Queensland Government

Nursing Research and Practice Development Centre

The Prince Charles Hospital
Australian Catholic University

ACU AUSTRALIAN CATHOLIC UNIVERSITY

ANNUAL RESEARCH REPORT 2020

Nursing Research and Practice Development Centre

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Welcome

Professor Paul Fulbrook

Nursing Director Research and Practice Development

On behalf of The Prince Charles Hospital (TPCH) and Australian Catholic University (ACU) Nursing Research and Practice Development Centre (NRPDC), welcome to our 2020 Annual Research Report.

This report provides information about the NRPDC research activities during 2020. It includes information about our many and varied research projects and research outputs, and acknowledges our affiliated clinicians and research students.

As was the case for many researchers in 2020, our research was severely curtailed due to COVID-19 impacts. Within TPCH, all clinical research was put on hold for several months, and our research assistants were redeployed to clinical practice. In the light of the challenges we all faced in 2020, I am particularly proud to present this year's research report.

The NRPDC nursing research priorities are established annually and are embedded within the NRPDC Strategic Plan 2018-2020, which is agreed jointly between TPCH and ACU. The NRPDC Strategic Plan performance indicators are consistent with key objectives identified in the Metro North Hospital and Health Service Strategic Plan (2016-2020), as well as ACU's Research Indicators.

Pressure injury prevention and management is our main research priority area, and is where most of our research activity is focused. This research priority is aligned with the Australian Council on Healthcare Standards, National Safety and Quality Health Service (NSQHS) Comprehensive Care Standard 5: Comprehensive Care. Despite COVID-19 restrictions, our research endeavour within this priority area continued to be productive in 2020.

The Centre continues to demonstrate significant research activity, including publication output in peer-reviewed journals. Our publication output continues to be excellent, with many colleagues contributing to publications in high quality Q1-ranked journals. Due to COVID-19 restrictions, although we had multiple conference presentations accepted, we were unable to present in 2020.

In 2020, the NRPDC employed one part-time research fellow (joint appointment with ACU), one part-time nurse researcher (joint appointment with Queensland University of Technology) and one full-time-equivalent research assistant (joint appointment with ACU); a role that was shared by two part-time TPCH nurses. This year, Melanie Jüttner, one of our research assistants left to return to practice in wound care. We thank her for her valuable contribution. Amanda Genn has taken over her role and brings valuable expertise in database management.

The NRPDC has also facilitated several visiting researchers from ACU, who have been involved with TPCH staff on a variety of projects. Their collaboration provides support to TPCH staff with potential and ongoing research projects, and strengthens the research training environment within both organisations. This year we welcomed Dr Michael Steele, a biostatistician, to our team of visiting researchers.

Other users of the NRPDC include ACU higher degree research students. Most are nursing staff employed within the hospital, of whom some have graduated in 2020. We also welcomed two new Honours students: Saroeun Ven and Jacob Butterworth; both are undertaking pressure injury research projects. Research students are supported via the NRPDC and have on-site access to their supervisors, office facilities and research equipment.

The continuing hard work of the NRPDC staff, and the collaborations formed with clinician-researchers, have contributed significantly to our ability to conduct clinically relevant research. Although most of our research has been nurse-led, we have developed productive collaborative research partnerships with several other professional disciplines and organisations.

Forewords

Clinical Associate Professor Cherie Franks

Director of Nursing

Nursing Services

The Prince Charles Hospital

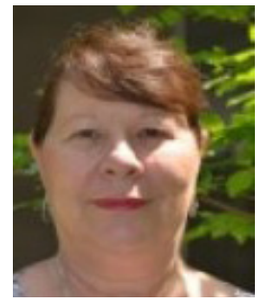
I am pleased to provide a foreword for the 2020 Annual Research Report.

It is always my great pleasure to reflect on the outcomes of the Nursing Research and Practice and Development Centre (NRPDC) and the ongoing collaboration that remains strong between The Prince Charles Hospital (TPCH) and the Australian Catholic University, now into its tenth year.

Despite the challenges of the last twelve months and the pandemic response required, the NRPDC has continued to offer nurses the opportunity to increase and develop their level of knowledge by participating in its mentoring and scholarship programs, enrolling in master's and doctoral research programs and a range of research activities to advance their clinical practice and improve patient outcomes.

I would personally like to acknowledge the hard work and commitment of the NRPDC team led by Professor Paul Fulbrook, and TPCH nursing staff for the achievements that are highlighted within this annual report.

As Director of Nursing for TPCH, I remain passionate and committed to supporting nursing research. So, if you have an interest in further developing your knowledge or undertaking nursing research please contact Prof Paul Fulbrook and the team for some advice.



Professor Karen Nightingale

National Head of School of Nursing, Midwifery and Paramedicine

Australian Catholic University

It gives me great pleasure to provide a foreword to the Annual Report that reflects on our achievements in 2020. The Nursing Research and Practice Development Centre (NRPDC) continues to support nurse education, nursing research and practice development by our nurse-led research team.

Professor Paul Fulbrook, Clinical Chair (jointly funded by the TPCH & ACU), leads the research team which is comprised of nurse leaders from The Prince Charles Hospital (TPCH) and Australian Catholic University (ACU), School of Nursing, Midwifery and Paramedicine within the Faculty of Health Sciences. The NRPDC is also complimented by a number of Honorary TPCH appointments and visiting ACU researchers who contribute to a range of research proposals and projects. In the *Excellence in Research for Australia* assessment, ACU continues to receive the top score above world standard for research in nursing and ACU is also recognised globally as a leader in a range of subject specialisations; it is ranked 7th in Australia and 18th in the world for nursing.

In 2020 COVID-19 significantly disrupted our personal and working lives and I would like to pay tribute to the many frontline nurses and other healthcare workers who have tirelessly worked throughout this pandemic and still continue to do so. Although clinically based research was heavily impacted by COVID-19 and suspended for large periods of time, the team is to be commended for its continued research efforts and publications in Q1-ranked journals, advancing their agenda 'to make an impact by implementing evidence-based practice that contributes to improved clinical outcomes'.

TPCH and ACU's strong collaboration continues to strengthen in growing the research agenda and advancing our commitment to support vital research to provide quality healthcare. I hope you enjoy reading this report as a testimony of our ongoing shared vision and commitment to quality research.

Introduction

About

The NRPDC was founded in 2010, to foster change through research and encourage the implementation of evidence-based practice regarding patient care. Its overall aim is to contribute to improved clinical outcomes. The NRPDC houses a nurse-led research team whose aim is to inspire, support, and undertake quality research within the hospital and university. Its current research priority area, which is established within the NRPDC Strategic Plan 2018-2020 is:

- pressure injury prevention and management.

Aims

- To undertake research and practice development that is aligned with TPCH nursing strategy.
- To undertake research and practice development that impacts on the quality of patient care and improves outcomes.
- To extend nursing research capacity and capability, and enhance the research culture within the hospital and the university.
- To assist clinicians in research activities by providing mentorship and facilitation for research development, data collection, data analysis, and dissemination.
- To provide research ethics and governance guidance.
- To provide information regarding internal and external funding sources, and assist/collaborate with research grant applications.
- To support and co-write research articles for local, national and international conferences and peer reviewed journal publications.
- To assist clinical staff to obtain adequate funds to provide time away from their substantive roles to work on research projects.
- To support nursing staff to undertake higher degree by research (HDR) studies; supervised via the NRPDC.
- To provide HDR students with supervision, a research community, and office space and facilities to work on their research.
- To contribute to ACU's research outcomes.

Governance

The NRPDC is governed by a Steering Committee, which meets to agree on and monitor the strategic direction and outcomes of the centre. In 2020, ts members were:

Adjunct Professor Alanna Geary, Chief Nursing and Midwifery Officer, Metro North Health; Clinical Associate Professor Cherie Franks, Director of Nursing, TPCH; Professor Michelle Campbell, Executive Dean, Faculty of Health Sciences, ACU; Bradley Maunder, Acting Nursing Director, Clinical Effectiveness, TPCH; Professor Karen Nightingale, Head, National School of Nursing, Midwifery and Paramedicine, ACU; Associate Professor Paula Schulz, Head of School (Qld), School of Nursing, Midwifery and Paramedicine, ACU; Professor Paul Fulbrook, Nursing Director, Research and Practice Development, NRPDC, TPCH and Professor of Nursing, School of Nursing, Midwifery and Paramedicine, ACU.

The Prince Charles Hospital

Personnel

Professor Paul Fulbrook RN; PhD, MSc, PGDipEduc, BSc (Hons)

Nursing Director

Paul was appointed as Professor of Nursing at ACU in late 2004. He began collaborating with TPCH in mid-2008. This led to his establishment in a full-time jointly funded role at TPCH in mid-2009, as Nursing Director, Research and Practice Development. He has an active role in the research life of TPCH, and is a founder member of its Research Council, and a member of the Hospital Research Ethics Committee. Paul's clinical and research background is in intensive care nursing. He is well known for his critical care nursing work, has published widely in this field and spoken at many national and international conferences.

Dr Sandra Miles RN, RM, CCYPN; PhD, MN (Child & Adol), BN

Research Fellow

Sandra is a part-time member of the NRPDC who also maintains a teaching and research position as Senior Lecturer in the School of Nursing, Midwifery and Paramedicine at ACU. Sandra specialises in skin integrity research and is the recipient of individual staff research hours allocation from ACU in recognition of this expertise. As a member of the TPCH Tissue Viability Working Group, she collaborates with clinicians to identify suitable research projects and integrate research findings with clinical practice. Sandra also co-supervises NRPDC-based research students and assistants.

Josephine Lovegrove RN; BN (Hons), PhD(c)

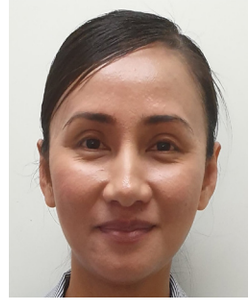
Nurse Researcher

Josie is a part-time joint appointment between TPCH and QUT. She has worked on a variety of projects in the pressure injury research program. She completed research for her Honours degree, investigating nurses' clinical judgement of pressure injury risk assessment and preventative interventions, graduating with first class honours in 2018. She is currently undertaking her PhD, investigating pressure injury prevention in intensive care. She is a receipient of a TPCH Foundation PhD scholarship.

Amanda Genn RN; BN, M Occup Health & Safety

Research Assistant

Amanda is part-time and has worked on a variety of projects in the pressure injury research program. She specialises in database management and data retrieval. Her clinical background is in coronary care at TPCH.



Saroeun Ven RN, BN

Research Assistant

Saroeun is a part-time research assistant. Her clinical background is palliative care nursing. She undertakes research activities such as literature searching, patient recruitment, data collection and data entry. She is currently researching nurses' clinical judgement of pressure injury risk, and is undertaking her BN Honours degree.

Steering Committee

The NRPDC is governed by a Steering Committee, which meets to agree on and monitor the strategic direction and outcomes of the centre. It is comprised of the following members			
Adjunct Associate Professor Alanna Geary	Chief Nursing and Midwifery Officer, Metro North Health	Professor Michelle Campbell	Executive Dean, Faculty of Health Sciences, ACU
Clinical Associate Professor Cherie Franks	Director of Nursing, TPCH	Professor Karen Nightingale	Head, National School of Nursing, Midwifery and Paramedicine, ACU
Bradley Maunder	Acting Nursing Director, Clinical Effectiveness	Associate Professor Paula Schulz	Head of School (Qld), School of Nursing, Midwifery and Paramedicine, ACU
Professor Paul Fulbrook	Nursing Director, Research and Practice Development, NRPDC & Professor of Nursing, ACU		

TPCH and ACU Partnership Representatives

Clinical Associate Professor Cherie Franks RN; BN, Grad Cert Health Stud (Nurs), Dip Manage

Director of Nursing, The Prince Charles Hospital

Cherie holds positions as Clinical Associate Professor, ACU and Adjunct Associate Professor, University of Queensland, with post graduate qualifications at both universities. Since 2015 Cherie has been the Director of Nursing at TPCH, which is a large tertiary hospital of over 600 beds within Metro North Hospital and Health Service. She is responsible and accountable for the provision of effective leadership, high level operational management and clinical expertise. Her passion and commitment is for clinical safety, patient outcomes and leading clinical service delivery in the provision of excellence. Cherie has a strong interest in nursing research and works collaboratively with the Nursing Director Research and Practice Development to integrate research evidence into clinical practice, and to further develop partnerships with consumers, researchers and clinical staff to strengthen nursing research and health care outcomes.

Professor Karen Nightingale RPN, RN; BAppSc, MClinNsg, MEd

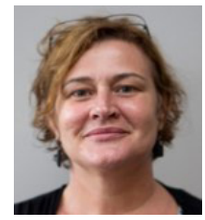
National Head of School of Nursing, Midwifery and Paramedicine, Faculty of Health Sciences, ACU

Karen commenced at ACU in 2010. She came to ACU with over 20 years' experience in higher education. As Head of one of the largest Schools within the University she has oversight of approximately 10,000 undergraduate and postgraduate students across three disciplines and six campuses. Karen is therefore well placed to be abreast of a range of academic and other issues affecting both students and staff. She has experience in teaching international and local students in undergraduate and postgraduate courses and has supervised research students in masters degrees. Karen's specialist expertise is in nursing education, curriculum development, student nurses clinical placements and student teaching and learning. Her clinical background encompasses both mental health and general nursing in both the acute care and community sector. She has worked in four other large Victorian universities in senior leadership roles, including Director of Teaching and Learning and Director of Undergraduate Nursing Programs. Karen is the chair of or a member of a range of School, Faculty and University committees and is a Fellow of the Australian College of Nursing.

Bradley Maunder RN; BN, MHA, Grad Cert Med/Surg

A/Nursing Director, Clinical Effectiveness; Clinical Fellow ACU

Bradley is a senior member of the Nursing Services Team, responsible and accountable for the provision of effective leadership, high level operational management and expertise for the planning, coordination, formulation and direction for the specialist hospital wide services. This includes nursing research, wounds and quality/standards, informatics, and the Quality and Effectiveness Support Team (QuEST). This workforce supports excellence in clinical care and ensures the planning, delivery and evaluation of high quality and cost-effective services that are consistent with the strategic and operational directions of The Prince Charles Hospital, Metro North Hospital & Health Service and policy of the Department of Health. Bradley has worked for Queensland Health for 33 years and has held several senior nursing positions across clinical, educational and management. Over the last 10 years Bradley has collaborated with ACU for clinical school activities and the leadership and post graduate industry partnerships.



Associate Professor Paula Schulz, RN; BA, BSc (Hons), MPsych, DPsych (Health)

Head of School (Qld), School of Nursing, Midwifery & Paramedicine, ACU

Paula has worked in tertiary education for nearly 30 years, and has held a number of academic leadership positions with the School and Faculty at ACU. She completed her PhD in 2007, investigating the efficacy of a modified Theory of Planned Behaviour that included anticipated regret as an additional variable in determining the reproductive intentions of women. Her research interests lie in the areas of positive psychology and resilience, health behaviour change and transition support strategies for students in their first year of University. Paula has been instrumental in establishing the ACU Clinical School at TPCH.

Emergency Department TPCH

Clinical Sciences Building TPCH

Visiting Researchers

Dr Adam Burston, RN; BN, PhD, M Health Serv Manage, Grad Cert (Nurs)

Visiting Research Fellow

Adam is a senior lecturer at ACU. Working with the NRPDC, he is engaged in exploring patients' and carers' experiences of living with a pressure injury. A series of interviews with patients (and their carers) living with a pressure injury will be conducted. A meta-synthesis of current evidence is in progress and the research protocol for this study has been registered (PROSPERO CRD420181076100).

Dr Roger Lord, PhD, BAppSc, Assoc Dip App Sc, ARCPA

Visiting Research Fellow

Roger is a registered clinical biochemist and Associate of the Royal College of Pathologists of Australasia in chemical pathology. He is a university academic and senior lecturer (Medical Sciences), attached to the School of Behavioural and Health Sciences, Australian Catholic University and a Visiting Research Fellow with the NRPDC. Roger has served on advisory committees to the Therapeutic Goods Administration (TGA) and currently holds an appointment as a specialist advisor to the TGA for pharmaceutical expertise in relation to transplantation and infectious diseases. He is currently clinically credentialed by Queensland Health for full scope of practice in clinical biochemistry and immunopathology at TPCH. Roger's principal project at TPCH is a registered double blind clinical trial for the use of 0.2% glyceryl trinitrate for the healing of chronic venous leg ulcers. The trial has industry support provided by Care Pharmaceuticals, 3M Corporation and Radiometer and is expected to extend into further clinical trials using combined therapy approaches for chronic wound management.

Alison Peeler, RN; MPhil, PGCert (Paed), PGCert (Paed Int Care), GradDip (Neonat), PhD(c)

Visiting Research Fellow

Alison regularly visits the NRPDC, and lectures in the School of Nursing, Midwifery and Paramedicine at ACU (Brisbane) the remainder of the time. She has over thirty years' experience as a registered nurse and has worked in many areas including education, research and management. For her Master of Philosophy degree, Alison researched parents' and nurses' experiences of respiratory support of children with respiratory distress syndrome due to acute bronchiolitis. Her PhD is in the area of paediatric emergency care, and she has evaluated the new paediatric emergency department at TPCH.

Dr Michael Steele, PhD, BSc(Hons), BSc

Visiting Research Fellow

Michael is a statistical consultant at NRPDC and lectures biostatistics in the School of Allied Health at ACU (Brisbane). He has over 25 years' experience as an applied statistician and has consulted for many health/medicine projects in Australia, New Zealand and Brunei Darussalam. His areas of research are diverse but include a focus on statistical projects from nursing, allied health and Queensland emergency departments. His PhD investigated the power of goodness-of-fit tests.

Dr Min-Lin (Winnie) Wu, RN; MN (Crit Care), PhD

Visiting Research Fellow

Winnie lectures in the School of Nursing and Midwifery at Griffith University (Nathan Campus). She is a registered nurse and has worked in a variety of clinical settings including intensive care, burns, medical, peri-operative care, and community. Also, she has been working in tertiary education and research since completing her PhD in 2012. Her research focuses on the areas of promoting chronic disease management, healthy ageing, and health care service in preventing hospital readmission in older adults. She is collaborating with NRPDC to investigate re-presentations to the emergency department.

Associate Researchers

Bridie McCann, RN; BN, M Health Admin

Nurse researcher: emergency care

Bridie is a registered nurse currently working at Caboolture Hospital. She recently completed a research thesis for a Master of Health Administration under the supervision of Professor Paul Fulbrook and Dr Sandra Miles. Her research was focused on patients presenting to the emergency department following a fall. The aim of the study was to test the use of a rapid screening tool to assess patients for early referral and discharge.

Vainess Mbuzi, RN; PhD, BN, MN (Primary Health Care), MN Adv Prac (Health Prof Educ), Grad Dip (Intens Care Nurs)

Nurse researcher: intensive care

Vainess is a Clinical Nurse working in the Adult Intensive Care Service at TPCH. She has over 30 years of experience as a registered nurse and has worked in a variety of areas, including education and management, overseas and in Australia. Vainess worked part-time as a research nurse with the NRPDC, whilst completing her PhD. Under the supervision of Professor Paul Fulbrook and Dr Sandra Miles, she investigated Indigenous peoples' experiences of acute cardiac care. She was also a recipient of a TPCH Foundation PhD Scholarship. Recently, she has been collaborating on systematic reviews.

Damian Williams, RN; MNP, BNSc, Grad Cert Clin Nurs, Cert IV WPAT N

Nurse researcher: wound care

Damian has been directly involved in delivering advanced wound management services for over 20 years. His current position is a Nurse Practitioner Wound and Stoma within Community and Oral Health and Clinical Nurse Consultant for Wound Management at TPCH. He is actively involved in gaining knowledge and promoting best practice wound management. He holds post graduate qualifications in wound management and has a Master of Nurse Practitioner degree. He conducts regular wound management education and has presented at conferences at a state, national and international level. Damian has held committee positions on both the Australian Wound Management Association (now Wounds Australia) National Committee and Queensland Committee, and is a past President of the Queensland Committee and a current committee member. Damian is collaborating on several research projects with the NRPDC. He received a TPCH Foundation Novice Researcher grant for his first project, which is comparing two different dressings for use with skin tears.

Post Graduate Research Students

2020 Post Graduate Research Students			
Research Student	**Degree**	**Supervisors**	**Thesis title**
[β]Vainess Mbuzi (graduate)	Doctor of Philosophy	[α]Prof Paul Fulbrook [α]Dr Sandra Miles Dr Melanie Jessup	Indigenous people's experiences of hospitalisation for acute care
[α]Alison Peeler (current)	Doctor of Philosophy	[α]Prof Paul Fulbrook [α]Dr Sandra Miles [β]Dr Frances Kinnear Prof Karen-Leigh Edward	Evaluation of a paediatric emergency department
[α]Josephine Lovegrove (current)	Doctor of Philosophy	[α]Prof Paul Fulbrook [α]Dr Sandra Miles [α]Dr Michael Steele Angel Cobos Vargas	Pressure injury risk assessment and prevention in intensive care
Bridie McCann (graduate)	Master of Health Administration	[α]Prof Paul Fulbrook [α]Dr Sandra Miles	Screening for falls in the emergency department
Annie Wang (current)	Honours	[α]Prof Paul Fulbrook [α]Dr Sandra Miles [α]Josephine Lovegrove	Reliability of pressure injury stage assessment
[α]Saroeun Ven (current)	Honours	[α]Prof Paul Fulbrook [α]Dr Sandra Miles [α]Josephine Lovegrove	Pressure injury risk assessment: clinical judgement versus use of a structured tool
[β]Jacob Butterworth (current)	Honours	[α]Prof Paul Fulbrook [α]Dr Sandra Miles [α]J osephine Lovegrove	Incidence of mucous membrane pressure injury

Graduation (left to right): Bridie McCann, Dr Sandra Miles, Dr Vainess Mbuzi, Professor Paul Fulbrook

[α]NRPDC [β]TPCH

Research Projects

PRESSURE INJURY PREVENTION AND WOUND MANAGEMENT

NSQHS Standard 5: Comprehensive Care

The prescription and implementation of pressure injury preventative interventions following a risk assessment: an exploratory, descriptive study

[α]Josephine Lovegrove, [α]Sandra Miles, [α]Paul Fulbrook

The aim of this study was to explore the relationship between pressure injury preventative intervention prescription and implementation, following a risk assessment. An exploratory, descriptive research design was used. Data were collected from observations of the included patients' bedsides and extracted from their charts and electronic records using a standardised data collection form. Of the final sample (n = 187), 66.8% of cases were categorised as being 'at risk' or above. As the risk category of patients increased, proportionately more patients in each category were prescribed each intervention. However, in most cases, significantly fewer interventions were actually implemented than were prescribed; except for several interventions which were implemented in more cases than were prescribed. There were 14 cases, including four 'at risk' and three 'high risk' patients, in which no preventative interventions were prescribed; while 88.7% of 'not at risk' patients had (unnecessary) preventative interventions prescribed.

DISSEMINATION: a Q1 article has been published.

FUNDING: in-kind.

Implementation and evaluation of multi-layered pressure injury prevention strategies in an Australian ICU

Fiona Coyer (QUT), Jane-Louise Cook (QUT), Anna Doubrovsky (QUT), Jill Campbell (QUT), Amanda Vann (RBWH), Greg McNamara (RBWH), Karen-Leigh Edward (Swinburne University of Technology), Gunter Hartel (QMIR), [α]Paul Fulbrook

The objectives of this before and after study, which was led by the Royal Brisbane and Women's Hospital/ QUT, were to implement targeted evidence-based pressure injury prevention strategies and evaluate their effect through measurement of patient pressure injury occurrences. Weekly observations of critically ill patients' skin integrity were conducted by research nurses over a 1 year period. During this time, 15.4% (97/631) of patients developed a prrssure injury with the majority of these injuries (71/97) caused by devices. After adjustment for covariates known to influence hospital-acquired pressure injury development, pressure injury rates for the post-intervention period compared to the pre-intervention period had an odds ratio of 0.44 (95% CI 0.20-0.97). It was found that the use of defined pressure injury prevention strategies targeted at both staff and patients, reduced pressure injury prevalence.

DISSEMINATION: a Q1 publication article is in press.

FUNDING: in-kind.

International consensus on pressure injury preventative interventions by risk level for critically ill patients: a modified Delphi study

[α]Josephine Lovegrove, [α]Paul Fulbrook, [α]Sandra Miles

The aim of this study was to determine a minimum pressure injury preventative intervention set for implementation relative to critically ill patients' risk level. Preventative interventions were identified via systematic review, risk levels categorised by an intensive care specific risk assessment scale (COMHON Index). 67 international panel members were identified. Three rounds were undertaken. Consensus indicated all patients should receive: risk assessment within 2-hours of admission; 8-hourly risk reassessment; and use of disposable incontinence pads. Additionally, moderate- and high-risk patients should receive a reactive mattress support surface and a heel off-loading device. High-risk patients should also receive: nutritional supplements if eating orally; preventative dressings (sacral, heel, trochanteric); an active mattress support surface; and a pressure-redistributing cushion for sitting. Repositioning is required at least 4-hourly for low-risk, and 2-hourly for moderate- and high-risk patients.

DISSEMINATION: A Q1 article was published in 2020.

FUNDING: Part-funded by The Prince Charles Hospital Foundation, PhD scholarship $82,788.

Association between emergency department length of stay and hospital-acquired pressure injuries: a retrospective matched case control study

[α]Paul Fulbrook, [α]Sandra Miles, [α]Josephine Lovegrove, [β]Frances Kinnear

This study investigates the relationship between emergency department (ED) length of stay and the development of pressure injury in patients admitted to hospital from ED. The medical records of all patients admitted to hospital in 2017 via the ED, that subsequently

[α]NRPDC [β]TPCH

developed a pressure injury within the first 48 hours of their hospital stay (cases), will be examined. These cases will then be matched with patients who were also admitted to hospital via the ED during 2017 but did not develop a pressure injury within the first 48 hours of their admission (controls). The medical records of both cases and controls will be compared to identify factors associated with pressure injury development. The 2017 cases and controls will also be compared to similar data collected in 2012. Data collection is in progress.

FUNDING: in-kind.

Prevalence and incidence of pressure injury in cardiac intensive care: a systematic review

[α]Paul Fulbrook, [α]Sandra Miles, [β]Vainess Mbuzi

Intensive care patients are at high risk of pressure injury development. The aim of this systematic review is to investigate the prevalence of pressure injuries in adult cardiac patients admitted to intensive care. Fifteen studies met the criteria for inclusion in the systematic review, of which 14 were incidence studies. The 95% confidence interval of cumulative incidence across all 14 studies, with an overall sample size of 6371, was 9.8–25.6%. In 11 studies that included all-stage pressure injury the 95% confidence interval was 8.3– 28.3%. In seven studies in which Stage 1 pressure injury was excluded, the 95% confidence interval was 5.8–22.7%. In the single prevalence study included, which excluded Stage 1 pressure injury, prevalence was 8.8%. It was concluded that the incidence of pressure injury in cardiac intensive care patients was similar to that found in general intensive care patients. However, our results suggest that the incidence may be significantly higher in cardiac surgical patients admitted to intensive care.

DISSEMINATION: the systematic review protocol was registered with PROSPERO International. A Q1 publication is under review.

FUNDING: in-kind.

Systematic review and meta-analysis of the effectiveness of pressure injury preventative interventions for acute hospitalised patients

[α]Josephine Lovegrove, [α]Paul Fulbrook, [α]Sandra Miles, [α]Michael Steele

The overall aim of this study was to identify and assess which interventions (single or bundled) are effective in preventing PI in adult inpatients admitted to acute hospital settings. A systematic review protocol was developed and registered with PROSPERO International. Randomised controlled trials which trialled the effectiveness of pressure injury preventative interventions on a primary outcome measure of pressure injury incidence within adult inpatients in acute hospital settings were included in this review. Of 2000 records, 45 studies were included in the systematic review which investigated nine different intervention types. Several meta-analyses were undertaken, pooled by intervention type. Based on intention-to-treat data, only one intervention demonstrated a statistically significant effect: Following meta-analyses using intention-to-treat data, only one intervention was found to demonstrate a statistically significant effect in reducing pressure injury in adults admitted to acute hospital settings: Australian medical sheepskin surfaces compared to other standard care surfaces (risk ratio 0.42, $p = 0.006$, $I^2 = 36\%$). Following per protocol meta-analyses, only two intervention types demonstrated a significant effect: support surfaces (active versus other comparison [risk ratio=0.54, $p = 0.005$, $I^2 = 43\%$] and standard surfaces [risk ratio = 0.31, $p < 0.001$, $I^2 = 0\%$]; and reactive versus other comparison surfaces [risk ratio = 0.53, $p = 0.03$, $I^2 = 64\%$]) and heel protection devices versus standard care (risk ratio = 0.38, $p < 0.001$, $I^2 = 36\%$).

DISSEMINATION: the systematic review protocol was registered with PROSPERO International; a Q1 publication is under review.

FUNDING: Part-funded by The Prince Charles Hospital Foundation, PhD scholarship, $82,788.

Assessment of pressure injury risk using clinical judgement versus use of a standardised pressure injury risk assessment tool: a systematic review

[α]Saroeun Ven, [α]Josephine Lovegrove, [α]Sandra Miles, [α]Paul Fulbrook

Some studies have suggested that clinical judgement may be as effective as a structured tool to assess risk of pressure injury. The aim of this systematic review is to systematically analyse available evidence. Data collection has been completed and analysis is in progress.

DISSEMINATION: the systematic review protocol was registered with PROSPERO International.

FUNDING: in-kind.

Pilot study: evaluation of a silicone gel adhesive hydrocellular foam dressings for the prevention of sacral pressure injuries in hospitalised elderly patients

[α]Josephine Lovegrove, [α]Paul Fulbrook , [β]Damian Williams, [α]Sandra Miles

The aim of this pilot randomised controlled trial was to inform a future trial to compare the effectiveness of a prophylactic sacral dressing plus standard care to standard care only to reduce sacral PI in at-risk older adults admitted to hospital. Patients aged ≥ 65 years and at-risk of pressure injury were recruited and randomly allocated 1:1 to the intervention (prophylactic dressing plus standard care) or control group (standard care only). Ward and research staff collected data and assessed skin integrity daily. Retrospective chart reviews were undertaken to verify data. 130 participants were randomised (intervention n = 66; control n = 64). Protocol violations were noted in 48 participants (intervention n = 33; control n = 15). Two intervention (3.0%) and one (1.6%) control participant developed a sacral pressure injury. The difference was not statistically significant. Only one PI was recorded prospectively, while two PI were identified via chart review. Participants rated dressing comfort highly, particularly

during the first two weeks, and nurses rated utility highly. A sample size of 1799 per arm would be required in a definitive trial. A definitive trial is feasible and warranted, but for such a large sample size to be achieved in a reasonable timeframe, multiple sites would be required.

DISSEMINATION: the protocol has been registered with the Australian and New Zealand Trials Registry; a Q1 publication is under preparation.

FUNDING: Smith and Nephew, $12,141.

Systematic review and meta-analysis of the effectiveness of pressure injury preventative interventions for intensive care patients

[α]Josephine Lovegrove, [α]Paul Fulbrook, [α]Sandra Miles, [α]Michael Steele

The overall aim of this study is to identify and assess which interventions (single or bundled) are effective in preventing PI in adult inpatients admitted to intensive care settings. A systematic review protocol was developed and registered with PROSPERO International. Randomised controlled trials which trialled the effectiveness of pressure injury preventative interventions on a primary outcome measure of pressure injury incidence within intensive care settings were included in this review. Overall, 26 trials were included. Ten intervention types were found. Support surface trials were limited within type (active, reactive, seating, other). Meta-analysis was undertaken for reactive surfaces only, but the intervention effect was insignificant (risk ratio 0.24, $p = 0.12$, $I^2 = 51\%$). Meta-analyses demonstrated the effectiveness of sacral (risk ratio 0.22, $p < 0.001$, $I^2 = 0\%$) and heel (risk ratio 0.31, $p = 0.02$; $I^2 = 0\%$) prophylactic dressings for pressure injury prevention. Conclusions: Only prophylactic sacral and heel dressings demonstrated effectiveness in preventing pressure injury in adults admitted to intensive care settings.

DISSEMINATION: the systematic review protocol was registered with PROSPERO International; Q1 publication under review.

FUNDING: Part-funded by The Prince Charles Hospital Foundation, PhD scholarship, $82,788.

Validity of pressure injury staging/categorisation by hospital staff: a retrospective quality audit

Annie Wang, [α]Sandra Miles, [α]Paul Fulbrook

The aim of this study is to determine the accuracy of pressure injury staging and reporting made by nursing staff. The sample was drawn from all pressure injury incident reports made during 2016 and 2019 via Riskman that were subsequently re-assessed by experts from the hospital's Qualiity and Effectiveness Support Team (QuEST). The database was analysed to determine the accuracy of reported pressure injury staging. Both hospital-acquired pressure injury and pre-existing pressure injury present on admission were analysed and examined. Furthermore, the demographics and characteristics of the patients who developed a pressure injury during this time were explored and described. Results will be used to determine areas of improvement and effectiveness of interventions such as, education and staff awareness campaigns. Data collection has been completed and analysis is in progress.

FUNDING: in-kind.

Computer Vision for Health (CV4H)

Olivier Salvado (CSIRO), Lars Petersson (CSIRO), David Ahmedt (CSIRO), Jon Whittle (CSIRO), Clinton Fookes (QUT), [α]Paul Fulbrook, [α]Sandra Miles, [α]Josephine Lovegrove, Vladimir Yuzhakov (PosiSense), Paul Maruff (University of Melbourne), Silvia Pfeiffer (Coviu)

This is a major study, led by CSIRO, containing a major pressure injury project led by NRPDC researchers. Accurate patient position data is essential for the prevention of pressure injuries. Until now, there have been no system available that could provide such data. As a result, most previous research had been based on data from subjective surveys and manual observations, prone to human errors and biases. Since February 2020, PosiSense and TPCH have been conducting a joint research project. The objective of the project is to determine technical feasibility of PosiSense sensors in gathering patient images in hospital setting for the purpose of further determining the patient position when bed-ridden. As of December 2020, 1500 hours of patient data have been collected successfully. Preliminary results confirmed the technical and operational feasibility of PosiSense sensors in gathering, processing, and automatic extraction of patient data in hospital setting. The availability of objective real-time patient position data now enables a new stage of the research program: developing a new repositioning standard. Currently, there is no evidence-based standard regulating the reposition frequency for pressure injury prevention. The optimal reposition frequency required to prevent pressure injuries may vary depending on patient's individual characteristics, including age, skin frailty, BMI, cognitive impairment, etc. The objective of this observational study is to develop a statistical model prescribing an optimal repositioning schedule/frequency depending on patient's individual characteristics and medical history.

FUNDING: a national competitive grant (Category 1) is currently under review.

Prevalence and incidence of mucosal pressure injury in hospitalised adults: a systematic review

[α]Paul Fulbrook, [α]Sandra Miles, [α]Josephine Lovegrove, Ban Isaqi

The aim of this systematic review was to identify and evaluate primary research studies which reported the prevalence or incidence of mucosal pressure injuries (MMPI). Searches were conducted between 2008 and 2019. Twenty-one studies met inclusion criteria; most provided incidence data. No studies were found that specifically reported MMPI incidence or prevalence. It was possible to calculate incidence or prevalence from four studies; all were in intensive care settings. MMPI incidence of 0.8% and 30.4%, and prevalence of 1.7% and 3.7% were found. One study provided data that enabled calculation of prevalence of 0.1% in a non-intensive care sample. Only one other study provided specific data about MMPI. It is concluded that there is insufficient evidence available to enable estimation

of MMPI incidence or prevalence in either acute hospital or intensive care settings.

DISSEMINATION: the protocol has been registered with PROSPERO International; a Q1 publication is under review.

FUNDING: in-kind.

Assessment of pressure injury risk and intervention: nurses' clinical judgement with and without use of a standardised pressure injury risk assessment tool

[α]Sandra Miles, [α]Josephine Lovegrove, [α]Paul Fulbrook, [α]Saroeun Ven

Many people admitted to hospital are at risk of developing a pressure injury. Currently, TPCH nurses use a standardised tool to assess risk, which can be relatively time-consuming to complete. Also, some studies have suggested that clinical judgement may be as effective. The aim of this study is to compare nurses' use of a structured risk assessment tool versus clinical judgement to determine which results in the most effective planned interventions to prevent pressure injury. Data collection is in progress.

FUNDING: The Prince Charles Hospital Foundation, $9,796; ACU Faculty Grant, $7,431.

A descriptive, exploratory study of mucosal pressure injury incidence and characteristics: a retrospective quality audit

[β]Jacob Butterworth, [α]Paul Fulbrook, [α]Sandra Miles, [α]Amanda Genn, Saveen Oghana

The aim of this project is to describe the reported 5-year incidence and characteristics of mucosal pressure injury at TPCH between 2015 and 2019. An existing database of clinical incident reports of mucosal pressury injuries is being analysed. Medical charts are also being examined to collect further data on the mucosal pressure injury characteristics. The demographics and characteristics of the patients who developed a mucosal pressure injury during this time will be described. Furthermore, point prevalence of mucosal pressure injury between 2015 and 2019 will be determined from already published Queensland Bedside Audit reports, for comparison and benchmarking purposes. Data collection has been completed and analysis is in progress. During the 5-year period, 374 mucosal pressure injuries were reported.

FUNDING: The Prince Charles Hospital Foundation, $9,811.

A meta-synthesis of the experience of living with a pressure injury: the perspectives of the patient and carers

[α]Adam Burston, [α]Sandra Miles, [α]Paul Fulbrook

This meta-synthesis aims to explore the experiences of both patient and carer when encountering a pressure injury; from their perspectives. Pressure injuries are known to generate a range of psychological, social and economic effects for patients and their carers, although qualitative research exploring these experiences is limited. The findings will enable a comprehensive understanding of the extent of the current research exploring experiences of pressure injuries from the point of view of the patient and their carer, and consolidated insights into the effects of this experience. Data synthesis is in progress.

DISSEMINATION: the protocol has been registered with PROSPERO International.

FUNDING: in-kind.

Application of 0.2% glyceryl trinitrate ointment for the healing of chronic venous leg ulcers

[α]Roger Lord , [β]Damian Williams, [α]Sandra Miles, [α]Paul Fulbrook, [β]Ewan Kinnear, [β]Jeffrey Rowland

A small study by Roger Lord showed that glyceryl trinitrate, increased production of nitric oxide in venous leg ulcers. This resulted in vasodilation and immune system activation at the wound site, helping to clear bacterial load and promote wound closure. This new study will recruit a larger sample to reach statistical significance. Consenting patients with venous leg ulceration, confirmed with the use of transdermal oxygen sensors, will be randomly allocated to a control (usual treatment) or experiment (application of 0.2% glycerol trinitrate) group. Data collection has commenced, with the recent addition of a community site. Planimetry is being used for baseline measurements of ulcer size and to ascertain healing rates at weekly visits over four to six weeks, to monitor whether treatment is having an effect.

FUNDING: ACU, Faculty of Health Sciences, $10,000; Wounds Australia, $5,000.

An investigational, observational study of the use of thermal imaging to determine patient body position within an acute hospital setting

[α]Paul Fulbrook, [α]Sandra Miles, [β]Tracy Nowicki, [α]Josephine Lovegrove, Vladimir Yuzhakov, Nicholas Nguyen, Weller Zheng

The study aim is to identify and analyse patient body positioning and repositioning when lying in a hospital bed. The information gained from this study may help to design new pressure injury prevention strategies to be used in the hospital and long-term care settings. The technology is based on an innovative neural network object recognition that is able to automatically recognise body position with a very high degree of accuracy, and is not effected by lighting conditions. Data collection has been completed and analysis is in progress.

FUNDING: In-kind.

Categorisation of characteristics and severity of mucosal pressure injuries: a modified Delphi study

[α]Sandra Miles, [α]Paul Fulbrook

This study will assemble a consensus panel of wound care experts. In the first phase, experts will be asked to review previously collected de-identified photographs and descriptions of mucosal pressure injuries in order to assess their severity and derive agreed key descriptors for

[α]NRPDC [β]TPCH

each wound. In the second phase, a Delphi technique will be used to seek expert consensus on categorisation of the wounds according to their severity, with the aim to develop hierarchical wound grading criteria for mucosal pressure injuries. The wound grading criteria will subsequently be tested for reliability and validity, in the form of a wound assessment tool. Ethical approval has been received and the study will commence soon.

FUNDING: in-kind.

Adhesive silicone foam dressing versus meshed silicone interface dressing for the management of skin tears: a comparison of healing rates, and patients' and nurses' satisfaction

[β] Damian Williams, [α] Paul Fulbrook, [α] Sandra Miles, [α] Josephine Lovegrove

Point prevalence audits within TPCH between 2009 and 2011 have yielded skin tear prevalence results between 5.4% and 12.6% and 95% of skin tears were on patients over the age of 65. The main goal of this study is to compare two standard dressings in terms of their skin tear healing times. Secondary goals are to assess nurses' satisfaction with the dressings (fit for purpose) and patients' satisfaction (comfort et cetera). This will also enable a cost-benefit comparison to be made. Data collection is in progress.

FUNDING: The Prince Charles Hospital Foundation, $9,938.

Pressure injury prevention in ICU: a national survey

Fiona Coyer (QUT), Annabel Levido (RBWH), [α] Paul Fulbrook, Sharon Latimer (Griffith University), Rachel Walker (PAH), Jill Campbell (RBWH), Michelle Barakat-Johnson (University of Sydney)

The aim of this study is to examine and describe the nature and extent of pressure injury prevention practices in Australian public adult intensive care units. The study employed a cross sectional survey design, using structured telephone interviews. The sample included all adult or combined adult/paediatric ICU in public healthcare facilities within Australia. Data collection has been completed and analysis is in progress.

FUNDING: in kind.

Development and validation of the COMHON Index pressure injury risk assessment tool: Chinese version

[α] Josephine Lovegrove, [α] Paul Fulbrook, [α] Sandra Miles, [α] Michael Steele, Angel Cobos Vargas (San Cecilio University Hospital), Lin Zhang (10th People's University of Tongji University), Xian-Lang (Daniel) Liu (Charles Darwin University)

Pressure injuries are mostly avoidable with the use of preventative measures. Pressure injury prevention begins with a risk assessment, which is then used to guide the selection and implementation of preventative interventions; thus, risk assessment underpins the prevention process. However there are few scales which are specific to intensive care. Consequently, these scales do not account for pressure injury risk factors specifically associated with critical illness and intensive care admission. The COMHON Index is one risk assessment scale which was developed specifically for intensive care, and it has been matched with a set of preventative interventions for use at the risk levels identified by the scale. However, prior to this study, the COMHON Index had not yet been formally translated into Chinese, nor had it been tested in this setting. This study has formally translated the COMHON Index into Chinese Mandarin and will test the reliability of the translated scale within a Chinese intensive care setting. Ethical approval has been received in China and Australia, and the reliability study will commence soon. Future research will test the effectiveness of the COMHON Index, matched with the set of preventative interventions for different risk levels, on the occurrence of pressure injury in international intensive care units, including Chinese intensive care units.

FUNDING: in-kind.

FALLS PREVENTION AND MANAGEMENT

NSQHS Standard 5: Comprehensive Care

Fast screening of patients that present to the emergency department following a fall: a feasibility and prevalence study

[α] Paul Fulbrook, [α] Sandra Miles, [β] Frances Kinnear, Bridie McCann, [α] Michael Steele

The overall aim of this project is to demonstrate the feasibility and effectiveness of streamlining the processes of assessment and early management of emergency department (ED) presentations of fallers utilising an integrated ED Falls Pathway. In this phase of the project a falls screening tool was tested and falls prevalence was estimated. Data collection and analysis has been completed.

DISSEMINATION: a research article is under preparation for publication.

FUNDING: The Prince Charles Hospital Foundation, $9,762.

Fast screening and assessment in the emergency department: a clinical innovation to prevent falls in older people

[α] Paul Fulbrook, [α] Sandra Miles

The aim of this project is to implement and evaluate an interdisciplinary program within the emergency department (ED) to identify, screen and treat people that have fallen: the Emergency Department Falls Pathway (ED-FP). As a result of an initial nurse-led screening process, fallers will be referred to relevant health professionals and within a short space of time will receive an expedited clinical review whilst within ED that is focused on their recurrent falls risk. As well as providing immediate treatment focused on the fall, this will enable a falls prevention plan to be initiated within the ED for patients that can be safely discharged home, with referral for appropriate community support. Data collection is on hold due to COVID-19 restrictions but will commence soon.

FUNDING: The Prince Charles Hospital Foundation, $48,950.

Publications and Awards

Publications 2020

[α] Lovegrove J, [α] Fulbrook P, [α] Miles S (2020 online ahead of print). Authors' response to comment on: International consensus on pressure injury preventative interventions by risk level for critically ill patients: a modified Delphi study. International Wound Journal. 17(5), 1112-1127. https://doi.org/10.1111/iwj.13519. [Open access].

[α] Lovegrove J, [α] Fulbrook P, [α] Miles S (2020). Relationship between prescription and documentation of pressure injury prevention interventions and their implementation: implications for evidence-based practice. Worldviews on Evidence-Based Nursing 17(6):465-475. https://doi.org/10.1111/wvn.12473.

Williams G, [α] Fulbrook P, Kleinpell R, Alberto L (2020). The fifth international survey of critical care nursing organizations: implications for policy. Journal of Nursing Scholarship 52(6), 652-660. https://doi.org/10.1111/jnu.12599. [Open access].

[α] Lovegrove J, [α] Fulbrook P, [α] Miles S (2020). International consensus on pressure injury preventative interventions by risk level for critically ill patients: a modified Delphi study. International Wound Journal 17(5), 1112-1127. https://doi.org/10.1111/iwj.13461. [Open access].

Publications under review

Coyer F, Cook J-L, Doubrovsky A, Campbell J, Vann A, McNamara G, Edward K-L, Hartel G, [α] Fulbrook P (under review). Implementation and evaluation of multi-layered pressure injury prevention strategies in an Australian ICU setting.

[α] Fulbrook P, [α] Lovegrove J, [α] Miles S, Isaqi B. Systematic review: incidence and prevalence of mucous membrane pressure injury in adults admitted to acute hospital settings.

[α] Lovegrove J, [α] Fulbrook P, [α] Miles S, [α] Steele M. Effectiveness of interventions to prevent pressure injury in adults admitted to intensive care settings: a systematic review and meta-analysis of randomised controlled trials.

[α] Lovegrove J, [α] Fulbrook P, [α] Miles S, [α]Steele M. Effectiveness of interventions to prevent pressure injury in adults admitted to acute hospital settings: a systematic review and meta-analysis of randomised controlled trials.

[α] Lovegrove J, [α] Fulbrook P, [α] Miles S. Use of a sacral foam dressing to prevent pressure injury in at-risk sub-acute hospitalised older adults: a pilot randomised controlled trial.

Published protocols 2020

[α] Fulbrook P, [α] Miles S, [α] Lovegrove J (2020). Incidence and prevalence of mucosal pressure injury in adults admitted to acute hospital settings: A systematic review. PROSPERO 2020 CRD42020214127. Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020214127.

Awards 2020

Metro North Hospital and Health Service Research Excellence Awards: Professor Joan Webster Nursing and Midwifery Award: Professor Paul Fulbrook:

Metro North Hospital and Health Service Research Excellence Awards: Clinical Research Award. Highly Commended: TPCH Skin Integrity Program.

Research Ethics Approvals

LNR/2020/QRBW/64401

Care processes in Australian intensive care units for pressure injury prevention: a national cross-sectional survey.

SHSY-IEC-4.1/20-258/01

Inter-rater reliability and concurrent validity of a pressure injury risk assessment scale (the COMHON Index) in a Chinese intensive care setting.

[α] NRPDC [β] TPCH

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The Prince Charles Hospital

Contact: Paul Fulbrook
paul.fulbrook@acu.edu.au
Tel: 07 3139 4087
Level 5, Clinical Sciences Building
The Prince Charles Hospital, Rode Road,
Chermside, Queensland 4032, Australia

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