogen related risks as all cold water supplies – from toilets to ice machines – are being treated.

The conclusions drawn by Associate Professor Donner and her team were that:

• The data monitored, using both the plate count and DNA-based analysis, showed significantly reduced Legionella loads in the NECH tap water within just eight days of the May 2016 Ecas4 installation and consistently thereafter through to the latest results obtained in May 2017;
• The DNA-based qPRC analysis is a highly sensitive and cost-effective method for total bacterial community and Legionella monitoring in water supplies and facilitates point of use disinfection optimisation; and
• The Ecas4 treatment has clearly reduced Legionella-related risk at North Eastern Community Hospital and, in the process, has placed the hospital at the very forefront in water quality in the Australian healthcare sector.

The external assessment and validation of the Legionella and bacteria counts within the water are consistent with those achieved in the European and Asian hospitals that have implemented the technology, confirming that NECH has further improved the quality of its water.

At the same time and as further evidence of the outcomes, the hospital has been able to reduce its hot water heating from 80 degrees Celsius to 60 degrees Celsius, which has allowed it to halve its gas bill and save the organisation almost $100,000 per annum.

In addition, a number of unexpected benefits have also resulted, most notably in relation to the filters in NECH’s steriliser system, with the company contracted to service the system noting that the filters are the cleanest they have ever seen in their many years in the business.

In the words of the hospital’s CEO, Scott Williams, “with the Ecas4 implementation further enhancing water quality for patients and residents, saving the hospital money and allowing it to operate in a more environmentally-friendly manner, the outcomes for NECH are enormously positive and crystal clear.”

5. Striving for Best Practice

It is fair to say that in becoming the first hospital in Australia to introduce the world-leading Ecas4 technology – and to take this a step further by employing both the industry standard Legionella plate counting method and complementing it with the DNA-based analysis which provides an added layer of detail and a far greater level of surety – NECH takes water quality very seriously and is constantly striving to achieve best practice in this area.

The project is also another example of the hospital’s dedication to looking not just at what’s going on in Australia but what’s occurring elsewhere in the world as it aims for best practice.

And while there is always a degree of risk in being the first in anything you do, the fact that the Ecas4 system has proven its effectiveness in hospitals across Europe and Asia made the level of risk relatively low, added to which was another layer of risk mitigation in the form of an independent assessor, UniSA, on the project.

INNOVATION IN PRACTICE AND PROCESS

Being a small and independent community facility has never prevented NECH from being innovative or a leader in many areas of hospital and aged care endeavours.

On the contrary, the organisation has always harboured a mindset of innovation, as evidenced by its willingness to take on systems that are not necessarily prevalent in health. It also holds the view that for health to be innovative, health needs to look beyond health – and this is a perfect example of that type of novel thinking, especially given the system’s history in Australia.

As a fascinating aside, the inventive thinking of Ecas4’s Antony Amorico was particularly appealing to NECH as he initially imported the system from Italy to improve the water quality in his Australian florist business.
It was only when a family member contracted a bacterial infection while in hospital that he contemplated whether the technology could transcend across to other industries. After all, if it could improve the quality of water for his florist business, would it not be something that could be used to improve water quality in a healthcare setting?

**APPLICABILITY TO OTHER SETTINGS**

At NECH, the focus is very much on being more innovative with what you already have — and to do so, you need to look at how it can be used more broadly across the organisation. In Ecas4’s case, that is to ensure that the technology and its solution does not remain solely in the hospital’s cold water system, never to progress.

With the product already prepared in the hospital’s system and perfectly mixed, it holds the potential to remove the use of chemicals from NECH’s everyday cleaning operations.

Currently, the hospital is exploring ways to extend the application of the technology, with the area of food preparation gaining the most focus because, if NECH can get rid of chemicals in this area, it no longer needs to worry about concerns surrounding Personal Protective Equipment for Material Safety Data Sheets with chemicals.

And by eliminating the need to purchase chemicals, the Ecas4 system will also save NECH a considerable amount of money as the preparation is already present and in a ready-to-use state.

The long-term goal is also to use this technology to sterilise all NECH facilities, including waiting areas and hospital rooms post discharge.

**F. REFERENCES**

Ecas4 2014, Overview Brochure: Safe, Ecological Water Sanitation and Surface Disinfectant Systems, Adelaide, South Australia

The Australian Hospital Engineer, June 2014, Volume 37, Number 1, Adbourne Publishing, Belgrave, Victoria

The Australian Hospital Engineer, March 2016, Volume 39, Number 1, Adbourne Publishing, Belgrave, Victoria
G. APPENDICES

Figure 1: These images show an example of biofilm build-up on the inside of water distribution system supply pipes

Table 1: *Legionella* species colony counts (colony forming units per ml). These are standard plate counting method results from a NATA accredited commercial monitoring laboratory. Note that no positive *Legionella* plate counts have been reported since eight days after installation of the Ecas4 treatment system. *Legionella pneumophila* serogroup 1 and *Legionella pneumophila* serogroups 2-14 were not detected in any NECH tap water samples during baseline sampling or after installation of the Ecas4 disinfection system.
Figure 2: This graph shows the significant reduction in *Legionella* bacteria following installation and optimisation of the Ecas4 electrochemical water disinfection system at NECH. Data is presented as genomic units of *Legionella* per ml of tap water and was measured using DNA-based quantitative polymerase chain reaction analysis. Monitoring commenced eight days before installation to provide a baseline comparison point. The vertical line at Day 0 indicates the point of system installation. The data is graphed to show the median values and interquartile range of all monitored taps throughout the hospital. The heavy line within each box indicates the median number of *Legionella* from all sampling points within the hospital on that particular sampling date. Note that the graph has a logarithmic scale on the y-axis, indicating multiple log reductions in *Legionella* counts in response to the water treatment.
The system uses technology (electronic tablet, kiosks, QR codes and email links) to collect survey data, with help from volunteers. Measures of patient experience include the Family and Friends Test (FFT) and an aggregated Patient Experience Score. Questions are benchmarked at 85% and adapted for departments and specialties. Free text questions provide highly useful, granular detail to aid decision-making. The team supports frontline staff to ensure that data is linked into a quality improvement cycle.

The initial system rollout took 3 months and was focused on 3 wards at Westmead Hospital – Renal, Gastroenterology and ICU. The system has now been rolled out to a further 32 wards across Westmead and Auburn Hospitals and the implementation continues across the District.

The rollout of the system has ongoing challenges. The development and mapping of a representative organisational hierarchy within the system was complex. Led by the Patient Experience Team and aided by the WSLHD Business Analytics Team and frontline management the level of granularity needed for the survey was decided. Systematising the volunteer recruitment and training has minimised the time taken to onboard each user. Several approaches have been taken to engage staff, including working within existing quality improvement frameworks.

The survey itself, called the My Experience Matters survey, was developed in consultation with various internal and external stakeholders. While the survey has its origins in the UK, in design and use, it was customised based on WSLHD’s needs and incorporates the requirements of the National Safety and Quality Health Service Standards. Feedback from consumers, National Standards committees and staff enabled further customisation of the survey.

The survey system has been well received by staff, patients and families. The specificity of outcomes generated down to ward/unit level enables staff to initiate and prioritise tangible solutions to improve patient experience. The detailed data provided has captured specific issues around meals, noise and light disturbances. There has been increased buy-in with patient experience data and Nurse Unit Managers are becoming engaged in actioning
solutions to patient issues. Nurses in one ward improved noise levels by 18% in 3 months. Feedback on meals, wait times and patient involvement in care has been sent to the appropriate committee and flagged with relevant staff.

Overall results have shown that WSLHD’s Friends and Family (FFT) Score has surpassed 90% in the last 5 months. The Patient Experience Score (PX) is at 85%. Improved qualitative and quantitative data has increased consideration of the patient experience in strategy and operational design of services. This is empowering WSLHD to make widespread changes to support and improve the patient experience.

The Mater Hospital North Sydney
Food Services
Room Service - Enhancing the patient meal-time experience
Carmel Lazarus, Tamsyn Gardner

A. AIM
Introduction of an innovative NSW first hotel style room service at the Mater hospital to:

1) Provide an individualized, flexible food service, empowering the patient to order to appetite and transform the patient’s meal-time experience

2) Pilot room service and measure and monitor the outcomes, with the goal of implementing a standardised model across other St Vincent’s Health Australia (SVHA) private hospitals within the group

B. SUMMARY ABSTRACT
Introduction: Mater North Sydney (MNS) is the first SVHA hospital and first in NSW to introduce room-service. Patients contact the room service call centre to order their meal and receive fresh, cooked to order meals delivered within 45 minutes from placing their order. The kitchen has been fully renovated to support the new room service. Room Service embeds a service oriented culture, empowering patients to order to appetite when it suits them. With traditional food service systems having set meal times that usually benefit the organisation more than the patient, this model provides flexibility for patients to order when hungry and outside scheduled and non-scheduled activities, such as showering, attending classes or hosting visitors.

Background: As reported in the literature (Barton et al, 2000; Williams and Walton 2011; Walton and Krassie 2012), high plate wastage contributes to malnutrition-related complications in hospital, however there are also financial and environmental implications. High wastage results primarily from the patient’s clinical condition, however other significant contributing factors include inflexible food service models and complex ordering systems, with limited capacity to individualise menu offerings and service level, particularly around portion sizes, fixed meal delivery times, and patient’s ability to access food when needed. Good nutrition and a positive patient experience directly impacts patients’ health outcomes. Patients with high satisfaction for food services, generally have a higher intake/less wastage (Williams et al. 1998; McLymont et al. 2003; Agarwal et al. 2010)

Traditional food service models used across SVHA hospitals have demonstrated high costs, high wastage and variable patient satisfaction. The advance production and trayline plating models in healthcare in Australia and internationally have remained mostly unchanged for 30+ years, despite changes in patient acuity, demographics, models of care and length of stay. Initially investigated at St Vincent’s Private Hospital (SVPHS) through the food and menu review committee with strong consumer engagement, national and international study tours investigating room service and alternative delivery models were conducted in 2010, 2012 and 2013. In 2015, SVHA Food Service Managers collaborated on identifying a more sustainable model responsive to the patient’s needs, but still meeting quality and safety and financial requirements.

Room Service was identified as aligning closest to our SVHA Strategic vision - a) seeing something greater through an innovative model transforming the patient mealtime experience and b) striving for something greater pursuing excellence and best practice in patient centred care and sustainability. Following a site assessment to evaluate suitability in an Australian environment, room service was endorsed by SVHA Food Service Managers. This was supported late 2015 by Hospital CEOs, based on US data identifying reduced food wastage and costs, with marked improvements in the patient experience (high Press Ganey scores). The room service business case was approved in 2016. MNS was chosen amongst 8 SVHA private hospitals as best suited to pilot room service due to strong CEO and management engagement, an aging kitchen requiring renovation and the IT/Cbord technology already in place to support room service.

In hospitals where patients experience loss of control, this model empowers the patient, enabling
them to order what they want to eat, when they want to eat it. It places them in control of what, how much and when they want to eat, supporting an improved intake and reducing food waste. This is key when we know that patients consuming <25% of food offered is an independent indicator of poor clinical outcomes (Agarwal et al. 2010).

Methodology: A steering committee and multidisciplinary project planning team was established in October 2016, with regular meetings until implementation in April 2017. US Consultants experienced in room service implementation were engaged to support project implementation.

Input was sought from consumer groups at SVPHS where this model had initially been proposed, and MNS.

A project plan was developed and working groups established for key areas:

1) Kitchen Capital works – taking advantage of low patient numbers to ensure minimal disruption, the kitchen was closed and a temporary kitchen installed Christmas 2016. A production kitchen and room service module was built in the existing space.

2) Menu Design – Consumers and Dietitians were consulted. New recipes better suited to room service were developed. The menu design includes symbols and essential information to guide selections. Large print menus are available for sight impaired patients. The menu offers a variety of items for all complex diet codes, providing flexibility for patients, such as “build your own sandwich”, fresh salads, grills with varied sauces and all day breakfast.

3) Marketing/Communications – A detailed communication plan, with in-services provided across units including Medical Advisory Council, Consumer Advisory, Volunteers, Managers, Nurse Educators, Ward and Allied Health meetings. The hospital’s website and social media, public television screens, preadmission and admissions staff provided room service information. A patient video shown on admission included an introduction to room service to ensure patients are informed. Failsafe mechanisms are in place to ensure all patients are contacted for their meal order.

4) Call Centre Telephony/Information Technology – All existing staff taking meal orders were trained on the new call centre and room service system. Training tools were developed for call centre functions, including detailed scripting for meal ordering processes.

5) Policy/Procedure development – Policies with input from nursing, infection control, dietetics and speech pathology e.g. Management of meal trays for droplet precautions, Explaining Room Service, Assessment of Room Service suitability, ICU and Meal Ordering, Insulin Management with Room Service, Lift Usage and Room Service, Missed Meal Management with Room Service, Room Service Meal Ordering, Room Service Meal Delivery

6) HR and Training – Were engaged at the outset to support staff due to significant changes in work processes. Detailed HR communication plan completed. Staff briefed about room service since the initial site assessment early 2016. All staff continued in Food Services after the implementation and provided with intensive customer service and system training

Outcome measures: This level of individualization and flexibility with room service has transformed the patient’s mealtime experience, providing a patient centred model that is customer focused and significantly reduces food waste, and can be replicated across SVHA hospitals and beyond. Achievements to date include positive patient feedback, reduced waste, increased meal flexibility, reduced food costs, staff satisfaction, market differentiator and increased guest meal revenue.

Our Lady of Maryknoll Hospital, Hong Kong
Community Services
Connecting with Community – Achieving Better Health and Wellbeing to Community
Dr T C Wong, Jenny Tsoi, Kathy Chow, Chui Han Yiu, Eric Wong, Dr Winnie Chan

A. AIM

“Connecting with Community” aims to build up a close and mutual benefit relationship between Our Lady of Maryknoll Hospital and community stakeholders. We adopt multi-prongs in order to achieve better wellbeing in the community through centralized coordination with support from senior management and multi-disciplinary frontline staff.

B. SUMMARY ABSTRACT

Introduction: We have been following the mission set by our founding Maryknoll Sisters since 1961 to provide holistic care and health promotion in the community. Our Hospital has been actively providing health promotion activities in the local
district over the years. We receive strong support from local residents.

Structure: We established a Health Education Department in the 1970s to promote health awareness and disease prevention as well as providing outreach programs in elderly centers and schools.

A Community Health Centre was set up in 2007 with fitness training equipments and self-help health promotion facilities. The centre serves not only a venue for users to obtain health information, it also serves as a hub to collaborate with community partners and coordinate health promotion programs.

A Community Partnership Committee was set up in 2013 to formalize a committee structure to enhance communication and collaboration with community partners. It includes representatives from local District Council, local general medical practitioner, youth services non-government organization and elderly services centres. The membership is further expanded to include mental health agency, district elderly community centers, Parent Teacher Association and schools in 2017.

The Hospital represented by the Hospital Chief Executive is invited to be a member of a number of territory wide and local committees. It includes the Community Investment and Inclusion Fund of the Hong Kong Labour and Welfare Bureau, Wong Tai Sin District Healthy and Safe City, Wong Tai Sin District Central Area Committee, Wong Tai Sin District Fire Safety Committee, Wong Tai Sin District Fight Crime Committee and Wong Tai Sin District Primary School Heads’ Association. The wide participation has helped to build a trusting relationship and admirable working environment with community partners.

We have established an excellent working relationship with many community partners from various sectors. They include government departments and organizations, education sector, non-governmental organizations, elderly services centres and medical institutions.

Processes: Our Hospital would formulate the health promotion activities in the beginning of the year. Majority of the programs would be co-organized with other community partners. It would enhance synergy, raise community awareness, avoid duplication and increase access to funding sources. We will refine and improve new programs after reviewing the implemented programs.

The Hospital would also be invited to co-organize health promotion programs by community partners. Some of the programs would provide timely solution to the emerging needs of the community, for example, Wong Tai Sin Referral Mechanism of Health and Emotion Support Services for Children and Youth in 2016 after a series of youth committed suicide in Wong Tai Sin district. Health talk on lead poisoning when more than ten public estates were found to have lead contaminated drinking water in 2015. A program called Fresh Express was organized against youth drug abuse in 2009 after a number of youth being arrested for drug related offenses.

The programs cover a wide age range and health issues. We have organized activities for kindergarten students, primary school students, secondary school students and university students. Ethnic minority residents and students were also covered. It was most gratifying to receive visit from mental retarded students in 2016. A special program was organized with the Hong Kong Police Force for a group of delinquent female secondary school students in 2016. Health topics cover the common medical diagnosis, dementia and metabolic syndrome.

We have recruited 139 volunteers to assist the implementation of health promotion activities.

Outcomes: The Hospital has gained numerous recognitions for our contributions over the years. Wong Tai Sin District Office gave us the appreciation certificates for our support to youth career development in health care industry in 2016 and 2017. We received the appreciation certificate from District Council & District Office in 2016. The Hospital Chief Executive received the “Outstanding Social Capital Partnership Award (Individual)” for the significant contribution on the community partnership and support from the Government of the Hong Kong Special Administrative Region Chief Executive elected in 2014. We broke the Guinness World Record of “Most Waist Circumference Measurement taken in 12-hours” in 2014. We were awarded the Social Capital Builder Award for our continuous effort on building social capital through various community events and partnership over past three years. The Hospital Management Asia Award gave us the Gold Award for Corporate Social Responsibility in 2013.

Signature Programs: Student Healthcare Experience Scheme demonstrates the success of cross-sector
collaboration with schools and government department. The annual scheme was started since 2006. About 70 top students are nominated by the school principals to join a 3-week program to observe and learn the daily hospital operation. It could help them to decide if they are suitable to take health related subjects in university. A follow-up survey in 2015 showed that more than 50% of participants pursued study in healthcare related subjects. We received positive feedbacks from the schools and participants.

In 2014, the Hospital Centre for Diabetes Education and Management initiated a mega community promotion program “Wong Tai Sin Diabetes Awareness Carnival” to raise the awareness of diabetes and cardiovascular risks. More than 800 local residents participated in the program with support from Wong Tai Sin District Healthy and Safe City, District Council and community partners. Participants received health assessment and counselling, education talk and enjoyed game booths. We broke the World record of “Most Waist Circumference Measurement taken in 12-hours”. Extensive media coverage was recorded with positive feedbacks from our community.

Conclusion: We believe that “Success doesn’t come from what you do occasionally. It comes from what you do consistently.” We collaborate with various community partners to provide a wide range of health promotion programs to suit different age and ethnic origins.

It is our mission to serve the community with passion. We care about our community and answer to their needs. We would work closely with our community partners unceasingly. Striving for better community wellness is our motivation and we treasure recognitions received.
### Category: Non-Clinical Service Delivery

#### Table of Submissions

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Northern Sydney Local Health District  
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| **Room Service - Enhancing the patient meal-time experience** | Food Services  
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*Carmel Lazarus, Tamsyn Gardner*  
| **Qual-ED: Creating a culture of value-driven quality in the Emergency Department** | Department of Emergency Medicine, Critical Care and Clinical Support Services  
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**Recording Pastoral Interventions and improving processes, communication and facilities for multi-faith and “non-religious” Pastoral Care with predominately volunteer chaplains.**

Pastoral Care  
Bendigo Health  
*Karen Lunney*

**Distinctive online medicines information hubs – a collaboration between the Library and Pharmacy at King Edward Memorial Hospital**

Department of Library & Information Services, Department of Pharmacy  
King Edward Memorial Hospital  
*Karen Rickman, Tamara Lebedevs, Michael Petrovski, Nabeelah Mukadam, Stephanie Teoh*

**Patient Nutrition Information System**

Catering and Environmental Services  
Healthecare  
*Ian Barry Smart*

**Metro North GP Alignment Program: Maternity and Gynaecology**

Women’s and Newborn Services  
Royal Brisbane and Women’s Hospital  
*Jeanette Tyler, Meg Cairns*

**First demonstration in an Australian healthcare setting of an in-line electrochemical water treatment system for optimising potable water quality**

North Eastern Community Hospital  
*Scott Williams, Antony Amorico, Associate Professor Erica Donner*

**Connecting with Community – Achieving Better Health and Wellbeing to Community**

Community Services  
Our Lady of Maryknoll Hospital  
*Dr T C Wong, Jenny Tsoi, Kathy Chow, Chui Han Yiu, Eric Wong, Dr Winnie Chan*
A. AIM
To reduce length of stay for patients admitted to Blue Mountains Hospital with Chronic Obstructive Pulmonary Disease by one half a day within 12 months.

B. SUMMARY ABSTRACT
The prevalence of Chronic Obstructive Pulmonary Disease (COPD) in Australia is reported to be 7.5% amongst those aged over 40 years and 29.2% amongst those aged over 75 years. COPD is associated with multiple issues for individuals and their families, including physical and psychological morbidity and reduced quality of life. (Taylor et al 2012). The prevalence of chronic illness is increasing in the Local Health District placing pressure on facilities to discharge patients in a timely manner. Improving patient experience and improving population health are two strategic directions for the Nepean Blue Mountains Local Health District. Blue Mountains Hospital (BMDAMH) joined the Health Round Table (HRT) in July 2015. HRT data showed that BMDAMH had longer length of stay for patients with Chronic Obstructive Pulmonary disease (COPD) when compared to peer hospitals. A COPD Working Party was formed to look at possible issues which might contribute to this longer length of stay. The overarching aim of the COPD Working Party was to ensure the services provided are best practice and in line with current trends whilst providing a forum to discuss innovative and creative ways of assisting patients with COPD. Importantly the experiences and needs of consumers are paramount when discussing improvements in service delivery. The Multidisciplinary COPD Working Party included a consumer representative; respiratory physician, nursing, discharge planning, health information, Allied Health and executive staff from BMDAMH and Primary Care and Community Health representatives. Greater coordination with these health providers, consumers and patients presents an opportunity to improve efficiencies.

The Working Party identified issues contributing to the higher than average Relative Stay Index. These issues and gaps in service were addressed by the relevant members of the team and reported back to the Working Party.

The working party identified that a streamlined and more coordinated approach involving the multidisciplinary team for this patient cohort would result in reduced length of stay, improved patient journey and improved management of this patient cohort, easing the pressure on existing resources.

A range of identified issues with the approach to COPD patients included gaps in the staff’s knowledge and understanding of length of stay data related to various diagnostic groups; the inpatient journey whereby patient’s were not being sat out of bed regularly, were not being seen early in their admission by the Physiotherapist and were not always confident using their Positive Expiratory Pressure (PEP) breathing devices nor using the devices regularly. On discharge not all patients were being referred for Pulmonary Rehabilitation or referred to Chronic and complex Community nurse or Nurse Practitioner. After completion of the Pulmonary Rehabilitation program patients were wanting to continue in a hospital based maintenance group which was causing delayed entry to the acute pulmonary rehabilitation program for new patients.

Daily multidisciplinary team meetings were commenced at the Patient Journey Board (PJB). These meeting include hospital staff as well as representatives from Community Health. Each patient with COPD is identified on the journey board and referred to the Criteria Led discharge nurse. A list with Health Roundtable benchmarks for expected length of stay for key diagnostic related groups has been put up bedside the PJB to guide staff when determining discharge dates. Each team member comes to the meeting prepared with information that will assist the team to determine the patient’s readiness for discharge.
Referrals to the discharge planning team are made at the PJB meetings and other appropriate referrals for discharge are identified.

The Health Information manager provided education sessions about length of stay and the importance of Type changes to medical staff.

A flow on from the Patient Journey Board meeting has been the evolution of another project conducted by BMDAMH – Who’s doing what? This project is aiming to clarify roles for the Discharge Planning team to further enhance the discharge process.

Techniques which involve breathing out against a positive expiratory pressure resistance may provide greater benefits than other types of Airways Clearance Techniques. (Osadnik 2012).

Independent use of a Positive End Pressure (PEP) breathing device can assist in management of COPD for some patients. Patients were consulted via questionnaires to ascertain whether they felt they could use their PEP device and what would assist them to use it. Patient suggestions from qualitative surveys were implemented. Further suggestions that have been made by patients, such as having a tick off reminder sheet, will be implemented in the future.

Ties with community providers were established. COPD patients are referred to Chronic and Complex Community Nurse or the Nurse Practitioner. COPD patients are referred to attend BMDAMH Pulmonary rehabilitation after discharge. Encouragement to attend Pulmonary rehabilitation is reinforced by Community nurses and the Respiratory physician.

There was advocacy from BMDAMH staff for the The Lung Foundation endorsed Lungs In Action exercise group to be established locally to provide an venue for all patients to continue their exercise after completing Pulmonary Rehabilitation at BMDAMH.

The COPD Working Party forum resulted in the establishment of further community ties with the development of a Pilot project with BMDAMH and Integrated Care for People with Chronic Conditions (ICPCC). This is a collaborative project which has an aim of tailoring self–management support for maintenance of exercise after completion of Pulmonary Rehabilitation (White, Lees et al 2017).

Length of stay data was reviewed and compared to previous years. Comparison data over 24 months demonstrates that average length of stay for COPD patients at BMDAMH has decreased by nearly 1 day per encounter. The number of COPD episodes that exceeded the Average Length of Stay was compared 2015-2017 and demonstrated a reduction from 49% to 32%. Qualitative and quantitative questionnaires were given to patients to ask about their use of PEP and whether they have been sitting out of bed and what else might help them.

Patient reported participation in management of their COPD has increased over 12 months with 100% reporting they know how to use their PEP; 100% reporting they are sitting out of bed daily and an improvement in the prompts they are getting to use their PEP devices.

There is scope to explore extra strategies such as patient’s keeping an activity log of their mobilisation and exercise when in hospital

C. REPORT

In order to reduce the Length of Stay for COPD patients the issues identified by the COPD working party needed to be addressed. These included all COPD patients identified at Patient Journey board meeting and referred to Criteria led discharge Nurse (CLD); Physiotherapist reviewing patients in COU in the morning; education of patients about participation in their therapy especially using PEP devices and sitting out of bed; referral to Nurse Practitioner or Chronic and Complex community nurse on discharge; education of staff on expected length of stay and timely type change; referral to outpatient Pulmonary rehabilitation on discharge; sustainability of long term exercise for COPD patients by establishing ties in the community.

APPLICATION OF ACHS PRINCIPLES

1. Consumer Focus

The Chronic Obstructive Pulmonary Disease (COPD) working party had a consumer representative in its membership. Whilst the consumer representative changed over the course of the project each consumer was able to communicate their experiences both as an inpatient and outpatient. This enhanced the clinicians understanding of the patient journey. One of the aims of the working party was to ensure that the patient journey was enhanced both for the inpatient and discharging to Outpatient services.

COPD patients on the ward were asked to complete a qualitative and quantitative questionnaire (see Appendix 1 and 2). The engagement of the patients allowed us to understand what would assist them to participate more effectively in their therapy and how the staff could assist them.
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Appropriate referrals made on discharge including to Pulmonary Rehabilitation, Lungs in Action, Chronic and Complex Community nurse and Nurse Practitioner ensure the patient continues to be supported in managing their condition after their hospitalisation.

2. Effective Leadership
Establishment of the multidisciplinary COPD working party provided direction for the team to review the service to COPD patients. The Facility General Manager, Director of Nursing and Medical Executive Director attended the COPD working party. The broad representation of disciplines from within and outside the facility enhanced communication of potential improvement strategies. An example of this was staff from different disciplines providing education to other disciplines. An example of this cross discipline education was the Health Information Manager educating medical staff about Length of Stay data and timely Type change of patients.

3. Continuous Improvement
Systemic changes are now embedded in management of COPD patients at BMDAMH. The changes have been made by implementing efficiencies and improving communication, not through extra resources. Solutions identified in the redesign process have been successfully implemented by staff members and are now embedded in daily routines.

There is a commitment to ongoing improvement, demonstrated by the addressing of identified gaps. An example of this is tied in with the Daily Journey board meeting. It was identified that there was lack of clarity around the roles of each member of the Discharge Planning team. This resulted in another project running concurrently. The Organisation and Development team assisted the discharge planning team to map out their roles and work out who does what. The clarification of roles not only assists the Discharge Planning team members, but also the rest of the team. Appropriate referrals are now made without duplication of referrals.

Patients with COPD were given two questionnaires (Appendix 1 and 2) to identify how the staff could assist them to manage their condition. A sample of the qualitative responses demonstrate that the patients found the PEP information helpful:
• The yellow sign at the end of my bed, and the yellow instruction sheet is enough to remind me to use the PEP throughout the day
• Written instructions very good
• The physios have explained that this device will help me get out of hospital, so it is up to me to use the device
• The physio explained things very clearly, and was good at reminding me to do my PEP. I think the rest is up to the patient to want to get better and use the device.

To improve compliance and outcomes, in the future we will look at implementing some other patient comments such as:
• Writing down the times (on a chart) that you would like the patient to do their PEP. Then they can tick it off each time and day, as they complete it
• Perhaps be reminded to use it at a scheduled time – for example at medication time or after food

All patients questioned reported that they are now sitting out of bed. This is now an embedded practice for COPD patients.

Early mobilisation, which aims to prevent functional decline and facilitate hospital discharge, is a key element of physiotherapy management for AECOPD. This includes early ambulation, commenced within 24 hours of hospital admission, to achieve a safe discharge back to the community. Targeted strength training to achieve functional goals such as managing stairs may be included (Holland 2014). Scope for further improvement will involve facilitating patients to keep their own record of their mobilisation.

General Practitioners in the Nepean Blue Mountains Primary Health Network are participating in a national trial that aims to improve the treatment of people with chronic disease. The General Practice will work in partnership with the patient and other health professionals to tailor their care to address the individual’s specific conditions and coordinate the range of services that they require. A resource has been identified within the network to develop a primary care collaborative approach supporting the management of patients with COPD. Blue Mountains Hospital has been an active participant in development sessions.

4. Evidence of Outcomes
BMDAMH joined Health Roundtable in July 2015. The facility was provided with a range of data for the period April 2014 to March 2015 relating to General Medicine. The focus of the report was how the facility compared for various against peer hospitals across Australasia.

Evaluation of length of stay data shows improvements.

COPD patients at Blue Mountains Hospital have had a 0.9 day reduction in length of stay from 2015-2017 (Graph 1). BMDAMH has saved 152 bed days annually by reducing the length of stay by almost 1 day per episode. This translates to an annual saving of approximately $193,000. The length of stay is below the expected length of stay.
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The percentage of the number of COPD episodes over the Average Length of stay 2015-2017 has decreased from 49% to 32% (results for first 6 months of 2015, 2016 and 2017).

COPD patients for whom PEP is appropriate are now given a PEP instruction sheet, PEP pack (Appendix 3 and 4) and prompts to use PEP to encourage them to be independent with their exercises.

The questionnaire (Appendix 1) responses given by patients in 2016 and 2017 indicate that for this sample of patients there was an improvement of 23% in the number of patients reporting they could use their PEP devices. There was an improvement of 30% in patients reporting that they received regular prompts to do their PEP breathing.

Questions:
1: Did the nurse tell you to do PEP
2: Were you able to do PEP
3: Did the staff member observe you
4: Was PEP discussed at handover by nursing staff
5: Have you sat out of bed

Nil indicates answer not given.
Table 2: Summary of achievements

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<tr>
<th>Achieved</th>
<th>Pre-project</th>
<th>Post</th>
<th>Improvement</th>
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<tr>
<td>Reduction in Relative stay index</td>
<td>yes</td>
<td>129%</td>
<td>112%</td>
</tr>
<tr>
<td>Reduction in Length of stay (LOS)</td>
<td>yes</td>
<td>4.8 days</td>
<td>3.9 days</td>
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<tr>
<td>Reduction in episodes over Average LOS</td>
<td>yes</td>
<td>49%</td>
<td>32%</td>
</tr>
<tr>
<td>COPD Patients sitting out of bed</td>
<td>yes</td>
<td>66%</td>
<td>100%</td>
</tr>
<tr>
<td>COPD patients reporting they can use PEP device</td>
<td>yes</td>
<td>77%</td>
<td>100%</td>
</tr>
<tr>
<td>All appropriate COPD patients given PEP packs</td>
<td>yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Received regular prompts for patient to use PEP</td>
<td>yes</td>
<td>52%</td>
<td>82%</td>
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<tr>
<td>COPD patients identified at daily Patient Journey board meeting</td>
<td>yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>COPD patients referred to CLD nurse</td>
<td>yes</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Physiotherapist doing COU rounds at beginning of shift</td>
<td>yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ties with community</td>
<td>yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lungs in action; ICPC/ICL M pilot project</td>
<td>yes</td>
<td>-</td>
<td>-</td>
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<tr>
<td>COPD patients referred to Pulmonary Rehabilitation</td>
<td>yes</td>
<td>-</td>
<td>-</td>
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<tr>
<td>CALM patients referred to Lungs in action on discharge</td>
<td>yes</td>
<td>Service not available</td>
<td>100%</td>
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<tr>
<td>Education of Medical staff re LOS</td>
<td>yes</td>
<td>-</td>
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</table>

5. Striving for Best Practice

Clinicians are continually striving for best practice for patients with COPD at BMDAMH.

COPD-X Plan notes there is Level 1 evidence that Pulmonary rehabilitation reduces dyspnoea, fatigue, anxiety and depression, improves peripheral muscle function, exercise capacity, emotional function and health-related quality of life and enhances patients’ sense of control over their condition (Yang et al 2017). Delivery of pulmonary rehabilitation after hospitalisation for acute exacerbation of COPD reduces the odds of readmission for acute exacerbation of COPD by over 70% (Holland 2014).

Whilst Pulmonary rehabilitation is not appropriate in the acute setting, all COPD patients at BMDAMH have the
opportunity to be referred to Pulmonary Rehabilitation after discharge. Once their Pulmonary rehabilitation is completed, patients are then referred onto Lungs in Action (Lung Foundation). The pilot project that has been initiated out of the COPD working party will further assist patients by tailoring self-management support.

Osadnik (2014) notes that PEP therapy may produce a short-term reduction in functional limitation due to dyspnoea. It should not be routine for patients with acute exacerbation of COPD without consideration of all appropriate treatments for each patient. As length of stay for COPD patients decreases, empowering the patient to manage their condition and achieve functional independence (Holland 2014) and making appropriate referrals to pulmonary rehabilitation become essential. The onus is on the physiotherapist to incorporate evidence based practice with each patient rather than a one treatment suits all approach.

Moving forward with assisting patient to manage their COPD we are exploring the tailoring of Self-management support to those who attend our Pulmonary Rehabilitation program.

**INNOVATION IN PRACTICE AND PROCESS**

There are many clinicians involved in the care of the patient with COPD both in hospitals and out of hospitals. This project has highlighted areas where enhanced communication between clinicians and with patients can be improved. Optimising the use of existing resources such as the Patient journey board to plan for discharge at the beginning of the hospital admission; using benchmark data to set the estimated discharge date and ensuring appropriate referrals to assist the patient after discharge are in place. Extending this enhanced communication after discharge to the community setting via the Nurse Practitioner, community nurses, GPs and external providers. The ties have been extended further by collaborating over a project that has involvement of both Integrated Care and the Blue Mountains Hospital.

**APPLICABILITY TO OTHER SETTINGS**

There are a number of aspects of the process we went through which can be applied to other settings. Patient Journey boards are available in NSW hospitals and should be used for daily meetings. Length of stay can be reliably determined by identifying COPD patients on the journey board, involving the whole team in using the journey board as a communication tool and displaying expected length of stay data for COPD patients.

In all settings clinicians should be engaging patients to learn what will assist them to participate in their management of their condition.

**F. REFERENCES**


Inpatient Casemix App NBMLHD Graph 1: COPD Length of Stay.
### Appendix 1: Quantitative questionnaire

#### PEP Audit tool Pre/POST

**Date**

You have been prescribed PEP by your respiratory physician or Physiotherapist. We would like to know how often you are doing PEP and who is helping you.

**Did you understand the PEP instructions?** Yes / No

#### Day one

<table>
<thead>
<tr>
<th>Morning tea or lunch</th>
<th>Afternoon tea</th>
<th>Supper</th>
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<tbody>
<tr>
<td>Did the nurse tell you to do PEP?</td>
<td>Yes / No</td>
<td>Did the nurse tell you to do PEP?</td>
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<tr>
<td>Were you able to do PEP?</td>
<td>Yes / No</td>
<td>Were you able to do PEP?</td>
</tr>
<tr>
<td>Did that staff member observe you doing PEP?</td>
<td>Yes / No</td>
<td>Did that staff member observe you doing PEP?</td>
</tr>
<tr>
<td>Was PEP discussed at handover by nursing staff?</td>
<td>Yes / No</td>
<td>Was PEP discussed at handover by nursing staff?</td>
</tr>
<tr>
<td>Have you sat out of bed?</td>
<td>Yes / No</td>
<td>Have you sat out of bed?</td>
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#### Day Two

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<tr>
<td>Did the nurse tell you to do PEP?</td>
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<tr>
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<td>Did that staff member observe you doing PEP?</td>
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<tr>
<td>Was PEP discussed at handover by nursing staff?</td>
<td>Yes / No</td>
<td>Was PEP discussed at handover by nursing staff?</td>
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<tr>
<td>Have you sat out of bed?</td>
<td>Yes / No</td>
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#### Day Three

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<td>Were you able to do PEP?</td>
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<td>Did that staff member observe you doing PEP?</td>
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<tr>
<td>Was PEP discussed at handover by nursing staff?</td>
<td>Yes / No</td>
<td>Was PEP discussed at handover by nursing staff?</td>
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<tr>
<td>Have you sat out of bed?</td>
<td>Yes / No</td>
<td>Have you sat out of bed?</td>
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</table>
Appendix 2: Qualitative questionnaire

1) What support(s) would encourage you to use your PEP device?

2) What would help you to remember to use your PEP device regularly?

3) Do you have any additional feedback on how our team can improve our PEP service?
Appendix 3: Threshold PEP instructions

**THRESHOLD PEP**

1. Take a deep breath in
2. Place the mouthpiece in your mouth
3. Firmly breathe out through the PEP for 5 seconds
4. Repeat ___ times
5. Stop, rest and breathe normally if you feel dizzy at any time
6. Huffs – open your mouth and throat, push breath out like fogging a mirror. Repeat with increasing breath size – small, medium, large huffs
7. Cough – cough strongly to clear any mucus/phlegm in the top of your chest
8. Repeat ___ cycles from the beginning, or until mucus/phlegm is cleared

How often?

This PEP device is yours to take home. Please use it when you feel your secretions are increasing and becoming difficult to clear. Bring it to hospital with you if you are readmitted.

Cleaning: Wash under clean warm soapy water, rinse with cold water. Allow to air dry overnight on a piece of paper towel. Clean every 2-3 days or sooner if needed.
Appendix 4: PEP Pack
# Category: Healthcare Measurement

## Table of Submissions

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<th>Service Enhancement Project</th>
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<tr>
<td>Community Care</td>
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<tr>
<td>integratedliving Australia (formerly BDNH Group)</td>
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<td>Royal North Shore Hospital, Northern Sydney Local Health District</td>
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<td>Anne MacDonald, Michael Levitt, Karen Murphy, Sandy Sadler</td>
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| Clinical Research Centre, North Metropolitan Health Service Mental Health (NMHS MH) | Flavie Waters, Melissa Ree, Vivian Chiu, Danny Rock, Aleksandar Janca |