



Nursing Research and Practice Development Centre

The Prince Charles Hospital
Australian Catholic University



ANNUAL RESEARCH REPORT 2019

**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 2019 Annual Research Report.

This report provides information about the NRPDC research activities during 2019. It includes information about our many and varied research projects and research outputs, and acknowledges our affiliated clinicians and research students.

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. Research within this priority area has been especially productive in 2019. 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. In 2019, the NRPDC research activity made a substantial contribution to the hospital's ACHS accreditation event, and the award of 'Met with Merit' for the Comprehensive Care standard.

The Centre continues to demonstrate significant research activity, including publication output in peer-reviewed journals, successful research grant income, and national and international conference presentations. In particular, our publication output continues to be excellent, with many colleagues contributing to peer-reviewed publications in high quality Q1-ranked journals.

In 2019, the NRPDC employed one part-time research fellow (joint appointment with ACU), one part-time research nurse (joint appointment with QUT) and one full-time-equivalent research assistant (joint appointment with ACU; a role that was shared by two part-time TPCH nurses). 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.

Other users of the NRPDC include ACU higher degree research students, of whom most are nursing staff employed within the hospital. Several higher degree research students have graduated in 2019. The 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 2019 Annual Research Report.

The Nursing Research and Practice and Development Centre (NRPDC) continues to deliver nursing research outcomes, and the collaboration between The Prince Charles Hospital (TPCH) and the Australian Catholic University remains strong into its ninth year.

The NRPDC continues 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. It is always exciting to see nursing staff complete these higher education research programs.

Once again, 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 am very 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 Michelle
Campbell**
**Executive Dean
Faculty of Health Sciences
Australian Catholic
University**

It gives me great pleasure to provide a foreword to the Annual Report that reflects on our achievements in 2019.

The Nursing Research and Practice Development Centre continues to support nurse education, nursing research and practice development by our nurse-led research team, comprising 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. This team continues to make an impact by implementing evidence-based practice that contributes to improved clinical outcomes, with several of our honours and higher degree research students undertaking a variety of projects in our research priority area of pressure injury prevention.

Our strong collaboration continues to strengthen our growing research agenda and advance ACU's commitment to supporting vital research. We have several staff who continue to benefit from our partnership through honorary appointments as visiting researchers within the Centre. In the Excellence in Research for Australia (ERA) assessment, we continue 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 32nd in the world for nursing.

The Faculty of Health Sciences at ACU vision is to prepare highly skilled graduates to provide quality healthcare for vulnerable communities, and I hope you enjoy reading this report as a testimony of our 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. Its members are:

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; **Clinical Associate Professor Megan Lowe**, Nursing Director, Education & Workforce, TPCH; **Associate Professor Paula Schulz**, Head of School (Qld), School of Nursing, Midwifery and Paramedicine, ACU; **Professor Paul Fullbrook**, 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 a 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 in the School of Nursing, Midwifery and Paramedicine at ACU. She completed her PhD in 2018 and is the recipient of Early Career Researcher support from ACU. Sandra is a credentialed children and young people's nurse who now specialises in skin integrity research. She is a member of the TPCH Tissue Viability Committee, collaborating with clinicians to identify suitable research projects and integrate research findings with clinical practice. Sandra mentors visiting researchers and co-supervises research students and assistants at the NRPDC.



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

Nurse Researcher

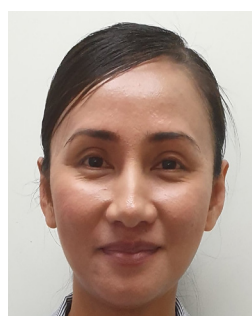
Josie is a part-time joint appointment between TPCH and QUT. She has worked on a variety of projects in the pressure injury research program. She completed research for her Honours degree, investigating nurses' clinical judgement of pressure injury risk assessment and preventative interventions, graduating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



Melanie Jüttner RN; BN, Grad Cert Stoma Therapy/Wound Manage

Research Assistant

Mel is part-time and has worked on a variety of projects, mainly in the pressure injury research program. She also undertakes ongoing contracts for the Wound and Stoma Service at TPCH and works within the TPCH casual nursing pool.



Saroeun Ven RN, BN

Research Assistant

Saroeun has recently joined the NRPDC as 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	Executive Director of Nursing, Metro North Hospital and Health Services	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
Clinical Associate Professor Megan Lowe	Nursing Director, Education & Workforce, TPCH	Associate Professor Paula Schulz	Head of School (Qld), School of Nursing, Midwifery and Paramedicine, ACU
Bradley Maunder	Acting Nursing Director, Clinical Effectiveness	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 Manag

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. Having worked in four other large Victorian universities in senior leadership roles including Director of Teaching & 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 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, DPpsych (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.



Megan Lowe, RN; BHSc, DipASc (Nursing Education), MA Admin Leadership

Nursing Director, Education and Workforce, TPCH; Clinical Associate Professor, ACU

In her current role, Megan is a senior member of the Nursing Services Team, responsible and accountable for the provision of effective leadership, high level operational management and educational expertise for the planning, coordination, formulation and direction of policies relating to the provision of nursing education, staff development and nursing workforce that 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 TPCH and Metro North Hospital & Health Service and policy of the Department of Health. Megan has worked for Queensland Health for over 33 years and has held a number of senior nursing positions across clinical, educational and workforce fields. She has provided leadership and support to a range of activities associated with visioning and bringing to life an interactive partnership with ACU in the development of the Clinical School.



Emergency Department TPCH

Visiting Researchers



Dr Adam Burston, RN; BN, PhD, MHealthServMgmt, GradCert (Nurs)

Visiting Research Fellow

Adam is a 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, AssocDipAppSc, 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 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 is evaluating the new paediatric emergency department at TPCH.



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

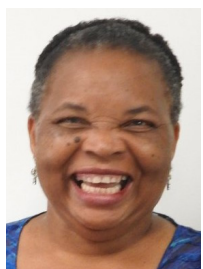
Bridie McCann, RN; BN, Grad Cert (Health Admin)



Nurse researcher: emergency care

Bridie is a registered nurse working as a Transformation Business Partner for Metro North Hospital and Health Service supporting the implementation of strategies to improve workforce culture and business efficiencies. She is a student with ACU completing a research thesis for a Master of Health

Administration. Her research is focused on patients presenting to the emergency department following a fall. The aim of the study is to test the use of a rapid screening tool to assess patients for early referral and discharge.



Vainess Mbuze, RN, BN, MN (Primary Health Care), MN Adv Prac (Health Professional Education), Grad Dip (Intensive Care Nursing), PhD(c)

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. Vainess was a recipient of TPCH Foundation PhD Scholarship, and investigated Indigenous peoples' experiences of acute cardiac care. She submitted her PhD in 2019.



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

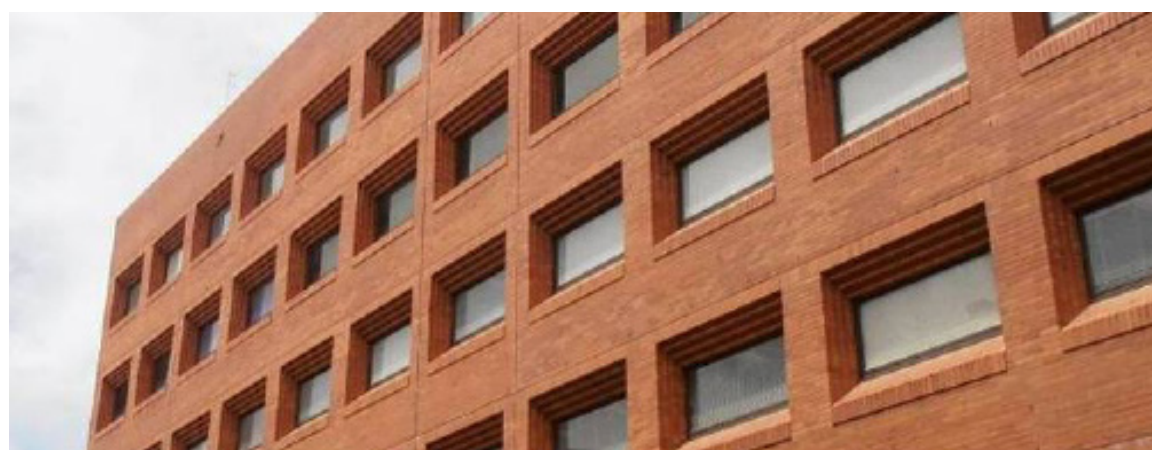
Nurse researcher: wound care

Damian has been directly involved in delivering advanced wound management services for nearly 20 years. His current position is a Nurse Practitioner 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 is currently undertaking a Masters of Nurse Practitioner Studies. 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

2019 Post Graduate Research Students			
Research Student	Degree	Supervisors	Thesis title
^β Vainess Mbuzi	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	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
Josephine Lovegrove	Doctor of Philosophy	^α Prof. Paul Fulbrook ^α Dr Sandra Miles Dr Michael Steele Angel Cobos Vargas	Pressure injury risk assessment and prevention in intensive care
Bridie McCann	Master of Health Administration	^α Prof. Paul Fulbrook ^α Dr Sandra Miles	Screening for falls in the emergency department
Annie Wang	Honours	^α Prof. Paul Fulbrook ^α Dr Sandra Miles	Reliability of pressure injury stage assessment



Clinical Sciences Building TPCH

^αNRPDC ^βTPCH

Research Projects

PRESSURE INJURY PREVENTION AND WOUND MANAGEMENT

NSQHS Standard 5: Comprehensive Care

Prevalence of pressure injury in adults presenting to the emergency department by ambulance

^aPaul Fulbrook, ^aSandra Miles, Fiona Coyer (QUT)

The objective of this study was to investigate the prevalence of pressure injury in adults on arrival by ambulance to the emergency department (ED). An observational, cross-sectional descriptive study design was used. Participants (n = 212) were recruited from the EDs of two Australian tertiary hospitals. Full skin inspection and pressure injury risk assessment, using Braden and Waterlow scores, were undertaken within one hour of presentation. Pressure injuries were identified in 11 of 212 participants, giving a prevalence of 5.2% at ED presentation. Nearly all were admitted to hospital, giving a prevalence of 7.8% at this entry point. Participants with pressure injury and those at high risk of injury were found to have spent longer in the ambulance and within the ED. During ambulance transport and in the first hour of presentation to the ED, it was rare that pressure-relieving interventions were implemented, even for those with an identified pressure injury and those at high risk. The results indicate that early pressure injury surveillance and risk assessment are merited at the point of presentation to the ED, so that prevention and treatment can be implemented at the earliest possible opportunity. Although it is more challenging to manage pressure injuries within the ambulance and ED, the use of pressure-relieving devices should be considered for those at greatest risk.

DISSEMINATION: a research article has been published in *Australian Critical Care* in 2019; international and local conference presentations have been given.

FUNDING: ACU Faculty of Health Sciences, \$13,000.

Australian nurses' knowledge of pressure injury prevention and management

^aPaul Fulbrook, ^aSandra Miles, Petra Lawrence

The aim of this study was to assess nurses' knowledge of pressure injuries in order to gather benchmark data, identify knowledge gaps, and based on results, implement educational strategies to improve practice. A cross-sectional survey design was used. The PieperZulkowski Pressure Ulcer Knowledge Test (PZPUKT) was used to measure nurses' pressure injury knowledge (n = 306). The overall mean knowledge score was 65%; approximately

two-thirds of the sample (68%) scored 60% or more. The lowest mean scores were found in the 'wound description' subscale. Participants who sought pressure injury information via the Internet or had read

pressure injury guidelines scored significantly higher than those who had not ($p = .001$ and $p < .001$, respectively). Seventeen items were answered incorrectly by over half of participants, identifying important knowledge deficits, particularly within the wound description subscale. When compared with results from studies using the PZPUKT, we contend that a cut-off score of 60% and greater (instead of $\geq 70\%$) should be used to indicate an overall satisfactory score. The results identified deficits in pressure injury knowledge related to seating support and seated individuals and wound dressings as areas where nurses would benefit from focused education strategies.

DISSEMINATION: a research article has been published in 2019 in *Journal of Wound, Ostomy and Continence Nursing*; several conference presentations have been given.

FUNDING: in-kind.

Prevention of pressure injury using prophylactic sacral protective dressings: a systematic review

^aPaul Fulbrook, Vainess Mbuli, ^aSandra Miles

Use of prophylactic dressings, particularly on the sacrum, as an additional protective measure for the prevention of pressure injuries has been investigated by various researchers. This study employed a systematic review and meta-analysis design in order to determine evidence of effectiveness of prophylactic sacral dressings in the prevention of pressure injuries. Electronic database searches were conducted from February 2018 to March 2018. Seven studies were included in the final review. Meta-analysis of the studies indicated that prophylactic use of a sacral dressing decreases the risk of pressure injury by 68%.

DISSEMINATION: the systematic review protocol was registered with PROSPERO International; an article was published in *International Journal of Nursing Studies* in 2019.

FUNDING: in-kind.

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

^aJosephine Lovegrove, ^aSandra Miles, ^aPaul 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: an article is under review for publication.

FUNDING: in-kind.

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

Fiona Coyer, Jane-Louise Cook, Anna Doubrovsky, Jill Campbell, Amanda Vann, Greg McNamara, Karen-Leigh Edward, Gunter Hartel, ^aPaul 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 pressure 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: an article is under review for publication.

FUNDING: in-kind.

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

^aJosephine Lovegrove, ^aPaul Fulbrook, ^aSandra 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: An article is under review for publication.

FUNDING: Part-funded by The Prince Charles Hospital Foundation, PhD scholarship \$82,788.00.

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

^aPaul Fulbrook, ^aSandra Miles, ^aJosephine Lovegrove, ^bFrances 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 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.

FUNDING: in-kind.

Systematic review of the effectiveness of preventative interventions for hospitalised patients

^aJosephine Lovegrove, ^aPaul Fulbrook, ^aSandra Miles, Michael Steele, Angel Cobos Vargas

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 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. Data collection has been completed and analysis is in progress.

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

FUNDING: Part-funded by The Prince Charles Hospital Foundation, PhD scholarship, \$82,788.00.

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

^aPaul Fulbrook, ^aSandra Miles, ^bVainess 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. The criteria for inclusion were: peer-reviewed primary research, of both observational (e.g. cross sectional, cohort, case control) and experimental research designs, which may be retrospective or prospective, and which reported on pressure injury prevalence and incidence. Sixteen studies met the criteria for inclusion. Data analysis has been completed.

DISSEMINATION: the systematic review protocol was registered with PROSPERO International. An article is being prepared for publication.

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

^aSandra Miles, ^aJosephine Lovegrove, ^aPaul Fulbrook, ^bTracy Nowicki

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.

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

Annie Wang, ^aSandra Miles, ^aPaul 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 2017 via Riskman that were subsequently re-assessed by experts from the hospital's Quality 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 analysis is in progress.

FUNDING: in-kind.

Evaluation of a silicone gel adhesive hydrocellular foam dressings for the prevention of sacral pressure injuries in hospitalised elderly patients

^aPaul Fulbrook, ^bDamian Williams, ^aSandra Miles, ^aJosephine Lovegrove

The primary aim of this study is to compare the effect of a shaped silicone gel adhesive hydrocellular foam dressing to standard care on the development of sacral pressure injury in at risk hospitalised elderly patients. The secondary aims are: to evaluate dressing comfort from the patient's perspective and to evaluate dressing utility from the nurse's perspective. The design is an open label randomised observational study of patients admitted the Geriatric Evaluation and Management (GEM) unit at TPCH. Data collection is complete. Analysis is in progress.

FUNDING: Smith and Nephew, \$12,141.

A descriptive, exploratory study of mucosal pressure injury 4-year reported incidence and characteristics using a retrospective quality audit

^aMel Jüttner, ^aPaul Fulbrook, ^aSandra Miles

The aim of this project is to describe the reported 4-year incidence and characteristics of mucosal pressure injury at TPCH between 2015 and 2018. An existing database of mucosal pressure injuries will be utilised. Medical charts will be accessed 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 2018 will be determined from already published Queensland Bedside Audit reports, for comparison and benchmarking purposes. Data collection has commenced.

FUNDING: The Prince Charles Hospital Foundation, \$9,810.54.

A systematic review of the prevalence and incidence of mucosal pressure injury in hospitalised adults

^aPaul Fulbrook, ^aSandra Miles, Ban Isaqi, ^bVainess Mbuzi

The aim of this systematic review was to identify and evaluate primary research studies which reported the prevalence or incidence of mucosal pressure injuries. Searches were conducted between 2008 and 2019. In total, 381 eligible articles were identified of which 12 articles met the inclusion criteria for full review. The studies were conducted in various different countries. None of the included studies investigated the prevalence or incidence of mucosal pressure injury as a primary research outcome, nor could these be calculated as a secondary outcome. Only two studies were found that reported mucosal pressure injury incidence. The characteristics of patients with mucosal pressure injury were reported in only a few studies.

DISSEMINATION: the protocol has been registered with PROSPERO International; an article is being prepared for publication.

FUNDING: in-kind.

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

^aAdam Burston, ^aSandra Miles, ^aPaul 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.

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

^aPaul Fulbrook, ^aSandra Miles, Tracy Nowicki, ^aJosephine 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 affected by lighting conditions. Data collection has commenced.

FUNDING: In-kind.

A retrospective exploratory descriptive study of the prevalence, incidence, and characteristics of mucosal pressure injury

^aSandra Miles, ^aPaul Fulbrook, Saveen Oghana

Despite reduction in the prevalence of pressure injury in general, medical device-related pressure injury is an ongoing clinical problem. Almost all available studies on medical device related pressure injury focus on skin pressure injury and disregarding mucous membrane pressure injury. The overall aim of this study is to describe the prevalence, incidence, and characteristics of reported mucosal pressure injuries for adults at TPCH during 2015-2017. The study employed a retrospective exploratory descriptive research design to report and describes the prevalence, incidence, and characteristics of mucosal pressure injury. The period prevalence of mucosal pressure injury for the years 2015, 2016, and 2017 was 0.2%, 0.1%, and 0.1%, respectively, and the overall point prevalence of mucosal pressure injury for the three years was 0.57%, 0.59%, and 0.0%, respectively. The cumulative incidence of mucosal pressure injury was 0.15%, 0.09%, and 0.1% for the years 2015, 2016, and 2017,

respectively. The incidence density in 2015 was 0.47, in 2016 was 0.31, and in 2017 was 0.34 number of mucosal pressure injuries per 1000 bed days. The most common medical devices to cause mucosal pressure injury were the endotracheal tube (n = 65, 32.3%), Foley catheter (n = 40, 20%), and endotracheal tube tapes (n = 38, 19%). Consequently, lip (n = 64, 31.8%), mouth (n = 52, 26%), and genital area (n = 41, 20.4%) were the predominant anatomical sites to be affected. The findings of this study concluded that intensive care unit patients have the same possibility as non-intensive care unit patients to develop hospital-acquired mucosal pressure injury with a similar number of mucosal pressure injuries per patient. The majority of study findings are not reported in published literature on mucosal pressure injury. This study has added to existing knowledge of mucosal pressure injury. It has demonstrated the need for conducting more research into a variety of unexplored clinical features of mucosal pressure injury.

DISSEMINATION: an article is being prepared for publication.

FUNDING: in-kind.

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

^aSandra Miles, ^aPaul 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 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.

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

^aRoger Lord, ^βDamian Williams, ^aSandra Miles, ^aPaul Fulbrook, ^βEwan Kinnear, ^βJeffrey 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. 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.

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

^βDamian Williams, ^αPaul Fulbrook, ^αSandra Miles, ^αJosephine 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.

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

^αPaul Fulbrook, ^αSandra Miles, ^βFrances Kinnear, Bridie McCann

The overall aim of this project is to demonstrate the feasibility and effectiveness of streamlining the processes of

assessment and early management of 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

^αPaul Fulbrook, ^αSandra 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 will commence soon.

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

Publications

Publications 2019

^αFulbrook P, Mbuvi V, ^αMiles S (2019). Effectiveness of prophylactic sacral protective dressings to prevent pressure injury: a systematic review and meta-analysis. *International Journal of Nursing Studies* 100 (2019) 103400. <https://doi.org/10.1016/j.ijnurstu.2019.103400>.

Liu X-L, Willis K, ^αFulbrook P, Wu C-J, Shi Y, Johnson M (2019). Factors influencing self-management priority setting and decision-making among Chinese patients with acute coronary syndrome and type 2 diabetes mellitus. *European Journal of Cardiovascular Nursing* 18(8), 700-710. <https://doi.org/10.1177/1474515119863178>.

Phonpruk K, Flowers K, Naughton G, ^αFulbrook P (2019). Analysis of written resources for parents of children discharged from a paediatric emergency department. *Journal of Child Health Care* 23(4), 652-662. <https://doi.org/10.1177/1367493519852460>.

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Kleinpell RM, Blot S, Boulanger C, ^αFulbrook P, Blackwood B (2019). International critical care nursing considerations and quality indicators for the 2017 Surviving Sepsis Campaign Guidelines. *Intensive Care Medicine* 45(11), 1663-1666. <https://doi.org/10.1007/s00134-019-05780-1>.

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Liu X, Willis K, Wu C, ^αFulbrook P; Shi Y, Johnson M (2019). Preparing Chinese patients with comorbid heart disease and diabetes for home management: a mixed methods study. *BMJ Open* 9(9), e029816. [Open access]. <https://doi.org/10.1136/bmjopen-2019-029816>.

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^αPeeler A, ^αFulbrook P, Edward K-L, ^βKinnear F (2019). Parents' experiences of care in a paediatric emergency department: a phenomenological inquiry. *Australasian Emergency Care* 22(2), 113-118. <https://doi.org/10.1016/j.auec.2018.12.004>.

^αFulbrook P, Lawrence P, ^αMiles S (2019). Australian nurses' knowledge of pressure injury prevention and management: a cross-sectional survey. *Journal of Wound, Ostomy and Continence Nursing* 46(2), 106-112. [Open access]. <https://doi.org/10.1097/WON.0000000000000508>.

Published protocols 2019

^αLovegrove J, ^αFulbrook P, ^αMiles S (2019). Effectiveness of interventions to prevent pressure injury in adult patients in acute hospital settings: a systematic review. PROSPERO 2019 CRD42019129556. Available from: http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42019129556.

Publications under review

^αLovegrove J, ^αFulbrook P, ^αMiles S (under review). International consensus on pressure injury preventative interventions by risk level for critically ill patients: a modified Delphi study.

^αLovegrove J, ^αFulbrook P, ^αMiles S (under review). Relationship between prescription and documentation of pressure injury prevention interventions and their implementation: implications for evidence-based practice.

Coyer F, Cook J-L, Doubrovsky A, Campbell J, Vann A, McNamara G, Edward K-L, Hartel G, ^αFulbrook P (under review). Implementation and evaluation of a pressure injury prevention bundle in an Australian ICU setting: a prospective study.

Williams G, ^αFulbrook P, Kleinpell R, Alberto L (under review). The fifth international survey of critical care nursing organizations: implications for policy.

Conference Presentations

International

^αFulbrook P (2019). Translating pressure injury research into clinical practice. 2019 International Conference on Promoting Best Rehabilitation of Patients and Integrating Efficient Nursing Practices. Shanghai, China. 24-26 October 2019.

^αFulbrook P (2019). What's happening in the world of critical care nursing? 110th Anniversary of Chinese nurses Association International Congress. Beijing, China. 5-7 September 2019.

^αFulbrook P, ^αMiles S, Coyer F (2019). Preventing pressure injury in adults presenting to the emergency department by ambulance. Sigma's 30th International Nursing Research Congress. Calgary, Canada, 25-29 July 2019.

National

^βMbuzi V, ^αFulbrook P, Jessup M (2019). Effectiveness of cardiovascular programs designed for Indigenous Australians. National Indigenous Closing The Gap Health Conference. Cairns, 8-10 May 2019.

Local

^αLovegrove J, ^αFulbrook P, ^αMiles S (2019). An exploratory, descriptive study of whether the pressure injury preventative interventions prescribed by nurses are implemented into practice. Annual Health Discoveries Forum, The Prince Charles Hospital, Brisbane, Australia, 14-18 October 2019.

Research Ethics Approvals

50538

Dressings used over the nasal bridge for patients undergoing acute non-invasive ventilation therapy.

52575

An investigation, observational study of the use of the Sensor-X device to determine patient body position within an acute hospital setting

2019-25E

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

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ANNUAL RESEARCH REPORT 2019

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The Prince Charles Hospital**

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Published by
Australian Catholic University