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Nursing Research and Practice Development Centre

The Prince Charles Hospital
Australian Catholic University



ANNUAL RESEARCH REPORT 2022

Nursing Research
and
Practice Development
Centre

ANNUAL RESEARCH REPORT 2022

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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 2022 Annual Research Report.

This report provides information about the NRPDC research activities during 2022. It includes information about our many and varied research projects and research outputs, and acknowledges our affiliated clinicians and research students.

2022 was a year of 'getting back to normal'. In the previous few years our research activity was impacted by COVID restrictions. This year we were able to get most of our clinical research projects back on track, and several projects were completed. This year, as in previous years, I am pleased to report that our research outputs have been excellent and I am very proud to present them in this year's research report.

The NRPDC nursing research priorities are established annually and are embedded within the NRPDC Strategic

Plan 2021-2024, which is agreed jointly between TPCH and ACU. The NRPDC Strategic Plan performance indicators are consistent with key objectives identified in the Metro North Health Strategic Plan, as well as ACU's Research Indicators.

Pressure injury prevention and management continues to be our strategic research priority area, and is where most of our research activity is focused. This research priority is aligned with the Australian Commission on Safety and Quality in Health Care National Safety and Quality Health Service (NSQHS) Standard 5: Comprehensive Care. Our research has continued to be very productive within this priority area in 2022.

The Centre continues to demonstrate significant research activity, including publication outputs in high quality peer-reviewed Q1-ranked journals with high impact factors. As COVID restrictions were lifted we were able to present several national and international conference papers in 2022.

Our research staff group remains the same, although small in number, punching well above its weight. All positions are jointly funded between TPCH and universities. We have two part-time Research Fellows: Adam Burston is jointly funded between ACU and TPCH and Josie Lovegrove is a joint appointment between TPCH and Queensland University of Technology. Josie was away on maternity for half of the year and welcomed a beautiful new daughter into the world. In addition, I would like to congratulate her on completing her PhD this year. The NRPDC employs two part-time research assistants (joint appointments with ACU). Saroeun Ven has been with NRPDC for nearly three years, and will be commencing her PhD next year. Jacob Butterworth has been with us for well over a year now, and has recently completed his BN Honours First Class. Both Josie and Jacob researched pressure injury prevention for their degrees.

All members of the research team undertake research studies in our pressure injury research program. The NRPDC has also facilitated several visiting researchers from ACU, who have been involved with NRPDC and TPCH staff on a variety of projects. This collaboration strengthens the research training environment within both organisations.

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. Whilst most of our research has been nurse-led, we have developed productive collaborative research partnerships with several other professional disciplines and organisations, and completed a major project with colleagues in the emergency department this year.

Forewords



**Clinical Associate Professor
Cherie Franks**

Director of Nursing, Nursing
Services

The Prince Charles Hospital

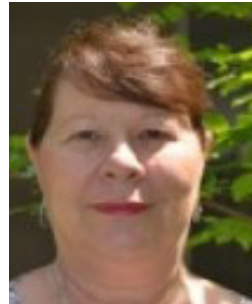
It is always a pleasure to provide a foreword for the Annual Research Report and again this year for 2022.

The Nursing Research and Practice and Development Centre (NRPDC) and the ongoing collaboration between The Prince Charles Hospital (TPCH) and the Australian Catholic University remains strong, and is now into its 12th year.

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 and its implementation into practice for the care of our patients and the community.



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 2022. 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 and 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 complemented 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 6th in Australia and 14th in the world for nursing.

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 outcomes.

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 2021-2024 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 2022, its members were:

Adjunct Professor Alanna Geary, Chief Nursing and Midwifery Officer, Metro North Health; **Clinical Associate Professor Cherie Franks**, Director of Nursing, TPCH; **Professor Suzanne Chambers**, Executive Dean, Faculty of Health Sciences, ACU; **Danielle Johanson**, Nursing Director, Workforce & Innovation, TPCH; **Professor Karen Nightingale**, Head, National School of Nursing, Midwifery and Paramedicine, ACU; **Associate Professor Paula Schulz**, Head of School (Qld & ACT), 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's Human Research Ethics Committee. Paul's clinical and research background is in intensive care nursing.



Josephine Lovegrove RN; PhD, BN (Hons)

Research Fellow

Josie is a part-time Research Fellow, jointly appointed by TPCH and Queensland University of Technology. She researched pressure injury risk assessment for her BN Honours and recently completed her PhD, which extended upon her previous work; developing an international risk-stratified pressure injury prevention bundle for use in intensive care. Josie has worked on a variety of projects at NRPDC and also contributes to the supervision of PhD and Bachelor of Nursing (Honours) students within the NRPDC.



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

Research Fellow

Adam holds a joint appointment as a Research Fellow at NRPDC and a Senior Lecturer at ACU. His research interests encompass pressure injury care, bioethics, healthcare professionals' education, and nursing workforce. Adam has a passion for mentoring research students and new academics.



Saroeun Ven RN; BN (Hons)

Research Assistant

Saroeun is a part-time research assistant. She researched nurses' clinical judgement of pressure injury risk for her BN Honours degree, which she completed with First Class Honours. Her clinical background is palliative care nursing. Next year, she commences her PhD, investigating pressure injury risk assessment in this field.



Jacob Butterworth RN; BN (Hons)

Research Assistant

Jacob is part-time and has worked on a variety of projects in the pressure injury research program. He investigated mucosal pressure injury incidence for his First Class Honours degree. He also works part-time in the emergency department at Redcliffe Hospital.

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 Suzanne Chambers	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
Danielle Johanson	Nursing Director, Workforce and Innovation, TPCH	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, MHA, Grad Cert Health Stud (Nurs), MACN

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 Health. 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. Karen is the chair of or a member of a range of school, faculty and university committees, a member of the Council of Deans of Nursing and Midwifery and is a Fellow of the Australian College of Nursing.



**Danielle Johanson RN; BN,
MAppMgt (Nursing), Grad Cert
Nursing, MACN**

Nursing Director, Workforce and Innovation, The Prince Charles Hospital

Danielle is responsible and accountable for nursing workforce planning and strategy, research and innovation. She

has expertise in leading and managing nursing research and clinical trials teams driving the strategic direction and implementation of innovative models of nursing care underpinned by high level evidence-based research. Her role is to help ensure the planning, delivery and evaluation of high quality and cost-effective services that are consistent with the strategic and operational directions of TPCH, Metro North Health service and Department of Health policy. Danielle has worked across a variety of healthcare settings including both public and private sectors, health strategy and planning, university partners and Queensland Health for 25 years and has held several senior nursing positions across the healthcare sector.



**Associate Professor Paula Schulz, RN;
BA, BSc (Hons), MPsy (Community &
Health), DPsy (Health)**

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

Paula has worked in tertiary education for over 30 years and has held several academic leadership positions with

the School of Nursing, Midwifery and Paramedicine and Faculty of Health Sciences at ACU. She is currently Head of School, School of Nursing, Midwifery and Paramedicine (Qld). In this role she has been instrumental in establishing the ACU Clinical Schools with The Prince Charles Hospital and Mater Health. Paula completed her Doctorate 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 transition support strategies for students in their first year of university, program support strategies for Aboriginal and Torres Strait Islander students enrolled in the Away from Base Bachelor of Midwifery program and evaluation of alternate models of nursing education.



Emergency Department TPCH



Clinical Sciences Building TPCH

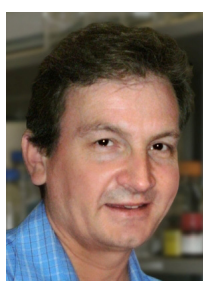
Visiting Researchers



Dr Peter Le Rossignol, PhD, BSc (Educ), M Phys Educ

Visiting Research Fellow

Peter is an exercise physiologist, and is a researcher and sessional academic in the School of Behavioural and Health Sciences at ACU. He has a particular interest in supporting people to improve well-being through building mental and physical resilience. He has an extensive academic background in exercise science and is currently engaged in a project exploring the effects of sleep, stress, and physical activity on undergraduate nursing students during clinical placements.



Dr Roger Lord, PhD, B App Sc, 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, ACU 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.



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

Visiting Research Fellow

Sandra's clinical background is in child health, intensive care and nurse immunisation. She retired from ACU at the end of 2021 and now holds an Honorary Research Fellow position with ACU School of Nursing, Midwifery and Paramedicine. As well as being a co-investigator on several research projects, Sandra also co-supervises NRPDC-based research students.



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

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. For her PhD she evaluated the new paediatric emergency department at TPCH.



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

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.

Associate Researchers



Tracy Nowicki, RN

Nurse researcher: pressure injury

Tracy is a Clinical Nurse Consultant and has led the Quality Effectiveness Support Team (QuEST) at TPCH since 2006. Her team provides clinical expertise and quality risk management in the coordination, maintenance, evaluation and education of high use medical equipment, bariatric patient care, intravenous medication safety, falls prevention, falls injury minimisation and pressure injury prevention and management. Tracy is collaborating with NRPDC on several research projects.



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

Nurse researcher: wound care

Damian has been 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. Damian is collaborating on several research projects with the NRPDC.

Post Graduate Research Students

2022 Post Graduate Research Students			
Research Student	Degree	Supervisors	Thesis title
^a Josephine Lovegrove (graduated)	Doctor of Philosophy	^a Prof Paul Fulbrook ^a Dr Sandra Miles ^a Dr Michael Steele Angel Cobos Vargas	Development of an international risk-stratified pressure injury prevention bundle for intensive care
^a Jacob Butterworth (graduated)	Honours (First Class)	^a Prof Paul Fulbrook ^a Dr Sandra Miles ^a Dr Josephine Lovegrove	Incidence and characteristics of hospital acquired mucous membrane pressure injury: a five-year analysis



Graduation (left to right): Dr Adam Burston, Dr Michael Steele, Dr Josephine Lovegrove, Professor Paul Fulbrook

Research Projects

PRESSURE INJURY PREVENTION AND WOUND MANAGEMENT

NSQHS Standard 5: Comprehensive Care

Reporting accuracy of pressure injury categorisation in an acute tertiary hospital: a four-year analysis

^aPaul Fulbrook, ^aJosephine Lovegrove

Pressure injuries are an enduring complication of hospitalisation. The categorisation of pressure injury affects treatment and management decision-making and use of resources, and severe hospital-acquired pressure injury incidence is used to benchmark quality of care. However, it is unclear how accurately pressure injuries are categorised by clinicians in practice. The aim of this study was to determine the reporting accuracy of pressure injury categorisation by bedside clinicians, compared with nurse experts. A secondary analysis of hospital pressure injury incident and validation data was conducted. All pressure injuries reported in adults between 2016-2019 that were subsequently validated by nurse experts were analysed. Absolute agreement was reported using percentages, with inter-rater agreement reported using Kappa measure of agreement. Of 6186 pressure injuries that were analysed, the category was reported correctly in 67.3% ($n = 4163$), with an overall moderate level of inter-rater agreement by category ($K = .567, p < .001$). Of those found to be non-pressure injuries when validated (18.3%, $n = 1129$), most were reported originally as stage II (41.2%, $n = 465$) or stage I (30.5%, $n = 344$), and 13.4% ($n = 151$) were categorised initially as unstageable. The majority reported initially as stage I, stage II, suspected deep tissue injury, or mucosal pressure injury were validated, whereas half of those reported initially as stage III or IV were validated and less than a third of those reported initially as unstageable pressure injuries were validated. This study provides important insight into the accuracy of pressure injury categorisation. Whilst moderate agreement of categorisation was found between reporting clinicians and nurse experts, pressure injury differential diagnosis and categorisation of severe injuries was inadequate. These results may be used for benchmarking and provide a focal point for future education and practice improvement efforts.

DISSEMINATION: Q1 publication under review.

FUNDING: in-kind.

Comparison of pressure injury risk assessment outcomes using a structured assessment tool versus clinical judgement: A systematic review

^aJosephine Lovegrove, ^aSaroeun Ven, ^aSandra Miles, ^aPaul Fulbrook

Whilst performing a pressure injury risk assessment is not in itself preventive, risk status identification is critical to inform

the judicious implementation of prevention strategies. Risk assessment is mostly undertaken using a structured tool informed by clinical judgement, though there is a perception that use of clinical judgement alone may be sufficient. The aim of this study, within acute hospital settings, was to identify differences in outcomes (risk status, preventive interventions) following nursing assessment of pressure injury risk when using a structured assessment tool compared to clinical judgement. A systematic review was undertaken using several databases: EBSCO CINAHL Complete, EBSCO MEDLINE Complete, Scopus, Web of Science, Ovid EMBASE. Primary research relevant to the objectives was eligible for inclusion. Two reviewers undertook the review process, with a third arbitrator. Appraisal was undertaken using Joanna Briggs Institute critical appraisal tools. Included studies were synthesised narratively. Five moderate to high quality studies were included. Synthesis was limited by heterogeneity. Several risk assessment tools and methods of clinical judgement were used. Three studies reported pressure injury risk status using both assessment approaches, but in only one did nurses undertake both. Risk status, as identified by each method, varied and was sometimes contradictory. Three studies reported some elements of preventive intervention prescription and/or implementation following risk assessment, but comparison between approaches was limited. Some research suggests that risk status varies across different methods of pressure injury risk assessment, but it is unclear what impact this has on preventive intervention use. Risk status was not well linked to preventive interventions. Research is warranted to examine the influence that each approach to risk assessment alone and combined has on identified risk and preventive intervention prescription and implementation.

DISSEMINATION: Protocol registration: PROSPERO International. Q1 publication: *Journal of Clinical Nursing*.

FUNDING: in-kind.

Implementation and evaluation of multi-layered pressure injury prevention strategies in an Australian intensive care unit

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), ^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 one 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: Q1 publication: *Australian Critical Care*.

FUNDING: in-kind.

Skin tear prevalence in an Australian acute care hospital: a ten-year analysis

^a Sandra Miles, ^a Paul Fulbrook, ^b Damian Williams

Hospital-acquired skin tear prevalence is under-reported; thus, the aim of this study was to analyse skin tear point prevalence and characteristics in a tertiary acute care hospital in Queensland, Australia, over a 10-year period. All consenting adult inpatients received a full skin inspection and skin tear category, site, cause, treatment, and whether it was documented as hospital- or community-acquired were recorded. Eleven prevalence audits were analysed with a total sample of 3626 patients. An overall pooled prevalence of 8.9% (95% confidence interval [CI] 7.5-10.4) with an associated hospital-acquired pooled prevalence of 5.5% (95% CI 4.5-6.7) was found. In total, 616 skin tears were reported, of which 374 (60.7%) were hospital-acquired. Over a third of patients (38.7%) had multiple skin tears and most patients (84.8%) with at least one skin tear were aged ≥ 70 years. The largest proportion of skin tears (40.1%) was those with no skin flap. Of those documented, most were caused by falls or collisions, suggesting combined skin tear and falls prevention strategies may be effective. Over a decade, there was a downward trend in hospital-acquired skin tears, which is encouraging. Skin tear prevalence is recommended as a measure of care quality with an emphasis on good quality documentation.

DISSEMINATION: Q1 publication: *International Wound Journal*.

FUNDING: in-kind.

Healing rate of hospital-acquired skin tears using adhesive silicone foam versus meshed silicone interface dressings: a prospective, randomised, non-inferiority pilot study

^a Paul Fulbrook, ^a Sandra Miles, ^b Damian Williams

Skin tear is a traumatic wound that mostly affects older adults. Although often minor, untreated or inappropriately treated skin tears can become chronic complicated wounds. The aim of this study was to compare the effectiveness of two standard dressings (adhesive silicone foam versus meshed silicone interface) to heal hospital-acquired skin tear. An intention-to-treat pilot study was designed using a randomised, non-inferiority trial in an Australian tertiary hospital setting. Consenting participants had acquired a skin tear within the previous 24 hours and had agreed to a three-week follow-up. Data were collected at baseline and weekly, including patient demographics, co-morbidities, experience of dressing, skin tear description and dressing evaluation. Baseline characteristics were similar in both arms. In the adhesive silicone foam group, 86% of skin tears were fully healed at three weeks, compared to 59% in the meshed silicone interface group. Greater

healing was observed across all skin tear categories in the adhesive silicone foam dressing group. Results suggest the adhesive silicone foam dressing may be superior, as it produced clinically significant healing of skin tears at three weeks compared to the meshed silicone interface dressing. A sample of at least 117 participants per arm would be required to power a larger study.

DISSEMINATION: Protocol registration: Australian and New Zealand Clinical Trials Registry. Q1 publication under review.

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

Effectiveness of interventions to prevent pressure injury in adults admitted to intensive care settings: a systematic review and meta-analysis of randomised controlled trials

^a Josephine Lovegrove, ^a Paul Fulbrook, ^a Sandra Miles, ^a Michael Steele

The overall aim of this study was to identify and assess which interventions (single or bundled) are effective in preventing pressure injury 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: Protocol registration: PROSPERO International. Q1 publication: *Australian Critical Care*.

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

Use of a sacral foam dressing to prevent pressure injury in at-risk sub-acute hospitalised older adults: a pilot randomised controlled trial

^a Josephine Lovegrove, ^a Paul Fulbrook, ^a 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 pressure injury 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 pressure injury was recorded

prospectively, while two ressure injuries 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: Protocol registration: Australian and New Zealand Clinical Trials Registry. Q1 publication: *Journal of Wound Ostomy and Continence Nursing*.

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

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

^aJosephine Lovegrove, ^aPaul Fulbrook, ^aSaroeun Ven, ^aSandra Miles, ^βTracy Nowicki, Vladimir Yuzhakov

The aim of this study 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. Over 1500 hours of patient data have been collected successfully. Preliminary results confirmed the technical and operational feasibility of using thermal sensors to gather, process, and extract patient data in a hospital setting. The patient position data are currently being analysed.

FUNDING: In-kind.

Systematic review: incidence and prevalence of mucous membrane pressure injury in adults admitted to acute hospital settings

^aPaul Fulbrook, ^aJosephine Lovegrove, ^aSandra Miles, Ban Isaqi

Mucous membrane pressure injury is associated with a history of medical device use at the site of injury. The current international guideline recommends they should be reported in incidence and prevalence studies. The aim of this systematic review was to analyse the incidence and prevalence of hospital-acquired mucous membrane pressure injury in adults admitted to acute hospital settings. Database searches (EBSCO CINAHL Complete, EBSCO Medline Complete, Embase, Scopus and Web of Science) were undertaken between October 2019 to February 2021), using search terms related to hospital-acquired, mucosal and device-related pressure injury incidence and prevalence. Searches were limited to the English language. Articles published between 2008 to 2020, reporting incidence or prevalence of mucous membrane or medical device-related pressure injury in non-interventional samples were selected. Two authors assessed study bias and extracted data, with a third reviewer as arbitrator. Twenty-one studies met inclusion criteria; most provided incidence data. No studies were found that specifically reported mucous membrane pressure injury incidence or prevalence. It was possible to calculate incidence or prevalence from four studies; all were in intensive care settings. Mucous membrane pressure injury 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 mucous membrane pressure injury. It was concluded that there is insufficient evidence available to enable estimation of mucous membrane pressure injury incidence or prevalence in either acute hospital or intensive care settings.

DISSEMINATION: Protocol registration: PROSPERO International. Q1 publication: *International Wound Journal*.

FUNDING: in-kind.

Implementation of an intensive care-specific pressure injury risk assessment scale and preventative intervention bundle: a before and after study

^aPaul Fulbrook, ^aJosephine Lovegrove, ^aAdam Burston, Cindy Weatherburn (Royal Hobart Hospital), Rick McAllister (Royal Hobart Hospital), Ellyn Burke (Royal Hobart Hospital)

The primary aim of this Tasmanian study is to identify whether a change in intensive care nursing practice i.e. implementation of the COMHON Index pressure injury risk assessment tool with bundled preventative interventions by risk level, results in reduced pressure injury incidence. A secondary aim is to assess compliance with the change in practice in the after phase. The results from this project will demonstrate whether the change in practice has reduced pressure injury incidence within the study unit and will be used to further improve pressure injury prevention practice locally and within the community more broadly through the dissemination of results. Specifically, the results will provide information to assist in the determination of the effectiveness of a risk level-based pressure injury prevention care bundle to reduce pressure injury occurrence within intensive care. Data collection is in progress.

FUNDING: in-kind.

Incidence and characteristics of hospital-acquired mucous membrane pressure injury: a five-year analysis

^aPaul Fulbrook, ^aJosephine Lovegrove, ^aJacob Butterworth

Mucous membrane pressure injuries represent a significant proportion of all hospital-acquired pressure injuries. They are caused by pressure from medical devices at the site of injury and differ to those on the skin. Intensive care patients, who have multiple devices in situ, are particularly vulnerable. There is a significant knowledge gap regarding mucous membrane pressure injury incidence in acute hospital settings. The aim of this study was to analyse mucous membrane pressure injury incidence and characteristics in a tertiary acute general hospital. A secondary data analysis of hospital clinical incident reports was undertaken. The sample included all adults with mucous membrane pressure injuries between 2015-2019. There were 414 reports of mucous membrane pressure injury. Most (91.5%, $n = 379$) were hospital-acquired with the majority found in intensive care patients (74.4%, $n = 282$). Hospital-acquired mucous membrane pressure injury incidence was 0.1% (11 mucous membrane pressure injuries per 10000 hospital episodes). In intensive care, the incidence was 2.4% (235 mucous membrane pressure injuries per 10000 intensive care episodes). The median time from device insertion until reporting of a mucous membrane pressure injury was 3 days. The most common sites of mucosal injury were the lips (35.6%) and mouth (28.8%). In all cases except one, mucous membrane pressure

injury was associated with medical device use at the site of injury. Five device types were identified (oral endotracheal tube-related 70.3%; urinary catheter 15.5%; gastric tube 8.3%; nasal prongs 3.5%; tracheostomy tube 2.4%). In intensive care, oral endotracheal tube-related devices were most often associated with mucous membrane pressure injury (84.8%), whereas in non-intensive care mucous membrane pressure injury it was the urinary catheter (51.4%). Whilst hospital-acquired mucous membrane pressure injury incidence is relatively low, it is considerably higher in intensive care patients compared to those in non-intensive care settings. The most common sites are the lips and mouth.

DISSEMINATION: Q1 publication: *Journal of Clinical Nursing*.

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

Incidence and characteristics of medical device-related pressure injury in adult intensive care patients

^aPaul Fulbrook, ^aJosephine Lovegrove, ^aJacob Butterworth

The primary aim of this study is to describe the four-year incidence of ICU-acquired medical device-related pressure injury in adult patients admitted to intensive care. Descriptive statistics will be used to describe patient demographics and characteristics, summarise the data and describe the proportions of hospital-acquired pressure injury, medical device-related pressure injury and mucosal pressure injury. The results of this study will provide evidence to contribute to research knowledge about medical device-related ICU-acquired pressure injury. It will also provide benchmarking data and help inform clinical practice guidelines and policy development. Data analysis is in progress.

FUNDING: The Prince Charles Hospital Foundation, \$ 9,995.

Pressure injury prevention practice in Australian intensive care units: a national cross-sectional survey

Annabel Levido (RBWH), ^aPaul Fulbrook, Michelle Barakat-Johnson (University of Sydney), Jill Campbell (RBWH), Lori Delaney (QUT), Sharon Latimer (Griffith University), Rachel Walker (PAH), Rochelle Wynn (RBWH), Anna Doubrovsky (QUT), Fiona Coyer (QUT).

Pressure injury is an ongoing problem for patients in intensive care units (ICUs). The aim of this study was to explore the nature and extent of pressure injury prevention practices in Australian adult ICUs. An Australian multicentre, cross-sectional study was conducted via telephone interview using a structured survey instrument comprising six categories: workplace demographics, patient assessment, pressure injury prevention strategies, medical devices, skin hygiene, and other health service strategies. Publicly funded adult ICUs, accredited with the College of Intensive Care Medicine, were surveyed. Data were analysed using descriptive statistics and chi-square tests for independence to explore associations according to geographical location. Of the 75 eligible ICUs, 70 responded (93% response rate). Pressure injury was considered problematic in two thirds (68%) of all ICUs. Common pressure injury prevention strategies included risk assessment and visual skin assessment conducted within at least 6 hours of admission (70% and 73%, respectively), a structured repositioning regimen (90%), use of barrier products to protect the skin (94%), sacrum or heel prophylactic multilayered silicone foam dressings (88%), regular pressure injury chart audits (96%), and pressure

injury quality improvement projects (90%). Pressure injury prevention rounding and safety huddles were used in 37% of ICUs, and 31% undertook pressure injury research. Although most ICUs were supported by a facility-wide skin integrity service, it was more common in metropolitan ICUs than in rural and regional ICUs ($p < 0.001$). Conversely, there was greater involvement of occupational therapists in pressure injury prevention in rural or regional ICUs than in metropolitan ICUs ($p = 0.026$). This is the first study to provide a comprehensive description of pressure injury prevention practices in Australian ICUs. Findings demonstrate that pressure injury prevention practices, although nuanced in some areas to geographical location, are used in multiple and varied ways across ICUs.

DISSEMINATION: Q1 publication: *Australian Critical Care*.

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

^aJosephine Lovegrove, ^aPaul Fulbrook, ^aSandra Miles, ^aSaroeun Ven

Many people admitted to hospital are at risk of developing a pressure injury. Currently, TPCN 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. Initial analysis of pilot data indicate that agreement between nurses is fair. Data collection across six hospital wards is complete and data analysis is in progress.

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

Patient and carer experience of living with a pressure injury: a meta-synthesis of qualitative studies

^aAdam Burston, ^aSandra Miles, ^aPaul Fulbrook

Pressure injuries are a significant cause of harm, contributing to increased mortality and financial burden on the healthcare system. Significant research on pressure injury risk assessment, prevention, and treatment exists, but limited research exploring the patient and carer experience of living with pressure injury. The aim of this meta-synthesis was to describe the patient and carer experience of living with a pressure injury. A systematic search was conducted across five electronic databases. Two reviewers independently undertook screening and review of articles, using the CASP checklist for evaluating qualitative research. A meta-synthesis using thematic content analysis was undertaken. Twelve studies met the inclusion criteria. Meta-synthesis led to the construction of three primary themes: loss of autonomy and independence, psychological effects, and adjustment. Within these primary themes, sub-themes of: dependence, social isolation and social avoidance behaviours, feelings and emotions, loss, managing, physical consequences, service provision, and functional challenges, were identified. The psychology and mindset of those involved, and support to navigate the challenges that arise are critical considerations. Adaptation to a pressure injury is multi-

faceted and contextual, challenges to adaptation create additional psychological burden. Interventions encompassing all facets of the experience are necessary. Current research into experiences is limited, and further research to support interventions is necessary.

DISSEMINATION: Protocol registration: PROSPERO International. Q1 publication: *Journal of Clinical Nursing*.

FUNDING: in-kind.

Translation and piloting of the Chinese Mandarin version of an intensive care-specific pressure injury risk assessment tool (the COMHON Index)

^aJosephine Lovegrove, ^aPaul Fulbrook, ^aSandra Miles, ^aMichael Steele, Angel Cobos Vargas (San Cecilio University Hospital), Lin Zhang (10th People's University of Tongji University), Xian-Lang (Daniel) Liu (Charles Darwin University)

The aim of this study was to translate an intensive care-specific pressure injury risk assessment tool (the COMHON Index) from English into Chinese Mandarin. A four-step approach to instrument translation was utilised: 1) English-Mandarin forward translation by three independent bilinguals; 2) Mandarin-English back-translation by two other independent bilinguals; 3) comparison of forward and back-translations, identification of discrepancies, with required amendments returned to step one; and 4) piloting of the translated instrument. The pilot study was undertaken in a Chinese surgical intensive care unit with a convenience sample of 20 nurses. A five-point ordinal scale (1 = very difficult; 5 = very easy) was used to assess ease-of-use and understanding. Translations were retained where medians ≥ 4 indicated use and understanding was easy to very easy. Five iterations of steps 1 to 3, and two sets of amendments to the original English instrument, were required to achieve translation consensus prior to pilot testing. Subscale scoring, sum scoring, and risk categorisation were documented in most pilot assessments ($\geq 80\%$), but three sum scores were incorrectly tallied. The overall tool and all subscales were easy to use and understand (medians ≥ 4), and most assessments (16/20, 80%) took 5 minutes to complete. Thus, translations were retained, with minor amendments made to instrument instructions for scoring and risk categorisation. An easy-to-use Chinese Mandarin intensive care-specific pressure injury risk assessment tool was introduced through cross-cultural translation. However, it requires further testing of interrater reliability and agreement. A rigorous translation and reporting exemplar was developed that provides guidance for future translations.

DISSEMINATION: Q1 publication: *International Journal of Nursing Sciences*

FUNDING: in-kind.

FALLS PREVENTION AND MANAGEMENT

NSQHS Standard 5: Comprehensive Care

A short multi-factor screening tool to assess falls-risk in older people presenting to an Australian emergency department: a feasibility study

^aPaul Fulbrook, ^aSandra Miles, Bridie McCann, ^aMichael Steele

Falls are a major cause of ED presentation for older adults. The purpose of this study was to evaluate use of a short multi-factor falls-risk screening tool for older people within the emergency

department, to enable rapid identification of falls-risk and triggers for multidisciplinary referral for further falls-specific assessment. Older people, aged ≥ 70 years, presenting to the emergency department with a fall-related injury or disease ($n = 137$) were recruited by a research nurse following randomisation. A short multi-factor screening tool was completed, comprised of 14 falls-risk-related assessment components. Only one participant did not generate any referrals. Participants generated most referrals for social and housing (84.6%), podiatry (71.1%), vision (66.2%), or function and mobility (54.7%). Based on our results, the screening tool could be reduced to eleven components. The median time-to-screen was 11 minutes (IQR 9-15), with 736 triggers generated for referral and further assessment of falls-risk. A short multi-factor screening tool with eleven components could be adapted to local familiar falls-risk tools and be completed in less than 10 minutes. Further research to trial the feasibility of completing ED referrals based on screening results is required to confirm the usefulness of such screening and referral within the ED.

DISSEMINATION: Q1 publication under review.

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

^aPaul Fulbrook, ^aSandra Miles, ^bNicole Bellet, ^bHwee Yong (Debbie) Lee, ^bGreg Morrison, ^bBenjamin Cameron, ^bWilliam Dang, ^bLizelle Lumb, ^aJosephine Lovegrove, ^aAdam Burston

The aim of this project is to implement and evaluate an interdisciplinary program within the emergency department 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 the emergency department 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 emergency department for patients that can be safely discharged home, with referral for appropriate community support. Data collection has been completed and analysis is in progress.

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

OTHER RESEARCH

The impact of a structured assessment and decision tool (I-DECIDED) on improving care of peripheral intravenous catheters: a multicentre, interrupted time-series study

Gillian Ray-Barruel (UQ), Vineet Chopra (Michigan Hospital), ^aPaul Fulbrook, ^aJosephine Lovegrove, Marie Cooke (Griffith University), Marion Mitchell (Griffith University), Claire Rickard (Griffith University)

The aim of this study was to determine if a structured assessment and decision tool (I-DECIDED) improves daily PIVC assessment and care decisions. A prospective, interrupted time-series study was used. Seven adult inpatient wards in three Australian hospitals were recruited ($n = 825$ adults). Between August 2017-December 2018, PIVC assessments and chart audits were undertaken with informed patient consent. Following a 4-month pre-intervention

period (with 2-weekly measures), the I-DECIDED® tool was implemented over 3 months (no data collection) using multiple strategies (stakeholder meetings, vascular access device form, education sessions, ward champions, lanyard cards, and posters), followed by a 4-month post-intervention period (with 2-weekly measures). Primary outcomes were device utilisation; idle/unused PIVCs; insertion site complications, substandard dressings; and primary bloodstream infections. Of 2055 patients screened, 1175 (57.2%) had a PIVC, and 825 patients (867 PIVCs) consented and were included in the final analysis. Device utilisation increased from 42.0% of PIVCs at baseline to 49.6% post-intervention (absolute risk difference [ARD] 7.5%, 95% CI 4.8, 10.3; relative risk [RR] 1.18, 95% CI 1.11, 1.25). The proportion of idle PIVCs reduced significantly from 12.7% to 8.3% (ARD -4.4%, 95% CI -8.5, -0.3; RR 0.66, 95% CI 0.44, 0.97). PIVC complications reduced significantly from 16.1% to 10.9% (ARD -5.2%, 95% CI -9.7, -0.6; RR 0.68, 95% CI 0.48, 0.96). Substandard dressings reduced from 24.6% to 19.5% (ARD -5.2%, 95% CI -10.7, 0.4; RR 0.79, 95% CI 0.61, 1.02; not statistically significant). Only one primary bloodstream infection occurred (post-intervention). Interrupted time-series analyses detected significantly increased PIVC utilisation, a change in the trend in complication rates over time, and more substandard dressings. Implementation of a comprehensive device assessment and decision tool (I-DECIDED®) significantly reduced idle catheters, PIVC complications, and substandard dressings, despite higher device utilisation. Dressing quality improved but was not statistically

significant. Widespread implementation of the tool could improve hospital safety worldwide.

DISSEMINATION: Protocol registration: Australian and New Zealand Clinical Trials Registry. Q1 publication in preparation.

FUNDING: in-kind.

Developing clinical activities to improve physical activity and reduce stress by improving sleep patterns in student and new graduate nurses

^aPeter Le Rossignol, ^aAdam Burston, ^aSandra Miles, ^aRoger Lord, Gill Lewis, Paula Schulz, ^aPaul Fulbrook

The primary aim of this study is to measure the physical activity, sleep patterns and stress levels of university student nurses and early nursing graduates in the workplace, to improve their understanding of their level of efficacy in these areas. The secondary aim is to assist nurses develop strategies that will help them improve their functional fitness and reduce their occupational stress. Findings from this study will be used to improve the planned activities for undergraduate clinical nursing placements in the ACU/TPCH clinical school and TPCH graduate transition programs to improve nurses' readiness for graduate practice.

FUNDING: in-kind.

Conference Presentations

Geale S, ^aBurston A, Dickie R, Penny J, Betihavas V (2022). Branching Scenarios to support learning and teaching of prioritisation of patient care across the BNN program. ACU Centre for Education & Innovation Showcase, 14 December 2022.

^aFulbrook P (2022). Reliability of nursing assessments of pressure injury stage. Pressure Injury, Falls and Continence Symposium. The Prince Charles Hospital, Brisbane, 11 November 2022.

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^aBurston A, ^aFulbrook P, ^aMiles S (2022). Understanding the patient and carer experience of living with a pressure injury: A meta-synthesis. Wounds Australia 2022, Sydney, 14-17 September 2022.

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ICN NP/APN Network Conference, Dublin, Ireland 21-24 August 2022.

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Research Ethics Approvals

HREC/2022/QPCH/86044

Severe pressure injury consumer experience: the in-patient experience of hospitalisation with a severe pressure injury.

HREC/2022/QPCH/83555

Implementation of an intensive care-specific pressure injury risk assessment scale and preventative intervention bundle: a before and after study.

ACU 2022-2704N

Concurrent validity of a pressure injury risk assessment scale (the COMHON Index) in a Chinese intensive care setting.

Nursing Research
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ANNUAL RESEARCH REPORT 2022

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