HERSTON HEALTH PRECINCT SYMPOSIUM 2023

Across the Healthcare Journey

4 – 7 September 2023

Education Centre
Royal Brisbane and Women's Hospital

Clinical Research

Across the Healthcare Journey

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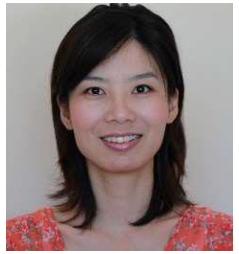
Education Centre, RBWH

What do Emergency Department clinicians think about the Peripheral Intravenous Catheter Standard?



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Background

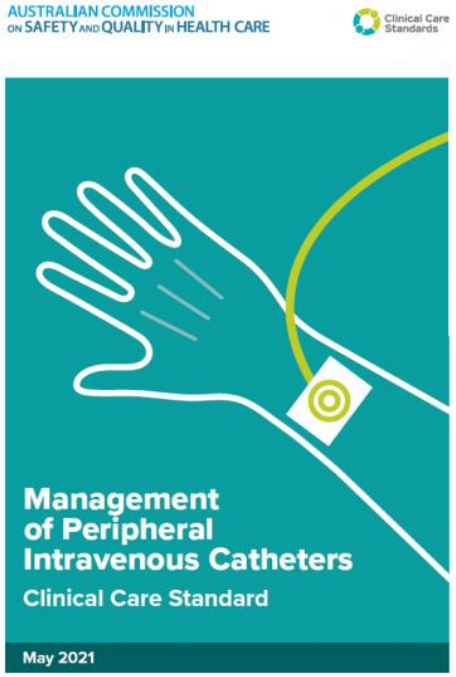
The **first** national peripheral intravenous catheter (PIVC) Standard was launched in 2021.
Clinicians' knowledge, attitude and practice toward the guideline are **unknown**, especially in emergency department (ED) settings.

Aim

This study aims to assess ED clinicians' knowledge, attitude and adherence to the PIVC guideline.

Method

An online national survey was conducted in Australia in mid-2022.
The surveys were distributed to ED clinicians via multiple professional networks and social media. Snowballing sampling method was used.
The survey included both 5-point Likert scales and multiple-choice questions.



433
ED doctors & nurses responded

61%
Unaware of the Standard

73%
Thought the Standard is not practical for ED

Results

- Participants demonstrated **adequate knowledge** of the Standard.
- Most participants' attitudes are **positive**.
- Several practices are **not aligned** with the Standard (e.g., idle catheter insertion, cubital fossa insertion, insertion without confidence and lack of ongoing review of PIVCs).

Conclusion

The Standard needs to be contextualised in ED settings.
Strategies/interventions are needed to close the evidence-practice gap.

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4–7 September 2023
Education Centre, RBWH

FIRST IN-HUMAN TRIAL OF SCAFFOLD IMPLANTATION WITH AUTOLOGOUS FAT GRAFTING FOR BREAST IMPLANT REVISION

Owen Ung[1,2,3], Matthew Cheng[4], Darryl Dunn[4], Gwenda Chapman[1,3], Aleksandra Edmundson[3], Alison McClintock[3], Danielle Herbert[1], Clement Wong[3], Michael Wagels[2]

1 MNHHS Herston Biofabrication Institute (HBI), 2 MNHHS Comprehensive Breast Cancer Institute (CBCI), 3 General Surgery RBWH, 4 Plastic and Reconstructive Surgery RBWH

PURPOSE

Silicone implants, the most common method for breast augmentation and reconstruction, have proven utility and provide satisfying results for many women. There are however inherent immediate, mid and long-terms risks which include infection, capsular contracture, rupture and more recently acknowledgement of links between surface texture and Anaplastic Large Cell Lymphoma (ALCL). So called 'implant syndrome' is a significant entity but poorly understood and, not infrequently, recipients may require revisional surgery for any of the above reasons.

This feasibility trial investigates an alternative to the currently available methods of breast reconstruction and reparative breast surgery with patient safety being the primary objective.

FIGURE 1: Polycaprolactone (PCL) Scaffold

METHOD

A 3D-printed, absorbable Polycaprolactone (PCL) scaffold is implanted pre-pectorally. The scaffold is lipo-filled, which will support tissue growth structurally and biologically. It is postulated, a natural chest contour can be created leaving the patient with only their own tissue and obviating the risk of silicone implant related complications.

The PCL Breast scaffold is designed to allow fibrovascular tissue to infiltrate the pores of the device providing mechanical support for fat grafting.

The trial is recruiting through the Royal Brisbane and Women's Hospital.

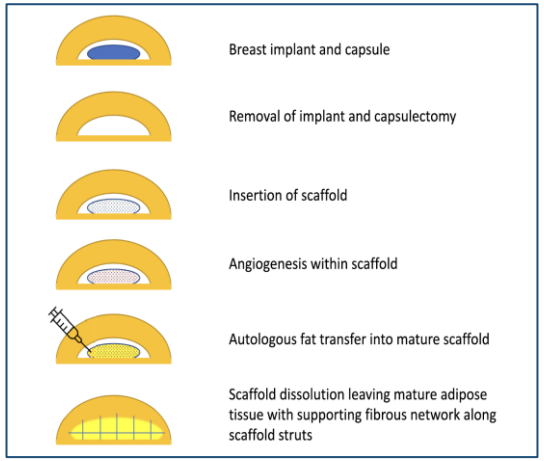
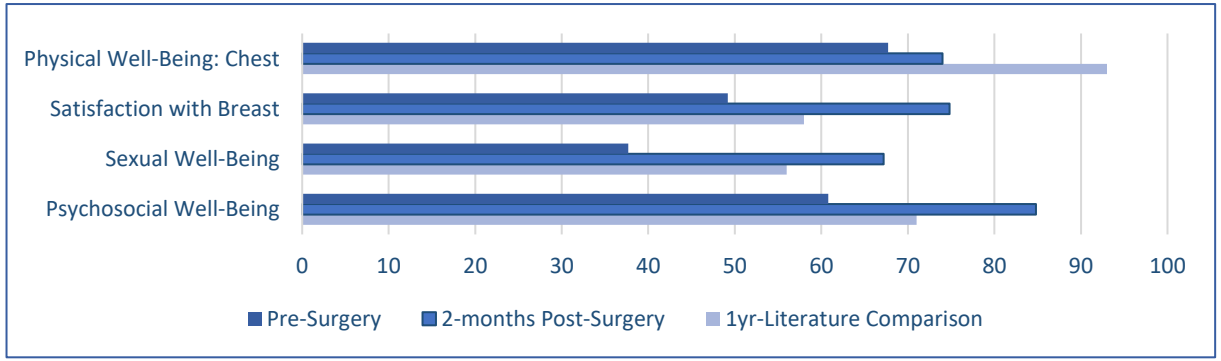


FIGURE 2: BREAST-Q Quality of Life Scores (mean)



PROGRESS

The first 'in human' scaffold procedure as described, was performed in June 2022 and 13 surgeries performed to-date. Currently 18 participants of a planned 15 – 20 cases have been recruited. Data from the first 11 participants to receive scaffold implants (volume =150 to 200 cc)(Fig 1), show good tissue retention 2-month post implantation and autologous fat grafting (Fig 3). Mean quality of life scores demonstrate improved patient satisfaction with scaffold implant 2-months after surgery (Fig 2).

To date, there have been no serious adverse event related to the implanted device.

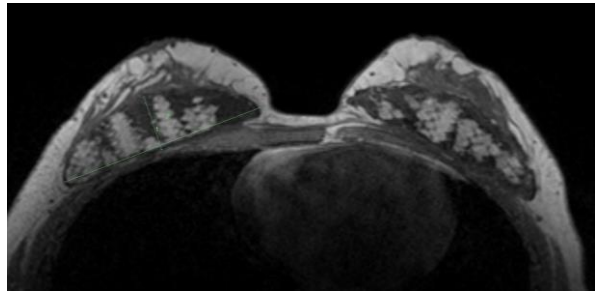


FIGURE 3: MRI of PCL scaffold with 50% autologous fat graft 2-month post-surgery

References:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5373485/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5713639/

Conflict Declaration:
The trial is sponsored by BellaSeno Pty Ltd and externally monitored.

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4–7 September 2023
Education Centre, RBWH

Determining *Pneumocystis jirovecii* colonisation from in infection using PCR-based diagnostics in HIV-negative individuals

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[4] The University of Queensland, Herston, Queensland.
[5] Metro North Virtual Hospital

Introduction

- *Pneumocystis jirovecii* pneumonia (PCP) is a life-threatening fungal infection. Incidence in HIV-negative, immunocompromised hosts (ICHs) has increased over the past 3 decades[1].
- Diagnosis is made through clinico-radiological and microbiological criteria.
- PCR-based diagnostics are now utilised over traditional microscopy techniques.
- ICHs have a lower fungal burden than HIV positive individuals[2]. Assay validation in HIV negative cohort is required.
- Determining colonisation from infection can be challenging.

Methods

- All positive *Pneumocystis* PCRs on lower respiratory specimens at a single centre between 2012-2023 identified. HIV cases excluded.
- Retrospective collection of demographic, clinico-radiological and microbiological data.
- Cases categorised as colonised, probable or proven PCP based on a clinical gold standard guided by the EORTC 2020 definitions[3].
- Current assay parameters are derived from validation in the HIV positive cohort with a qPCR > 2.5 x 10^5 copies/mL indicating infection.
- Quantitative PCR (qPCR) assay performance was assessed and modelling of various cut-offs explored.

Results

- 82 positive qPCRs: 53 on induced sputa and 29 on bronchioalveolar fluid (BAL).
- Current assay sensitivity: 50% (95% CI 30.65-69.35), specificity 83.33% (95% CI 62.62-95.26).
- Youden Index (generated from ROC curve in colonized vs proven infection): 6.5 x 10^4 copies/mL cutoff: sensitivity 75% (95% CI 56.64-87.32), specificity 66.67% (95% CI 46.71-82.03).
- "High cutoff" qPCR > 1.55x10^6 copies/mL: 100% specificity, sensitivity 32% (17.95- 50.66%).
- "Low cutoff" qPCR" > 8.1x10^3 copies/mL: sensitivity 96.43% (95% CI 82.29-99.82), specificity 20.83% (95% CI 9.245-40.47)

Table 1: Baseline demographics and categorisation

Characteristics	Colonisation (n=24)	Probable infection (n=30)	Proven infection (n=28)	2 way comparison (proven vs colonised)
Sex (male)	70.8% (17/24)	33.3% (20/30)	57.1% (16/28)	0.3911
Age (median, IQR)	57 (42-66)	68 (62-73)	63 (53-74)	0.1137
Sample type (BAL)	25% (6/24)	43.3% (13/30)	35.7% (10/28)	0.5487
qPCR (median, IQR)	40,500 (11,800-147,500)	101,500 (16,500-885,000)	280,000 (63,750-2,525,000)	0.0013
BAL qPCR	32,500 (11,650-160,750)	15,000 (8,000-280,000)	230,000 (66,000-665,000)	0.0978
sputum qPCR	43,000 (13,000-127,500)	140,000 (49,000-990,000)	385,000 (76,750-3,200,000)	0.0056
Co-morbidities				
Haem. cancer	25% (6/24)	30% (9/30)	42.9% (12/28)	0.2452
Non-haem. cancer	29.2% (7/24)	50% (15/30)	39.3% (11/28)	0.4615
Solid organ transplant	4.2% (1/24)	0% (0/30)	0% (0/28)	0.5622
Chronic lung disease	41.7% (10/24)	40% (12/30)	35.7% (10/28)	0.7772
Haemodialysis	0% (0/24)	0% (0/30)	0% (0/28)	>0.9999
Diabetes	16.7% (4/24)	16.7% (5/30)	21.4% (6/28)	>0.9999
Chronic liver disease	4.2% (1/24)	6.7% (2/30)	3.6% (1/28)	>0.9999
Autoimmune/CTD	20.8% (5/24)	16.7% (5/30)	28.6% (8/28)	0.749
Immunosuppression medications	58.3% (14/24)	80% (24/30)	67.9% (19/28)	0.5685
Steroids ≥ 2 wks > 15mg/day	25% (6/24)	36.7% (11/30)	28.6% (8/28)	>0.9999
Prophylaxis	8.3% (2/24)	13.3% (4/30)	17.9% (5/28)	0.43
Clinical presentation				
Fever	20.8% (5/24)	46.7% (14/30)	64.3% (18/28)	0.0022
Dyspnoea	75% (18/24)	96.7% (29/30)	85.7% (24/28)	0.4829
Cough	66.7% (16/24)	73.3% (22/30)	64.3% (18/28)	>0.9999
Hypoxia (< 95%)	41.7% (10/24)	80% (24/30)	67.9% (19/28)	0.0926
Bacterial	12.5% (3/24)	40% (12/30)	0% (0/28)	0.0916
Viral	20.8% (5/24)	30% (9/30)	0% (0/28)	0.0164
Other infective	16.7% (4/24)	10% (3/30)	0% (0/28)	0.0393
Non-infective	75% (18/24)	53.3% (16/30)	0% (0/28)	<0.0001
Radiological findings				
Ground glass	20.8% (5/24)	60% (18/30)	67.9% (19/28)	0.0009
Reticular opacities	0% (0/24)	3.3% (1/30)	3.6% (1/28)	>0.9999
Nodules	25% (6/24)	20% (6/30)	21.4% (6/28)	>0.9999
Consolidation	45.8% (11/24)	40% (12/30)	57.1% (16/28)	0.5783
Deceased D+30	12.5% (3/24)	26.7% (8/30)	17.9% (5/28)	0.7109
PCP treatment	0% (0/24)	93.3% (28/30)	100% (28/28)	<0.0001

Figure 1

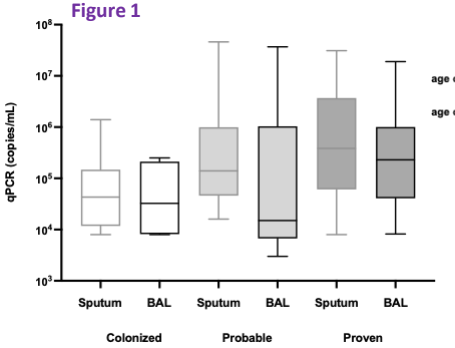

Figure 2

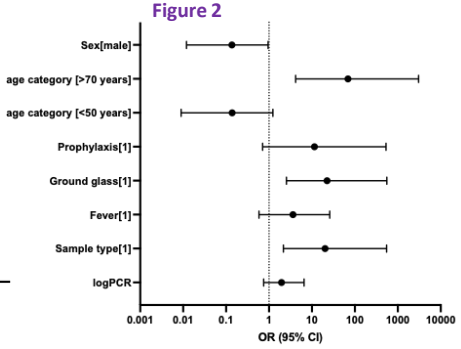

Figure 3

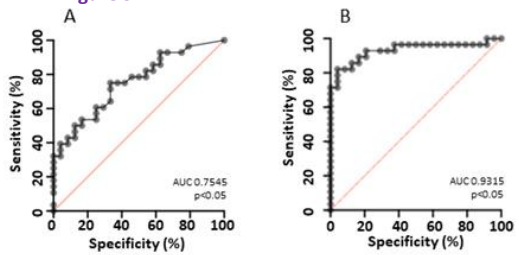

Figure 1: Median qPCR results stratified by sample type and clinical diagnosis.

Figure 2: Forest plot for multivariate analysis to determine main predictors of PCP.

Figure 3: ROC curves for the differentiation of *Pneumocystis* proven infection and colonisation using A) qPCR with the current cutoff and B) multivariate model of clinical, radiographic and laboratory factors (age, sex, prophylaxis, fever, ground glass changes, sample type and qPCR).

Conclusion

- Predominant cohorts affected by *Pneumocystis* included malignancy, chronic lung disease and receiving immunosuppression.
- Current assay performance is modest, the Youden index has a trade off in specificity.
- A high and low threshold cutoff system has a large grey zone resulting in a high number of "probable infections".
- A diagnostic algorithm incorporating prevalence, age, sex, prophylaxis, fever, ground glass changes, sample type and qPCR provides the greatest diagnostic accuracy.
- Our findings are consistent with previous studies showing that PCP in HIV-negative ICHs have a lower fungal burden and require a lower qPCR cut-off to ensure optimal test performance[2].

1. Kolbrink B, Scheikholeslami-Sabzewari J, Borzikowsky C, et al. Evolving epidemiology of pneumocystis pneumonia: Findings from a longitudinal population-based study and a retrospective multi-center study in Germany, The Lancet Regional Health - Europe, Volume 18, 2022, 100400, ISSN 2666-7762, https://doi.org/10.1016/j.lanepe.2022.100400.
2. Limper AH, Offord KP, Smith TF, Martin WJ 2nd. Pneumocystis carinii pneumonia. Differences in lung parasite number and inflammation in patients with and without AIDS. Am Rev Respir Dis. 1989 Nov;140(5):1204-9. doi: 10.1164/ajrccm/140.5.1204. PMID: 2817582.
3. Katrien Lagrou and others, *Pneumocystis jirovecii* Disease: Basis for the Revised EORTC/MSGERC Invasive Fungal Disease Definitions in Individuals Without Human Immunodeficiency Virus, *Clinical Infectious Diseases*, Volume 72, Issue Supplement_2, 15 March 2021, Pages S114–S120, https://doi.org/10.1093/cid/ciaa1805

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Developing ideal catheter to vein ratio parameters to prevent peripheral intravenous catheter failure

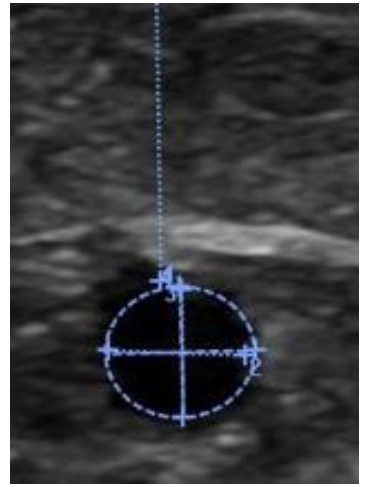
Marsh N[1,2,3], Larsen E,[1,2,3] O'Brien C[1,2], Peach H[1], Wignall E[1], Bulmer A[2], Rickard C[1,2,3], Ullman A[1,2,3], Ware R[2]

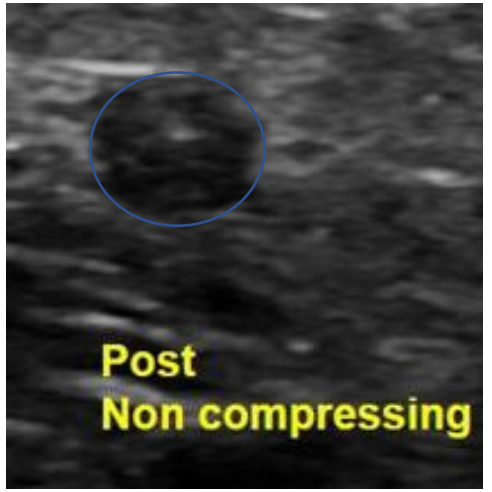
[1]Royal Brisbane and Women's Hospital; [2]Griffith University; [3]University of Queensland

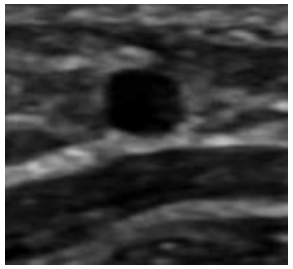
Purpose: Peripheral intravenous catheter (PIVC) failure, resulting from infection, infiltration, occlusion, dislodgement, and phlebitis is a pervasive problem, affecting one in three PIVCs. High catheter-to-vein ratio (CTVR) has been widely recognised as a predictor of failure among central venous access devices, however the influence of CTVR upon PIVCs is currently unknown. We aimed to address this knowledge gap.

Methods: A single-centre prospective observational study of PIVCs inserted among hospitalised medical and surgical patients was conducted at the Royal Brisbane and Women's Hospital between September 2020 and March 2022. Participants aged ≥18 years, requiring a PIVC for ≥24 hours, were eligible for inclusion. CTVR measurements were assessed at the time of PIVC insertion, and again at removal (where possible). The primary outcome was all-cause PIVC failure.

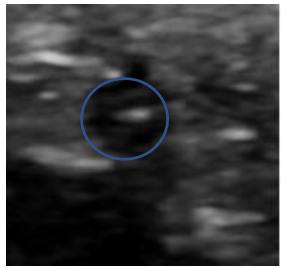
Results: In total, 183 participants were enrolled. The mean age was 55 years, with most patients (65%) presenting with two or more comorbidities. PIVCs were predominantly 20 gauge (89%), inserted in the cephalic vein (76.5%), with a median dwell time of 2.9 days. All-cause PIVC failure was 25.1% (n=46). In multivariable modelling, PIVCs with a CTVR of ≥20% (circumference ratio, n=96) had a significant association with failure (Odds Ratio 2.5, 95% Confidence Interval 1.1-5.8, p=0.03) than those with ≤20% CTVR (n=87). Results are preliminary; analysis is ongoing.







Pre PIVC insertion



On PIVC removal

Conclusion: CTVR of ≥20% is a significant risk factor for PIVC failure. Clinicians should consider the influence of CTVR during initial patient assessment, prior to PIVC insertion.

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Education Centre, RBWH

Securing Central lines in Intensive Care: A multicentre randomised controlled trial (RCT)

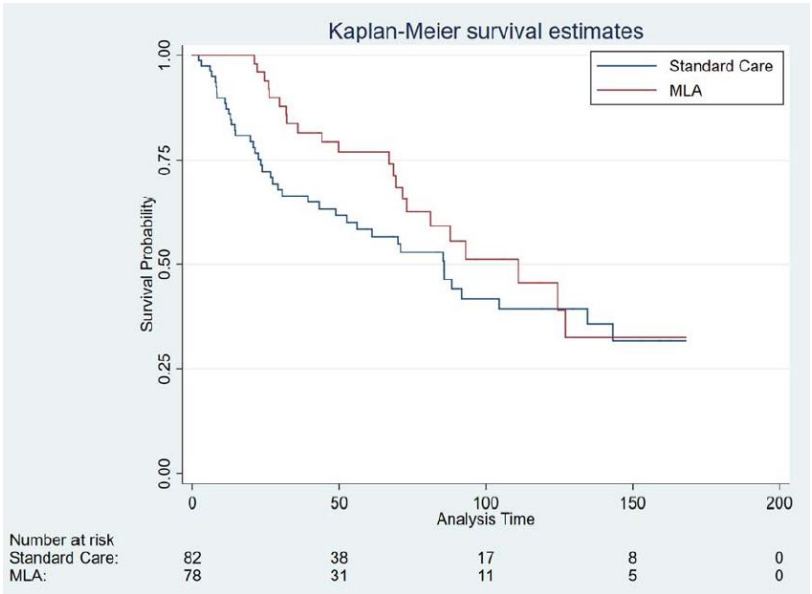
Marsh N[1,2,3], Larsen E,[1,2,3] O'Brien C[1], Ware RS[2], Coyer F[3], Alexandrou E[4,5], Pearse I[6], Sosnowski K[7], Patel M[2], Rickard CM[1,2,3,8], Byrnes J[2], Corley A[1,2,3]

[1]Royal Brisbane and Women's Hospital; [2] Griffith University; [3]University of Queensland; [4]Liverpool Hospital; [5]University of Wollongong; [6]The Prince Charles Hospital, [7]Logan Hospital, [8]Herston Infectious Diseases Institute, MNHS

Purpose: Central venous access devices (CVADs) deliver supportive therapies, monitor central-venous pressure and enable blood sampling from critically ill patients. However, approximately one-quarter of CVADs fail from mechanical or infective complications. Poor securement to the skin contributes to CVAD failure, and dressings for internal jugular (IJ) CVADs are particularly vulnerable to pull-out forces and failure. A topical medical liquid adhesive (MLA) has been manufactured to address this problem. This study aimed to evaluate the effectiveness of MLA, compared to standard care, for improving IJ CVAD dressing adhesion.

Methods: A parallel group, superiority RCT comparing standard care dressings with standard care plus MLA (intervention) was undertaken in the intensive care units in Queensland (RBWH, TPCH and Logan Hospital) and one in New South Wales (Liverpool Hospital). The primary endpoint was premature dressing failure. Secondary outcomes included first dressing dwell time, skin injury, and all-cause CVAD failure.

Results: In total, 160 participants (82 control; 78 intervention) were enrolled between September 2021 and February 2023. Premature dressing failure was significantly lower in the intervention group (n=22; 28%) compared to the control group (n=41; 50%); risk difference 0.22 (95% confidence interval (CI), -0.37 to -0.071; p=0.005). Time to first dressing failure was longer in the MLA group, 59 hours (95% CI, 29.6-81.2) compared to standard care, 24 hours (95% CI, 12.3-61.1; p=0.002). Three skin injuries occurred: standard care (maceration and skin tear) and intervention (blister). All-cause CVAD failure was similar in both groups (5% vs 5%).



Conclusion: MLA is significantly associated with decreased IJ CVAD dressing failure and longer dressing dwell. Clinicians should consider using MLA when applying CVAD dressings in ICU.

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4–7 September 2023
Education Centre, RBWH

Optimising the pathway of care for Neoadjuvant Breast Cancer Treatment at the Royal Brisbane and Women's Hospital

McCurry T, You K, Inglis P, Nottage N, Kennedy G

Cancer Care Services RBWH

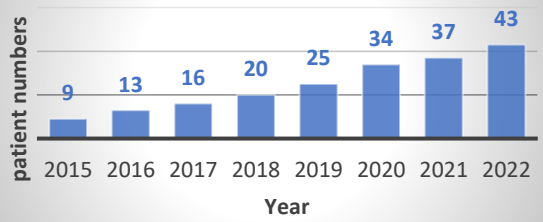
Purpose

Neoadjuvant chemotherapy treatment (NACT) plays a pivotal role in reducing tumour burden, facilitating breast conserving surgery and improving disease free and overall survival. NACT has been increasingly utilised in breast cancer treatment, due to these multifaceted benefits. Multidisciplinary team (MDT) meetings play an essential role in recommending and coordinating NACT. A Breast cancer MDT audit to review current NACT pathways was undertaken.

Methods

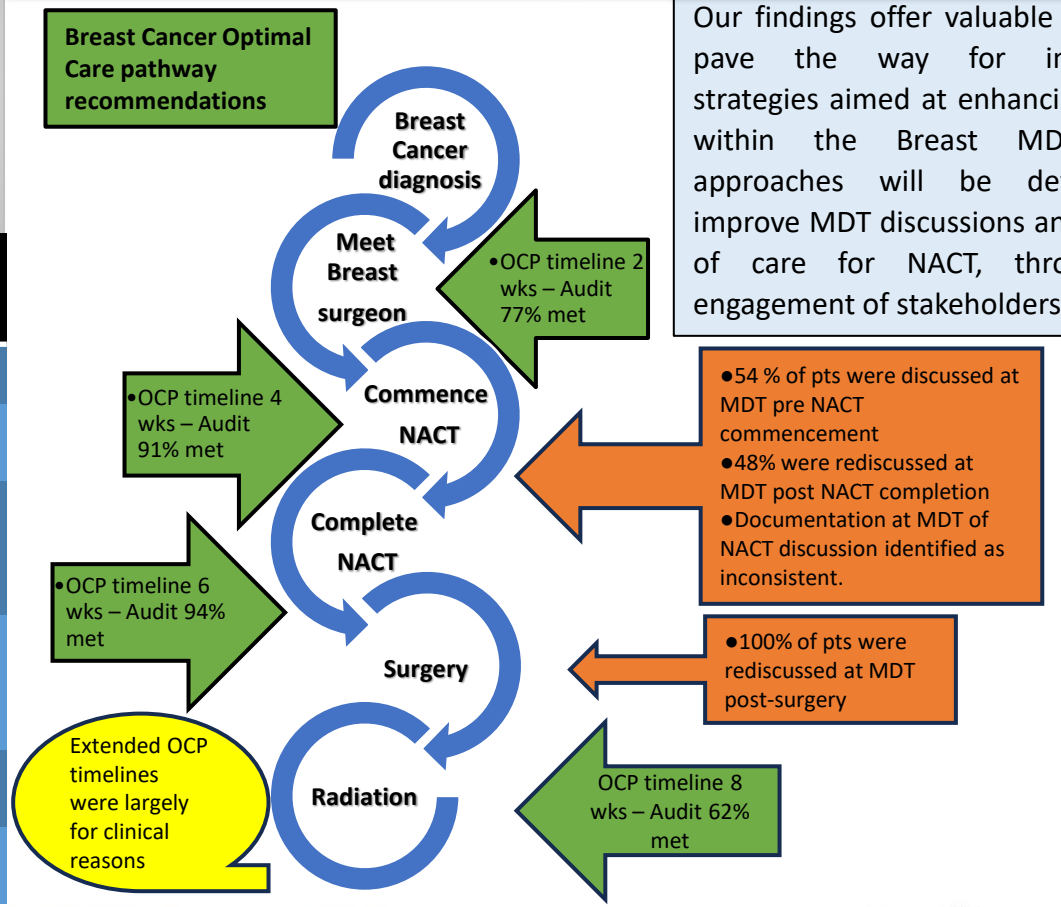
From July 2021 to July 2022, patients who received NACT were identified. Hospital electronic records (iEMR) were reviewed to collect patient demographic background, cancer characteristics and treatment information. To assess for Cancer Council Australia Optimal Care Pathway (OCP) treatment timelines; date of referrals, appointments and treatment were collected. MDT documentation was also collected through ieMR and Queensland Oncology Online (QOOL).

NACT utilisation RBWH



Characteristics of NACT Breast MDT population July 2021-July 2022 (n=35)	Percentage
Age, median (range)	49 (28-72)
Primary tumour size in mm, median (range)	29 (13-60)
Nodal status at diagnosis	
Confirmed positive on pathology	34%
Suspicious radiologically (not proven)	26%
Not suspicious	40%
Breast cancer subtype	
Hormone pos & HER 2 neg	29%
Hormone pos or neg & HER 2 pos	49%
TNBC	23%
Eligible for additional systemic adjuvant treatment post-surgery	Yes 46% No 54%
Adjuvant Radiation therapy treatment	Yes 80% No 20%

Results



Conclusion

Our findings offer valuable insights and pave the way for implementing strategies aimed at enhancing efficiency within the Breast MDT. Tailored approaches will be developed to improve MDT discussions and the model of care for NACT, through active engagement of stakeholders.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Transitions of Care: Continuity of Pharmaceutical Care and Medication Management

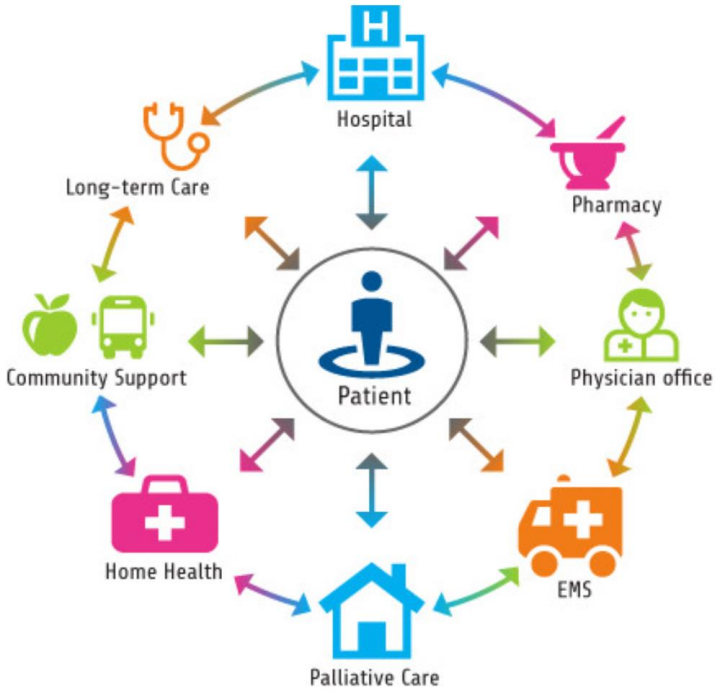
Abby Byrne Hartmann, Dr. Karen Bettenay, Professor Ian Coombes

Introduction

- In Queensland Health (QH) clinical and pharmaceutical handover is predominantly sent electronically to primary healthcare professionals (PHPs) upon patient discharge.
- Medication information may be inaccurate or incomplete, and transfer delayed or unsuccessful. This can lead to medication discrepancies and increased risk of readmission.
- Documentation of PHP (General practitioner and community pharmacy) details across QH systems was examined. Additionally, patient barriers/ enablers to continuity of care were evaluated.

Methods

- Sequential mixed methods using two collection methods: a prospective audit and verbal patient survey.
- Audit: determined PHP documentation and proportion of patients with regular PHPs.
- Survey: Identified barriers and enablers to patients having regular PHPs.
- Descriptive statistics and thematic analysis were used to analyse the data.



Results

- Thirty participants from Cardiology, Medical and Surgical wards.
- Community Pharmacy details: most frequently documented on the enterprise liaison management system (eLMS) (48%, 14/30), and 37% (11/30) accurate.
- GP details: most frequently documented in integrated electronic Medical Record (ieMR) (77%, 23/30), and 67% (20/30) accurate.
- More patients had a regular GP (93%, 28/30) than community pharmacy (53%, 16/30).
- Convenience, continuity, trust and rapport were drivers to patients seeking regular contact with their PHPs.

Conclusion

- Patients have trust in health professionals to communicate medication changes throughout transitions of care.
- Gaps exist in documentation of PHP details, hindering the transfer of clinical information.
- Challenges exist for transitions of care. Studies should aim to contextualize barriers and enablers to regular patient-provider relationships in larger patient cohorts.
- Organizations should implement a flexible approach to improve documentation and communication throughout transitions of care.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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NAVIGATING A NEW PATH TO PAIN RELIEF: A PHARMACIST-LED POST-DISCHARGE OPIOID ANALGESIC CLINIC

Ashlee Peacey, Nicola Harper, Sharon Millhouse and Margie Butnoris - STARS Pharmacy Department

PURPOSE

In 2022, a gap analysis comparing current care delivery at our specialist surgical facility against the Opioid Analgesic Stewardship in Acute Pain Clinical Care Standard, identified service delivery gaps well-suited for pharmacists to address through the implementation of analgesic stewardship. In response, a novel post-discharge pharmacist opioid analgesic review clinic was established to optimise acute pain management and minimise risk of opioid misuse in surgical patients at increased risk of opioid-related harm.

METHODS

Literature review and extensive collaboration with hospital and community stakeholders, defined the clinic's purpose, patient cohort and referral pathways. High risk patients are contacted by a pharmacist 2 to 7 days post-discharge for review.

PHARMACISTS' ROLE:

ASSESS
Recent analgesia use and current pain levels

EXPLORE
Understanding of pain management regimen

REVIEW
Drug interactions and non-pharmacological management

COUNSEL
Analgesia optimisation, side effect management and safe medication disposal

REFER
To primary care provider and other supports, if required

EVALUATIONS

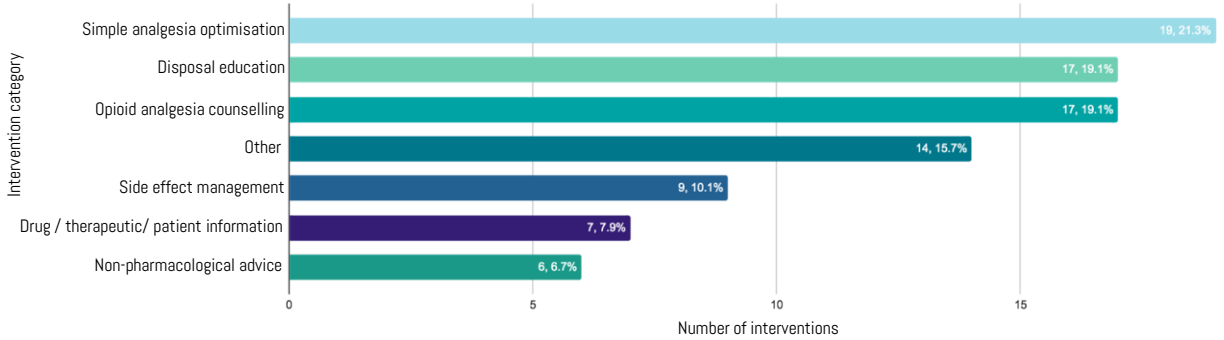
33
Patients reveiwed March – June 2023

59%
of patients still requiring pain relief were following their discharge plan

97%
of cases had ≥1 interventions

33%
referred to primary care provider for review

PHARMACIST INTERVENTIONS



CONCLUSIONS

This clinic demonstrates a pharmacist's value in applying analgesic stewardship principles to bridge care gaps, mitigate opioid-related harm, and enhance patients' post-operative experience with respect to their pain management.

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RECONCILING COMORBDITIES BETWEEN THE AUSTRALIA AND NEW ZEALAND DIALYSIS AND TRANSPLANT REGISTRY (ANZDATA) AND HOSPITAL ADMISSION DATASETS USING DATA-LINKAGE

Dharmenaan Palamuthusingam[1], Jesse Tong[1], Carmel M. Hawley[2], Elaine M. Pascoe[3], David W. Johnson[2], Palvannan Sivalingam[2], Stephen McDonald[4], Neil Boudville[5], Matthew D. Jose[6], Girish Talaulikar[7], Magid Fahim[2].

1. Royal Brisbane and Women's Hospital, 2. Princess Alexandra Hospital, 3. University of Queensland, 4. Australian and New Zealand Dialysis and Transplant Registry, 5. University of Western Australia, 6. School of Medicine, University of Tasmania, 7. Renal Services, ACT Health

Objective:

Clinical quality registries provide rich and useful data for clinical quality monitoring and research purposes but are susceptible to data quality issues that can impact their usage. This study assesses the concordance between comorbidities recorded in the Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry and those in state-based hospital admission datasets.

Methods: All patients recorded in ANZDATA as requiring chronic kidney replacement therapy (KRT) between 01/07/2000 and 31/12/2015 that were linked with state-based hospital admission datasets from New South Wales, South Australia, Tasmania, Victoria and Western Australia were included. Coronary artery disease, diabetes mellitus, cerebrovascular disease, chronic lung disease and peripheral vascular disease recorded in ANZDATA at each annual census date were compared overall, over time and between different KRT modalities to comorbidities recorded in hospital admission datasets, as defined by the International Classification of Diseases (ICD-10-AM), using both the kappa statistic and logistic regression analysis.

Table 1. Comparison of comorbidities between hospital admission datasets (reference standard) and ANZDATA.

	Total prevalence in ADM (*n* = unique patients)	Total prevalence in ANZDATA (*n* = unique patients)	Condition present in ADM and ANZDATA (*n* = unique patients)	Condition not present in ADM and not in ANZDATA (*n* = unique patients)	Recorded in ADM only (*n* = unique patients)	Recorded in ANZDATA only (*n* = unique patients)	Sensitivity ± SE	Specificity ± SE	PPV ± SE	NPV ± SE	Overall agreement (%) ± SE	Kappa ± SE
Coronary artery disease (YES OR SUSPECTED)	16 330 (4 772)	48 979 (12 244)	13 623 (3 790)	45 531 (15 745)	2707 (982)	35 356 (8454)	83 (0.4)	57 (0.3)	28 (0.3)	95 (0.1)	61 ± 0.2	0.22 ± 0.002 Fair
Diabetes mellitus	40 846 (11 804)	42 774 (12 164)	37 956 (10 964)	52 236 (16 132)	2890 (840)	4818 (1200)	93 (0.2)	91 (0.2)	89 (0.2)	94 (0.1)	92 ± 0.0	0.84 ± 0.002 Very good
Chronic lung disease (YES OR SUSPECTED)	6435 (1 795)	20 923 (5071)	3694 (941)	16 970 (4113)	2741 (854)	17 229 (4130)	57 (0.8)	19 (0.3)	18 (0.4)	82 (0.4)	21 ± 0.1	0.19 ± 0.004 Poor
Cerebrovascular disease (YES OR SUSPECTED)	1983 (594)	20 895 (4799)	1153 (320)	19 785 (4546)	830 (274)	19 742 (4479)	58 (0.2)	21 (0.3)	6 (0.2)	94 (0.2)	21 ± 0.1	0.07 ± 0.002 Poor
Peripheral vascular disease (YES OR SUSPECTED)	1377 (556)	33 053 (7795)	837 (309)	32 241 (7469)	540 (247)	32 216 (7486)	61 (0.2)	33 (0.3)	3 (0.1)	97 (0.0)	34 ± 0.2	0.02 ± 0.001 Poor

Results: 29, 334 patients with 207,369 hospital admissions were identified. Comparison was made at census date for every patient comparison. Overall agreement was 'very good' for diabetes mellitus (92%, k=0.84) and 'poor' to 'fair' (21-61%, k=0.02-0.22) for all other comorbidities. Diabetes mellitus had the highest accuracy (sensitivity 93% (±SE 0.2) and specificity 93% (±SE 0.2)), and cerebrovascular disease had the lowest (sensitivity 54% (±SE 0.2) and specificity 21% (±SE 0.3)). The false positive rates for cerebrovascular disease, peripheral vascular disease, and chronic airway disease (18-33%). The probability of a false positive was lowest for kidney transplant patients for all comorbidities and highest for patients on haemodialysis. A linear relationship between the probability of a false positive result and time was observed for all comorbidities likely due to a higher prevalence of these comorbidities in ANZDATA.

Conclusions: Agreement in the recording of comorbidities between the two data sources was variable, with the prevalence of comorbidities being higher in ANZDATA. The observed discordance may in part be explained by differences in collection patterns used by the two datasets

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Assessing Consumer Understanding Of Antimicrobials

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1. Antimicrobial Stewardship, RBWH; 2. Antimicrobial Stewardship, MNHHS; 3. School of Pharmacy, University of Queensland

Purpose

To **determine consumer understanding of prescribed antimicrobials** and current **practice of communication to patients/carers** in relation to prescribed antimicrobial treatment.

Method

A prospective paper-based survey of patients (or carers) admitted during early March 2023.

The audit collected data relating to patient/carer understanding of prescribed antimicrobials, how their antimicrobials were discussed with them, and how they would like to receive information about antimicrobials in the future.

Results

- There were 37 surveys completed during the audit period.
- Of those surveyed 95% reported being told they were on an antimicrobial by a health care practitioner and 84% knew the indication for prescription.
- Doctors and Nurses were recorded as the staff that most frequently discussed antimicrobials with patients, this mostly occurred through verbal communication (81%).

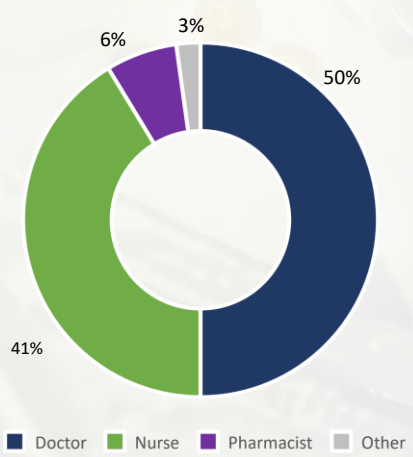

Figure 1: Which profession the patient/carer identified as the one who provided information on antimicrobial treatment

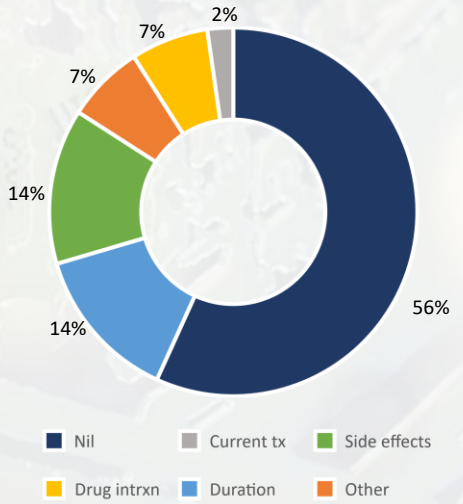

Figure 2: What further information patients indicated they would like to know about their antimicrobial treatment

Conclusions

The **majority of patients** captured **knew that they had been prescribed an antimicrobial** and had some understanding of why they were on it. **This demonstrates alignment of current practice at RBWH with the Antimicrobial Stewardship Clinical Care Standards.**

Some **patients indicated** they may like **more written information,** and there were **some limitations and barriers identified** in this pilot survey.

As this is **planned to be an ongoing** quality improvement activity, future **surveys will be adjusted for improvement**.

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4–7 September 2023
Education Centre, RBWH

ORAL HEALTH OF ADULTS REQUIRING HOME INTRAVENOUS SUPPORT

Osland EJ[1], Bhatt S[2], M Nelms[3], K Pateman[4]

[1]Royal Brisbane and Women's Hospital; [2]Princess Alexandra Hospital; [3]Gold Coast University Hospital; [4]Metro North Hospital and Health Service

Background: Oral health is not presently recognised as a component of multidisciplinary care for patients with chronic intestinal failure (CIF). This study explored self-reported oral health status, access to dental care and oral health behaviours in adult patients receiving home intravenous support (HIVS) in Queensland, Australia.

Methods: Patients were invited to complete a survey examining self-reported oral health status, behaviour and service access. Supporting clinical information was matched to the completed

Methods cont: self-assessment surveys by the treating team. Descriptive statistical analysis was undertaken.

Results: Twenty-four patients participated (response rate 58%). Daily positive oral health behaviours were reported in the majority of patients (brushing 96%; flossing 50%). Overall, 29% reported very poor or poor oral health: This did not differ between aetiologies of CIF (Table 1).

TABLE 1: Patient demographics	All (n=24)	Dysmotility (n=11)	SBS-IF (n=22)
Age	53.3(17.1)yrs	47.5(21)yrs	58(10.9)yrs
Gender (Male/Female)	5/19	1/10	3/9
Metro / Regional or Remote	20/4	10/1	9/3
Duration of HIVS	5[4.75]yrs	5[5]yrs	5[10.75]yrs
Frequency of HIVS	7[2.25] days	7[3] days	6.5[2.25]days
HIVS volumes	11[14.85]L/wk	7.5[17.5]L/wk	9.7L[16.85]/wk

Mean (SD); Median [IQR]

Results cont: A greater proportion of those accessing private dental care reported good or very good oral health when compared to those accessing public services (46% vs 27%). While dental care was received by 75% of patients in the last year, more patients in regional areas reported obstacles to access (50% vs 25% in metro).

Conclusions: This study suggests approximately one third of CIF patients experience sub-optimal dental health, and that patients in regional areas may be at greater risk. A greater awareness of the oral health needs of CIF patients is required by the CIF services.

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HHPS23 Abstract 111

Comparing Outcomes of Nasogastric Tube Position Testing in Two Countries

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1. School of Exercise and Nutrition Sciences, Faculty of Health, QUT
2. Dietetics and Food Services, RBWH
3. University College London Division of Medicine, London, United Kingdom

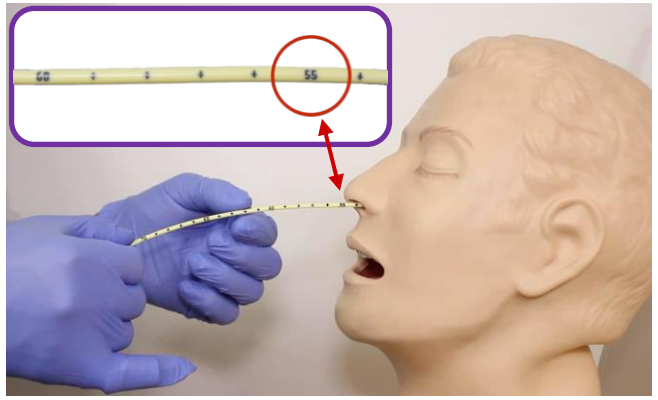
AIM

To compare practice and outcomes of ongoing NGT position testing at RBWH and University College London Hospital (UCLH). Ongoing NGT position testing is any test conducted subsequently to the test confirming initial placement.

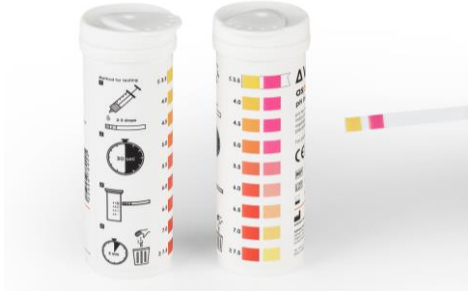
INTRODUCTION

- Use of a misplaced nasogastric tube (NGT) potentially causes harm and is considered avoidable.
- NGT position confirmation before each use is essential to identify a displaced NGT and avoid harm.
- No universally agreed method exists for confirming ongoing NGT position, with practice varying globally.

External Tube Length Measurement (ETLM) is an ongoing NGT position test used at RBWH & UCLH



pH testing is an ongoing NGT position test used at UCLH



METHODS

- All adults with NGTs used for feeding for ≥2 days at RBWH and UCLH were included.
- Data was collected prospectively from medical notes until NGT removal or maximum of 14 days.
- Outcomes collected were the results of tests, amount of enteral nutrition, medications missed and x-rays.

RESULTS

- Total 256 patients.
- No difference in demographics across UCLH and RBWH.
- UCLH had more unsuccessful ongoing NGT position confirmation tests.
- 1 pH test at UCLH failed to identify a displaced tube before use.
- 2 NGTs at RBWH and 3 NGTs at UCLH displaced and detected by oral cavity inspections prior to use.

Table 1: Outcomes of ongoing NGT position testing

	RBWH			UCLH (UK)			p-value*
Patients n=	120			136			
Patient days n=	818			901			0.9
Tests	pH	ETLM	ETLM+pH	pH	ETLM	ETLM+pH	
Successful n=	14	1,031	18	383	272	718	
Unsuccessful n=	1	11	4	187	2	93	
Outcomes							
X-rays n(%)†	9 (1.1)			48 (5.3)			<0.01
Disruptions^:							
Medication n(%)†	5 (0.6)			52 (5.8)			<0.01
Ent. Nutrition n(%)†	10 (1.2)			113 (12.5)			<0.01

ETLM = External Tube Length Measurement
UCLH = University College London Hospital
** p-value for χ^2 test*
† % of total number of days
^ A disruption is: – enteral feed missed
– medications either missed or delayed for more than 2 hours

CONCLUSION

Ongoing NGT position testing caused additional X-rays and disruptions to medications and enteral nutrition at UCLH, where pH testing is more widely practiced. During the study, pH testing did not detect one displaced tube before use causing serious patient harm. Further research is essential before recommending a specific method of ongoing NGT position confirmation.

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4–7 September 2023
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Ultrasound follow up of incidental thyroid nodules: An audit of clinical indications against the Choosing Wisely criteria

Jessica Connolly, Dr Shu Yan Thong, Heath Edwards – Royal Brisbane & Women's Hospital

Background/Aims

Incidental thyroid nodules are a common finding on cross sectional imaging of the neck.[1] Follow up of all incidentally detected thyroid nodules with ultrasound may lead to overdiagnosis and overtreatment.[2]

The American College of Radiology has developed the Choosing Wisely protocol which provides criteria for the ultrasound follow of thyroid nodules.[3] The aim of this study was to assess whether The Royal Brisbane & Women's Hospital (RBWH) follows the Choosing Wisley criteria in the follow up of incidental thyroid nodules.

Methods

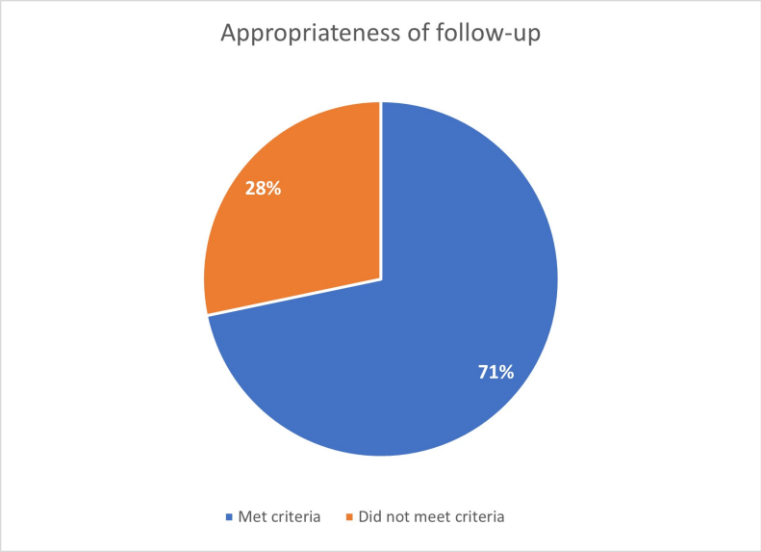
Request forms and radiologist reports for thyroid ultrasounds performed at RBWH over a 4 year period were reviewed, and data was collected that enabled us to compare the referral against the inclusion criteria for Choosing Wisely. Patient age, size of nodule at detection, clinical risk factors and results of thyroid ultrasound including histology were collected. The nodule was measured by the research team when size was not included in the images or report.

Results

Almost ⅓ (28%) of scans included did not meet The Choosing Wisely criteria. In 69% of scans the radiology report recommended ultrasound follow up, however of these 68 scans, 20 did not meet the criteria for follow up.

It was noted that 1 malignant nodule would have been missed from follow up if the criteria was followed. Histology results confirmed this as a papillary thyroid carcinoma, a slow growing cancer which is less likely to develop metastases. This was confirmed in a study which found that over a 10 year period, no deaths occurred from untreated papillary microcarcinomas, which suggests that the threshold applied by the Choosing Wisely criteria for follow up is adequate.[1]

By applying the criteria 14 hours of ultrasound time would have been saved.



Moving Forward

- Gatekeepers could be implemented to check the referral against the Choosing Wisely criteria
- Implementation of guidelines for the reporting of incidental thyroid nodules

Conclusion

Strict adherence to the criteria could result in a 30% reduction in scans. Implementation of processes that result in increased compliance are recommended.

References

1.Hoang JK et al. Managing incidental thyroid nodules detected on imaging: White paper of the ACR incidental thyroid findings committee. J Am Coll Radiol [Internet].2015 Feb [cited 2022 Apr 29];12(2):143-50.
2.Vaccarella S et al.Worldwide thyroid-cancer epidemic? The increasing impact of overdiagnosis. N Engl J Med.2016 Aug [cited 2022 Apr 29];375(7):614-7.
3. American College of Radiology 2017. Ultrasound for incidental thyroid nodules. https://www.choosingwisely.org

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Audit of Adverse Drug Reaction Reporting and Communication at a Quaternary Hospital

Sarah Risdale[1] | Erin McCaughey[1] | Emily Wong[2]

1. Pharmacy Department, Royal Brisbane and Women's Hospital; 2. School of Pharmacy, University of Queensland

Purpose

To determine the **percentage of Adverse Drug Reactions (ADRs) recorded into a patient's electronic hospital record** in line with Medication Safety Standards.

Review **communication of ADRs** to primary health providers, the **profession of people reporting ADRs**, and **if any ADR reports were re-exposure events**.

Methods

A retrospective audit was conducted of ADR reports made between January and December 2022. Drug reaction and patient information was collected from the hospital ADR database, electronic hospital records, and pharmacy dispensing software.

Results

The audit reviewed 41 reports. It found 29% of reports were appropriately entered into the electronic patient record, 39% were entered into the pharmacy software, and 71% had been communicated in discharge summaries to primary health care providers.

Of the reports audited, 15% were not recorded in any of the reviewed electronic records and one report was found to be a re-exposure event. The data also showed 100% of reported ADRs were reported by pharmacists.

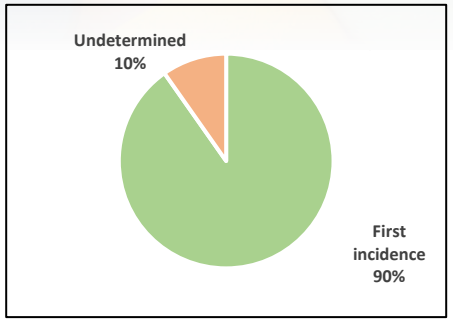

Figure 2: Proportion of ADR reports that were re-exposure events

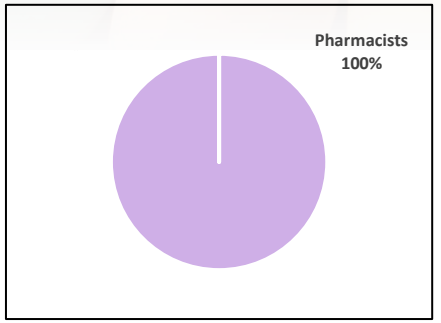

Figure 3: Proportion of health professionals who submit ADR reports

Conclusions

The proportion of ADRs reported in electronic patient records was found to be low, therefore not complying with the Medication Safety Standards.

It is crucial that all new ADRs are reported, documented in patient's records and communicated to primary health care providers to avoid unnecessary re-exposures.

The results have shown that a change in reporting processes is required at the hospital, and this should be investigated further.

The project team would like to acknowledge the following for their assistance with this project:

- Prof. Ian Coombes
- Dr. Peter Donovan
- Julie Withers
- Dr Elizabeth McCourt
- RBWH Pharmacy CE Team

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But how much do they actually take?

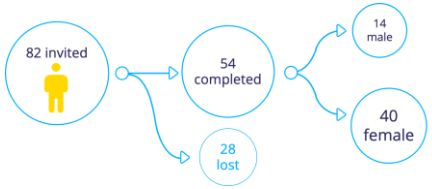
Post-discharge oxycodone use and handling in adult tonsillectomy patients

Kristiana McFarlane [1, 2.] 1. STARS Pharmacy Department 2. University of Queensland

Purpose: Tonsillectomy is acknowledged as causing moderate to severe pain lasting several days. The state-wide medication formulary restricts oxycodone discharge prescribing to a maximum of 10 tablets, however a local approval was obtained to allow 20 tablets post tonsillectomy. The project aimed to evaluate how much oxycodone adult tonsillectomy patients used post-discharge and their handling of unused medication.

Methods: A prospective evaluation of tonsillectomy patients was conducted at STARS for a period of 12 months with patients phoned 14 days post -procedure to complete a survey.

Results:



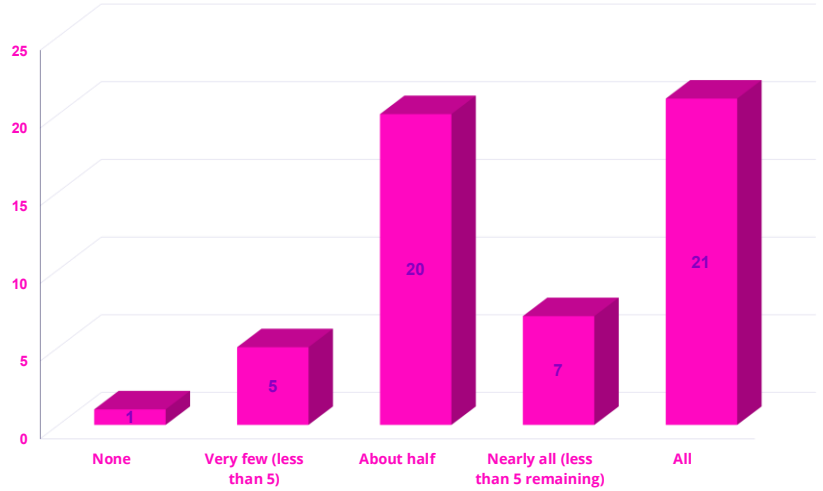
Avg age = 27.7 yrs (18-67yrs)

Worst pain = 8.67/10 (5-10/10)

Day worst pain experienced:

Post-op day	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
n=	2	9	12	15	6	7	3

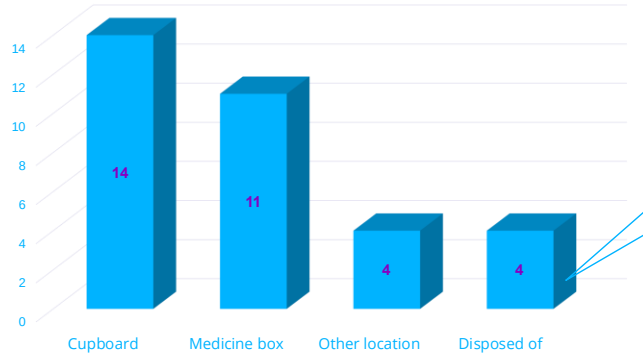
Amount of oxycodone tablets taken



Reasons why were all 20 tablets not taken?

- Pain well controlled (n=17)
- Side effects too strong (n=7)
- Other reasons (n=9)

Storage and disposal of leftover oxycodone tablets



Disposal locations:
Household garbage x2
Sink/toilet x1
Returned to pharmacy x1

Conclusion: There was a wide variety of oxycodone use following discharge. Most participants (61.1%) had left over tablets at the end of the 2-week period. Storage and disposal of leftover tablets in this context was suboptimal. There was insufficient number of patients to detect a relationship between any patient characteristics and oxycodone use. Further investigation is required to determine patient specific factors for analgesia requirements.

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The use of antipsychotics and benzodiazepines in patients with delirium: a retrospective audit at the Royal Brisbane and Women's Hospital

Jared Anderzipf[1], Professor Alison Mudge[1], Julie Withers[1], Ruby Ridgeway[2]. 1.RBWH, 2. UQ student

Purpose: To determine the proportion of patients with delirium at the Royal Brisbane and Women's Hospital (RBWH) that were prescribed an antipsychotic or benzodiazepine across their inpatient admission, according to quality standard seven of the ACSQHC Delirium Clinical Care Standards.

Methods: Data was collected over two weeks by accessing the integrated medical records (Iemr) of the first 200 patients coded with delirium and admitted to the RBWH between January 1 and June 30, 2022. Scanned medication charts were used to determine the patients' prescribed antipsychotics or benzodiazepines during their admission to RBWH. The medication action plan (MAP) was accessed to determine if patients were prescribed an antipsychotic or benzodiazepine prior to admission.

Results	Antipsychotics	Benzodiazepines
Total number of patients sampled	200	200
Proportion of patients who received an antipsychotic or benzodiazepine	**51** (25.5%)	**41** (20.5%)
Number of patients who were prescribed an antipsychotic or benzodiazepine before admission	22	23
Proportion of patients who received an antipsychotic or benzodiazepine for the first time	29 (14.5%)	18 (9%)

Conclusions: Out of 200 patients that were coded with delirium during their admission to Royal Brisbane and Women's hospital, 1 in 4 patients received an antipsychotic (25.5%) and 1 in 5 patients received a benzodiazepine (20.5%). However, around half of these patients were already on the medications at admission, suggesting they were being used for purposes other than delirium.

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Prevalence of Extrapulmonary Tuberculosis in Africa: A Systematic Review and Meta-analysis

Semira Goitom Hailu[1], Cameron Hurst[2], Griffin Cyphers[3¶], Stefan Thottunkal[4¶], David Harley[1], Kerri Viney[4,5,6], Adam Irwin[1,7], Judith Dean[8,9], Clare Nourse[1,7]

1. UQ Centre for Clinical Research, The University of Queensland, Brisbane, Australia; 2. Molly Wardaguga Research Centre, Charles Darwin University, Brisbane, Australia; 3. Faculty of Medicine, The University of Queensland, Brisbane, Australia; 4. ANU College of Health and Medicine, Australian National University, Canberra, Australia; 5. School of Public Health, University of Sydney, Australia; 6. Department of Global Public Health, Karolinska Institutet, Sweden; 7. Infection Management and Prevention Service, Queensland Children's Hospital, Brisbane, Australia; 8. The University of Queensland, UQ Poche Centre for Indigenous Health; 9. The University of Queensland, Faculty of Medicine, School of Public Health

Introduction

In 2021, an estimated 10.6 million people developed **tuberculosis (TB)** disease and 1.6 million died from TB [1].

TB is caused by the bacillus *Mycobacterium tuberculosis* and is primarily a pulmonary disease (PTB). However, *M. tuberculosis* also infects lymph nodes, the pleura, bone, the central nervous system and other organs and these clinical presentations are grouped as **extrapulmonary TB (EPTB)** [2].

Accurate ascertainment of the epidemiology of EPTB is challenging:

- Difficulty in diagnosis, misdiagnosis & lack of awareness [3].

Influencing factors include;

- Background prevalence of TB, HIV, poverty & migration [4-6].

The proportion of EPTB varies between countries.

- 15-20% in Bangladesh & India [7, 8].
- 40-42% in Australia [9].

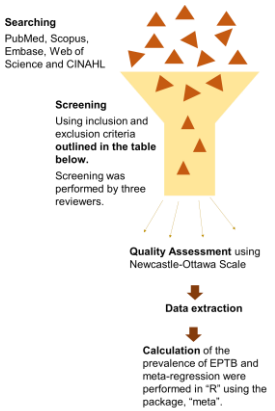
More than half of the 30 high TB burden countries are in Africa.

- Despite the high rates of co-infection of TB & HIV in Africa, the burden of EPTB is not well known.

A systematic review was performed **to estimate the prevalence of EPTB** in African countries.

- **Countries included:** 54 African countries
- **Definition of EPTB:** *M. tuberculosis* infection in organs and tissues other than the lung parenchyma.

Methods



Inclusion Criteria	Exclusion Criteria
Articles including the prevalence of EPTB or • Data that allow calculation of prevalence in African countries caused by M. tuberculosis only.	Non-tuberculous mycobacterial EPTB • EPTB cases caused by NTM such as Mycobacterium avium.
Studies reporting on individuals with both pulmonary and EPTB were included.	Case reports and case series.
Published in the last 30 years.	Non-English studies.

Results

Selection process of the papers included for the systematic review and meta-analysis.

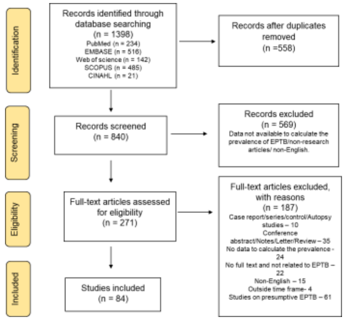


Figure 1: A total of 1398 papers were identified. Duplicate papers were removed, with 840 remaining. After title and abstract screening, 271 full text papers were screened; of these 84 papers were available for analysis.

Pooled prevalence of EPTB in included studies..

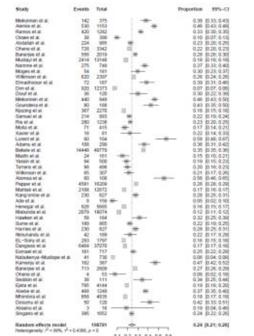


Figure 2: Forest plot for prevalence of EPTB among individuals with tuberculosis. The total number of studies included were 53 with total of 198,781 sample size. The pooled prevalence (indicated in diamond) using random effects model, is 0.24 (95% CI: 0.21-0.28).

Heat map of prevalence of EPTB based on African regions.

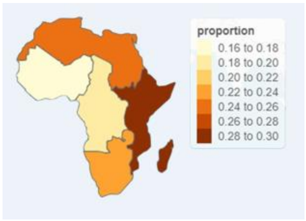


Figure 3: **H**eatmap representation of a meta-regression performed based on African regions: eastern, central, southern, western, and northern. There was a significant difference in the proportion of EPTB in those regions. The Eastern region had the highest prevalence at 0.30 (95% CI: 0.26-0.35) while the lowest prevalence was in Western Africa at 17% (95% CI: 0.10- 0.27).

Discussion

Estimated EPTB in Africa is **24%** (95% CI:21% - 28%).

Similar to countries such as Japan (22.5%), Germany (21.6%) & EU countries (19.3%) but lower than Australia (40%-42%) and Italy (31.6%) [9-11].

Further analysis by region:

- Eastern region had the highest (0.31) & Western Africa had the lowest (0.17)

Variation in prevalence could be due to variation in the background prevalence of HIV and socio demographic determinants associated with EPTB such as population age structure and sex [4-6].

Prevalence between three periods (1990-1999, 2000 – 2009, 2010-2020) revealed no decline in prevalence.

- The reasons for the slow decrease in EPTB are not well studied but may include:
  - Increase in prevalence of diabetes and other comorbidities [3,12].

Conclusion

This systematic review and meta-analysis provides an insight into the burden of EPTB in Africa.

The pooled prevalence of EPTB among people with TB in African countries over a 30 year period is **24%**.

Efforts and strategies aimed at ending the global TB epidemic have historically centred on PTB.

- **Combined efforts** focused on **both PTB and EPTB** are needed to reach global goals for reducing the burden.

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Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Can we clinically predict varices as the source of bleeding in cirrhotic patients presenting with upper gastrointestinal bleeding?

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[1] RBWH Department of Gastroenterology, [2] RBWH Emergency & Trauma Centre, [3] QIMR

Background and Aim:
Patients with cirrhosis are at increased risk of upper gastrointestinal bleeding (UGIB) from both non-variceal and variceal culprit lesions. The aim of this study was to determine the proportion of VGIB culprit lesion sources in patients with cirrhosis who present to the ED, and to evaluate potential predictors for VGIB.

Methods:
Consecutive patients with a history of cirrhosis presenting with UGIB to the RBWH, ETC over a 2-year period (June 2016-July 2017 and June 2018-July 2019) were included. Baseline clinical, demographic, and endoscopic data were collected. Continuous variables were described using medians and interquartile range, with groups compared using Mann-Whitney or Kruskal–Wallis tests. Categorical variables were described using frequencies and percentages and analysed using chi-squared or fishers exact test when expected frequencies were low. The association between the source of upper gastrointestinal bleeding and clinical/demographic factors was explored using binary logistic regression. A backwards selection approach was used for model building. All variables identified as potential predictors were initially included and then removed iteratively if they did not contribute to the model fit based on Akaike Information Criterion (AIC). The odds of being from variceal source and 95% confidence intervals were reported for logistic regression models. The data was analysed using the R statistical program.

	Descriptive statistics		Univariate logistic regression		
Characteristic	Non-Variceal	Variceal	OR[2]	95% CI[2]	p-value
Age	58.0 (51.0 - 69.8)	51.0 (46.0 - 58.0)	0.94	0.90, 0.98	0.004
Male **Female**	29 (76.3%) 9 (23.7%)	38 (67.9%) 18 (32.1%)	1.00 1.53	 0.61, 4.02	 0.375
Hb<80gm	13 (34.2%)	21 (37.5%)	1.15	0.49, 2.77	0.745
Shock Index>0.8	23 (60.5%)	34 (60.7%)	1.01	0.43, 2.34	0.985
Melaena	25 (65.8%)	33 (58.9%)	0.75	0.31, 1.74	0.502
Haematemesis	29 (76.3%)	48 (85.7%)	1.86	0.64, 5.49	0.249
INR>1.1	32 (84.2%)	52 (92.9%)	2.44	0.65, 10.2	0.192
MELD-Na SCORE	16.0 (11.0 - 18.8)	16.0 (11.0 - 21.2)	1.02	0.96, 1.09	0.479
Child-Pugh Score -A **-B** **-C**	10 (26.3%) 21 (55.3%) 7 (18.4%)	13 (23.2%) 27 (48.2%) 16 (28.6%)	1.00 0.99 1.76	 0.36, 2.69 0.53, 6.11	 0.983 0.361

Conclusion: Predicting variceal bleeding in cirrhotic patients presenting with UGIB remains challenging. We show that younger age had some predictive power, but clinical presentation, MELD or Child Pugh score are not reliable indicators of a variceal source of UGIB.

Results:
A total of 107 patients were identified and included in the study. Of these, 87.9% received an endoscopy and 59.6% were found to have evidence of active or recent variceal bleeding. Average age was 54 years, and 72% were male. Demographic and clinic variables identified as potential predictors of the source of UGIB were collected. On average, the variceal bleeding group was younger (median = 51y) than the non-variceal group (median = 58y) (OR: 0.94; 95% CI 0.90, 0.98; p=0.004). Univariate modelling revealed no other significant associations (see table). Multivariate analysis with backwards modelling process confirmed age as a predictor (OR 0.94; 95% CI 0.90, 0.98; p=0.003). INR>1.1 after age adjustment was also found to have an increased Odd's ratio, but this was not statistically significant (OR 3.14; (95% CI 0.70, 16.1; p=0.143). In-hospital and 30-day mortality was found to be higher in the variceal bleeding group (5.4% vs 2.6%, p= 0.039). A larger percentage of patients in the variceal group (71.4%) received endoscopic treatment compared with the non-variceal group (20.5%, p<0.001). Other clinical variables were similar between groups, such as median ED stay (p=0.3), time to endoscopy (p=0.985), afterhours endoscopy (p=0.349) and presence of intraluminal blood (p=0.306).

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Impact of endoscopic treatment on quality of life in patients with Barrett's neoplasia: A Scoping Review

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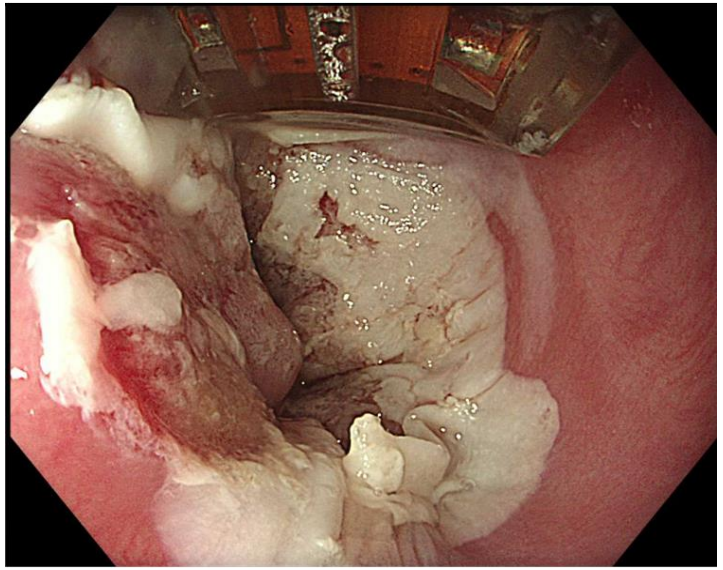
Purpose: To understand the extent and type of evidence in relation to the short-term impact of endoscopic treatment (ET) on quality of life (QoL) in patients with Barrett's neoplasia.

Methods: Studies were included if patients had undergone ET for Barrett's neoplasia (dysplasia and early cancer). Included studies measured the impact of ET on patient QoL within 12-months of ET. A comprehensive search was conducted in PubMed, Embase, Cochrane Library, and CINAHL Complete with a date range of 2001-2022. Unpublished literature sources included Advanced Google Scholar. After title and abstract checking, full-text papers were retrieved and further screened. Data Extraction was undertaken utilising a JBI scoping review guide. Data was synthesised and key information tabulated.

Results : Six studies were included. Study designs included three randomised controlled studies, two prospective observational studies, and a single retrospective observational study. Twelve different QoL survey tools were utilised. Health domains evaluated biophysical and psychosocial aspects of patient QoL. There were perceived psychological benefits for the patient while undergoing active ET. Biophysical aspects of QoL such as eating, pain, and dysphagia were shown to be better in patients treated endoscopically when compared to surgical treatment for early cancer.



Conclusions:

ET for Barrett's neoplasia can impact upon patient QoL. Despite its use in standard care treatment, little research has been conducted to evaluate its impact. In this review, patients undergoing ET were noted to have reduced psychosocial concerns. Functional aspects of eating may be affected in the short and long term by ET. Future research may target specific ET sub-types and measure QoL at baseline and post procedures in the short and long term.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Does longer peripheral intravenous catheter length optimise antimicrobial delivery? A randomised controlled trial

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[1]Nursing & Midwifery Research Centre, RBWH; [2]School of Nursing & Midwifery, Griffith University; [3]AVATAR Group, Griffith University; [4]School of Nursing, Midwifery & Social Work, The University of Queensland; [5]Herston Infectious Diseases Institute, Metro North Health, UQ Centre for Clinical Research; [6]Vascular Access Surveillance and Education, RBWH

Background

Hospitalised patients receiving intravenous antimicrobial therapy require a reliable device for drug delivery.

Short peripheral intravenous catheters (PIVCs) are often the default device for antimicrobial therapy but up to half fail before therapy completion, leading to:

- suboptimal drug dosing,
- patient distress from repeated insertions, and
- increased healthcare costs.

We investigated the use of long PIVCs to determine if they are more reliable for antimicrobial delivery.

Methods

This single-centre, two-arm, parallel group randomised controlled trial recruited adults requiring a PIVC for ≥3 days of antimicrobial therapy.

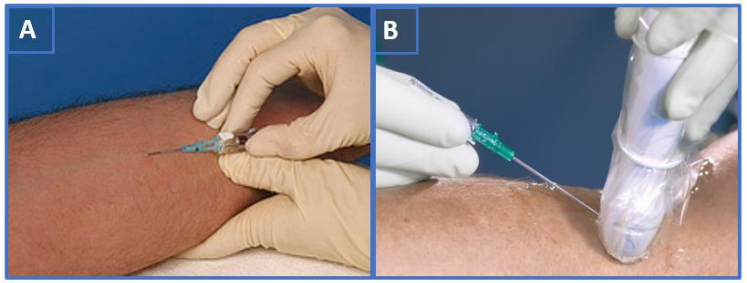

Figure 1. A) Short PIVC (<4cm); B) Long PIVC (4.5-6.4 cm)

Long PIVCs were tested against standard short PIVCs (**Figure 1**). A feasibility study (n=70) was embedded within the effectiveness trial (n=192).

Results

188 participants (94 per arm) were included in this early analysis: Two thirds (69%) were male, mean age was 60 yrs (SD 18) and the most commonly delivered antibiotic was Piperacillin-Tazobactam.

Outcomes	Short PIVC n=94	Long PIVC n=94	P-value
PIVC failure leading to Ab disruption (n, %) Failure per 1000 catheter days	22 (23.4) 74	20 (21.3) 69	0.72
PIVC dwell time (hours, mean)	76 (SD 52)	72 (SD 48)	0.30
Need for subsequent devices (n, %)	42 (44.7)	23 (24.5)	0.004

CONCLUSIONS

Long-PIVCs minimise the number of devices required to complete antimicrobial therapy however PIVC failure was similar for short and long PIVCs.

Further analysis will more fully explore causes of PIVC failure and identify ways to optimise antimicrobial delivery.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Education, knowledge, and perception of peripheral intravenous catheter care: A nursing cross-sectional survey

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[1] Southern Cross University; [2]Griffith University, [3]University of Queensland, [4]Royal Brisbane and Women's Hospital, [5]University of the Sunshine Coast

Purpose: Peripheral intravenous catheters (PIVCs) are a common invasive device in hospital. Unfortunately, many fail from mechanical and infectious complications, causing patient discomfort and treatment delays. Nurses are responsible for assessing, managing, and removing PIVCs within their clinical role. The aim of this study was to describe nurses current state of knowledge and confidence caring for PIVCs.

Methods An on-line cross-sectional survey. Nurses were recruited via posts to Twitter, Inc©. The survey had multiple-response-option demographic and professional-practice descriptors (n=8), education descriptors (n=12), a knowledge test (n=17) and Self-Efficacy Scale (SES) (n=10). Survey results were analysed descriptively.

Results In total, 180 nurses attempted the survey. Respondents were registered (n=145; 80%) and enrolled nurses (n-35; 20%) and a majority worked in an acute inpatient unit (n=141; 80%). Overall, 91% (n=152/167) received education on assessment, 88% (n=148/168) on management and 81% (n=137/168) for removal. Of 165 nurses, 105 (69%) received <5 hours education, 35 (21%) 5-10 hours and 12 (7%) >15 hours. The mean knowledge test score was 12.4/17 (standard deviation 2.1), this equates to a mean grade of 73%. There was no statistically significant difference (p=0.11) in knowledge scores for nurse who received >5 hours (score=21.1) education versus <5 hours (score=12.7). Nurses' confidence caring for PIVCs was high with a mean SES 43.3 (SD 5.5) [maximum score 50].

Conclusion Frequent and increasing use of PIVCs and high rates of PIVC complications are associated with inadequate assessment and management, and nurses' knowledge and confidence remain poorly reported. Preventing PIVC complications is a patient safety issue, and the findings of this study suggest improvements in education are needed.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Trends in Rates of Surgery and Postoperative Mortality Among Patients Receiving Chronic Kidney Replacement Therapy: A Population-based Cohort Study

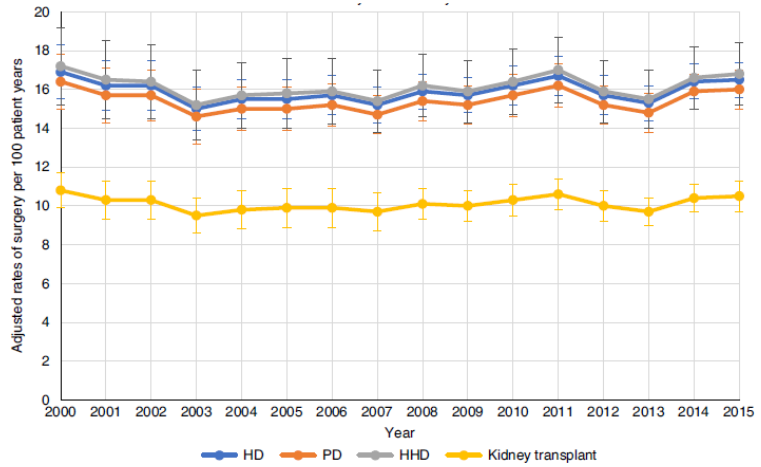
Dharmenaan Palamuthusingam[1], Carmel M. Hawley[2], Elaine M. Pascoe[3], David W. Johnson[2], Palvannan Sivalingam[2], Stephen McDonald[4], Neil Boudville[5], Matthew D. Jose[6], Girish Talaulikar[7], Magid Fahim[2].

1. Royal Brisbane and Women's Hospital, 2. Princess Alexandra Hospital, 3. University of Queensland, 4. Australian and New Zealand Dialysis and Transplant Registry, 5. University of Western Australia, 6. School of Medicine, University of Tasmania, 7. Renal Services, ACT Health

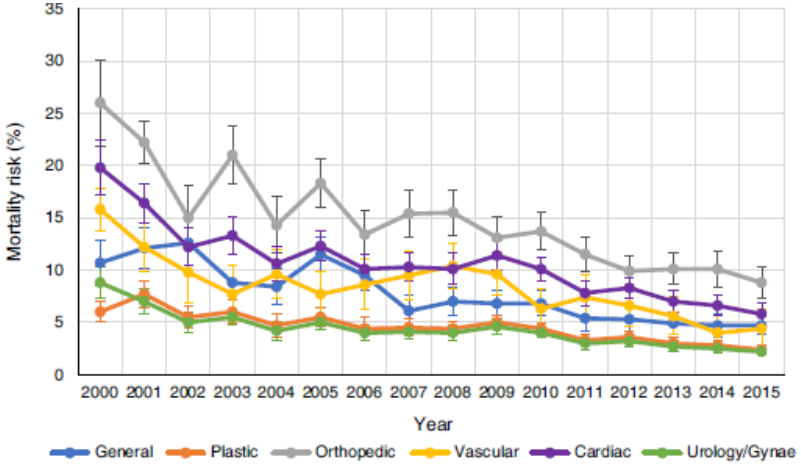
Objective: To estimate the incidence and postoperative mortality rates of surgery, and variations by age, diabetes, kidney replacement therapy (KRT) modality, and time over a 15-year period.

Background: Patients with kidney failure receiving chronic KRT (dialysis or kidney transplantation) have increased risks of postoperative mortality and morbidity. Contemporary data on the incidence and types of surgery these patients undergo are lacking.

Methods: This binational population cohort study evaluated all incident and prevalent patients receiving chronic KRT using linked data between Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry and jurisdictional hospital admission datasets between 2000 and 2015. Patients were categorized by their KRT modality (hemodialysis, peritoneal dialysis, home hemodialysis, and kidney transplant) for each calendar year. Incidence rates for overall surgery and subtypes were estimated using Poisson models. Logistic regression was used to estimate 30-day/in-hospital mortality risk.



Adjusted rates of surgery per 100 patient-years



Adjusted 30-day mortality risk

Results: Overall, 46,497 patients over a median (interquartile range) follow-up of 6.3 years (3.5–10.2 years) underwent 81,332 surgeries. The median incidence rate of surgery remained stable over this period with a median of 14.9 surgeries per 100 patient-years. Annual incidence rate was higher in older people and those with diabetes mellitus. Patients receiving hemodialysis had a higher incidence rate of surgery compared with kidney transplant recipients (15.8 vs 10.0 surgeries per 100 patient-years, respectively). Overall adjusted postoperative mortality rates decreased by >70% over the study period, and were lowest in kidney transplant recipients (1.7%, 95% confidence interval, 1.4–2.0). Postoperative mortality following emergency surgery was >3-fold higher than elective surgery (8.4% vs 2.3%, respectively). **Conclusions:** Patients receiving chronic KRT have high rates of surgery and morbidity. Further research into strategies to mitigate perioperative risk remain a priority.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Co-Designing a Framework for Delivering an Enhanced Therapeutic Mealtime Experience for Rehabilitation

Alice Pashley[1, 2], Adrienne Young[2, 3], Emmah Doig[4], Rachel Quinn[1, 2], Janette Moore[5], Dale Trevor[5], Meredith Fay[2], Olivia Wright[2]

1 Surgical, Treatment and Rehabilitation Services 2 The University of Queensland 3 Royal Brisbane and Women's hospital 4 STARS Education & Research Alliance 5 Metro North Engage

Background

Rehabilitation care aims to restore functioning and independence. All systems of care should reflect this aim, including foodservice and mealtime systems. Currently, there is little evidence to guide how this can be achieved in practice.

Aim

To co-develop a framework for delivering an enhanced therapeutic mealtime experience with rehabilitation patients and staff.

Methods

- Two workshops with consumers and rehabilitation staff utilising Values-Focused Thinking processes
- Workshop one developed objectives important for delivering a therapeutic mealtime experience categorised as fundamental, those that are important in and of themselves, or means, those that are important for achieving the fundamental objectives.
- Workshop two involved developing a suite of strategies to operationalise the means objectives to deliver a therapeutic mealtime experience.
- Participants synthesised literature, the lead authors previous PhD data, and lived experiences.

Results

Five consumers and five rehabilitation staff co-designed the following definition of a therapeutic mealtime experience:

To have a holistic, practical, caring, and safe mealtime experience where everyone helps to maximise the nutritional and health outcomes for all

The four objectives shown in Figure 1 were identified as fundamental to achieving a therapeutic mealtime experience:

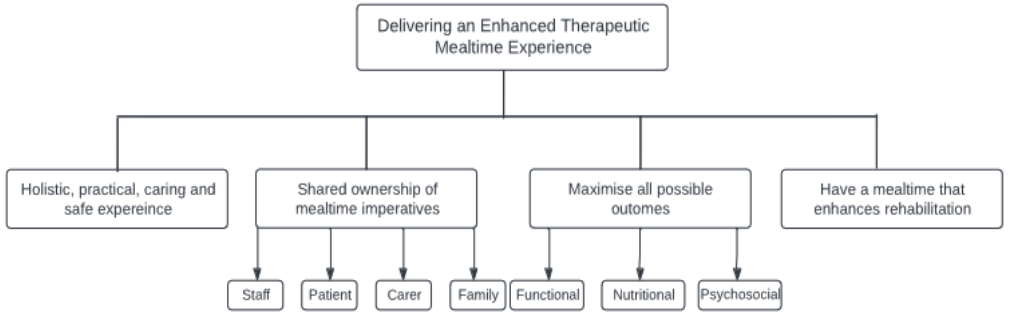


Figure 1 – Fundamental objectives for delivering an enhanced therapeutic mealtime experience

A further 23 means objectives were identified to support achievement of the fundamental objectives to create a therapeutic mealtime experience. The means objectives of 'enable access', 'feedback and monitoring', 'identifying needs', 'planning', and 'provide information' classified as important in achieving all four fundamental objectives. N=29 strategies were identified and discussed, with strategies most commonly addressing the means objectives of 'enable access' (n = 13) and 'provide information' (n = 9).

Conclusion

This framework can be applied in practice to identify mealtime initiatives aligned with rehabilitation principles, and the values and priorities of rehabilitation staff and consumers. Future research should focus on validation and implementation of the objectives identified in this framework.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Optimising glucose control prior to elective surgery – a team effort

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1.Royal Brisbane & Women's Hospital 2.University of Queensland 3.Queensland University of Technology 4.Queensland Institute of Medical Research

Background

People living with diabetes are more likely to require surgery due to microvascular and macrovascular complications caused by the condition. High blood glucose levels around the time of surgery is a known risk factor for surgical site infections, which can prolong hospital stay and increase healthcare costs. To address these concerns, a dedicated, multidisciplinary preoperative diabetes clinic was established at the Royal Brisbane and Women's Hospital to support elective surgery patients living with diabetes with their diabetes management prior to surgery.

Aim

- To determine the impact of a multidisciplinary preoperative diabetes clinic on perioperative glucose management in patients undergoing elective non-cardiac surgery.
- To obtain effect size measures for sample size calculation

Method

Patients referred to the clinic were invited to participate. They received regular consultations with the pharmacist, diabetes educator, and endocrinologist as necessary. Haemoglobin A1c (HbA1c) and serum fructosamine were measured at baseline and morning of surgery. Fructosamine levels were repeated four weeks postoperatively. Changes to perioperative HbA1c and fructosamine levels were analysed using SPSS® v.29 and regression modelling.

Results

Thirty patients were recruited to the pilot study.
Median time from first clinic appointment till day of surgery was 60.5 days (IQR 28.8-176.0)
Regression modelling identified that patients with the highest HbA1c at baseline experienced the greatest improvement from the clinic preoperatively. Time participating in the clinic prior to surgery was not a significant factor in impacting on change in HbA1c.

Table 1 – Change in HbA1c, Serum Fructosamine and number of diabetes medicines taken

	Baseline	Day of Surgery	4 weeks postop	Change (95% CI)	P value
HbA1c, %, mean±SD	9.8 ± 1.6	8.1 ± 1.4	-	-1.7 (-2.3, -1.1)	<0.001
Serum Fructosamine, µmol/L, median (IQR)	353 (331-417)	312 (283-349)	322 (282-354)	-55 (-75, -36)[a] -58 (-94, -23)[b] 1 (-22, 24)[c]	<0.001 0.003 0.923
Number of diabetes medicines taken	3 ± 1	3 ± 1	-	0.4 (0.1, 0.6)	0.009

[a] Change between day of surgery and baseline Fructosamine
[b] Change between 4 weeks post-surgery and baseline Fructosamine
[c] Change between 4 weeks post-surgery and day of surgery Fructosamine

Table 2 – Mean and CV of blood glucose levels measured on postoperative days one to three

	Day 0	Day +1	Day +2	Day +3	P value
Blood glucose, mmol/L, Mean±SD	10.6 ± 2.7	10.0 ± 2.9	10.3 ± 3.4	9.8 ± 4.0	NS
CV, %, Mean±SD	20 ± 11	21± 9	20 ± 10	18 ± 12	NS

Conclusion

The pilot study demonstrated that attendance at the clinic was effective in improving patients' glucose management prior to elective non-cardiac surgery. Improvement was sustained at four weeks after surgery, indicating that the clinic had an impact on patients' overall management of their diabetes. The pilot study will inform a suitable sample size for larger studies to further investigate the impact of this multidisciplinary model of care.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

No independent association between serum vitamin D status and chronic musculoskeletal (MSK) pain among 349,221 adults in the UK

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Background & Aim

Vitamin D insufficiency/deficiency might be a biological risk factor for chronic MSK pain

But there are conflicting findings on:

- Associations between vitamin D and chronic MSK pain
- Impact of vitamin D supplementation on reducing chronic pain

Few observational studies considered key confounding factors.

Aim: To explore the independent association between the serum vitamin D status and chronic pain across various body sites

Method

Study design: Cross-sectional observational study

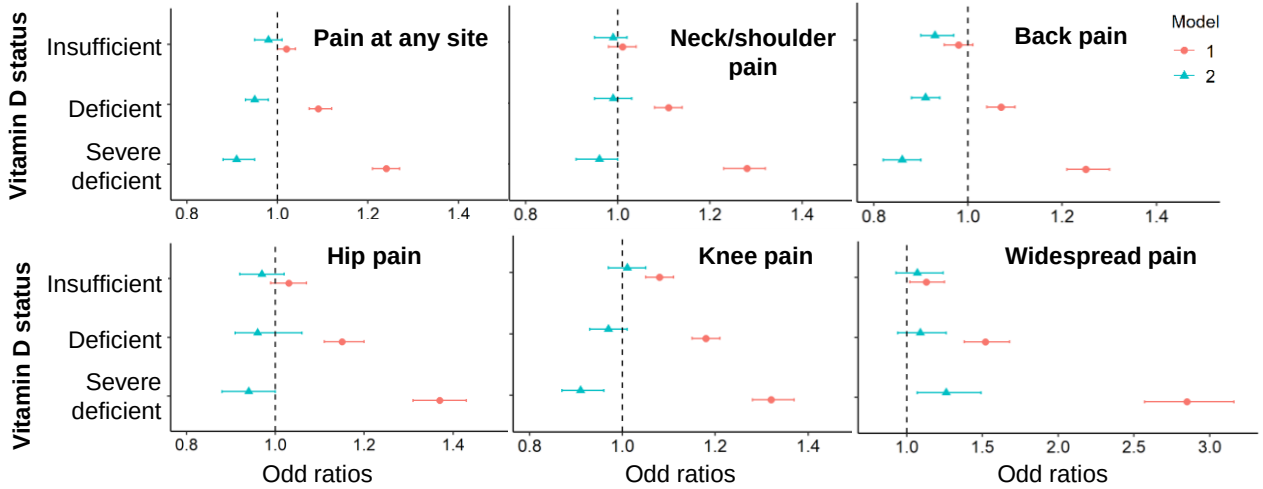
Participants: a subset of UK biobank participants at the baseline assessment between 2006 and 2010, aged 37-74 years, with 53% females

Confounders: age, sex, BMI, ethnics, education, socioeconomic status, smoking, alcohol, physical activity, sleep, dietary intake of oily fish, intake of fish oil supplements, depression, comorbidities

Exposure: 25-(OH) D

Outcome: Chronic pain at any site, neck/shoulder, back, knee, hip or widespread pain

Results



Model 1: adjusted for age & sex
Mode 2: adjusted all confounders

Conclusions and Implications

1. No independent and clinically relevant associations between vitamin D status and chronic MSK pain across regional pain sites and widespread pain.
2. Vitamin D supplementation may not be beneficial in treating chronic musculoskeletal pain.

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Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Clinicians should be aware that labels for neck pain after road traffic injury influence people's recovery expectations and management preferences, although the differences are small

Background

Diagnostic labels/names used to describe musculoskeletal pain may shape people's beliefs about their condition and management preferences

Common terms used to describe neck pain and associated symptoms after road traffic injury: whiplash injury, whiplash-associated disorder (WAD)

Some scholars believe that 'whiplash' is an emotive term:

- Imply a greater amount of disability
- Evoke negative thoughts such as slow recovery, distress and fear

But the impact of different labels used for neck pain after road traffic injury has not been explored through rigorous experimental studies

Aim

To examine whether different labels for neck pain after road traffic injury influence recovery expectations (primary outcome) and management beliefs

Labels *WAD= whiplash-associated disorder	Results	Adjusted mean difference [95% confidence interval]
WAD / neck pain vs neck strain	↓ Recovery expectations	-0.5 [-0.9 to -0.1]/ -0.5 [-0.9 to -0.1]
WAD vs post-traumatic neck pain / neck pain / neck strain	↑ Needs for avoiding physical activity	0.9 [0.4 to 1.5] / 0.7 [0.1 to 1.2] / 0.7 [0.1 to 1.2]
WAD vs neck strain	↑ Perceived seriousness	0.9 [0.5 to 1.4] / 0.7 [0.1 to 1.2]
Whiplash injury vs neck strain	↑ Willingness to make a claim	0.7 [0.2 to 1.1]/ 0.6 [0.1 to 1.2]
WAD vs neck pain	↓ Need for a second opinion	-0.9 [-1.5 to -0.3]
Whiplash injury vs neck pain		-0.9 [-1.5 to -0.3]
Post traumatic neck pain vs neck strain	↑ Perceived seriousness	1.0 [0.6 to 1.4] / 0.6 [0.1 to 1.0]
Neck pain vs neck strain	↑ Need for intensive treatments	0.6 [0.2 to 1.1] / 0.6 [0.2 to 1.1]
Neck pain vs neck strain	↓ Need for a second opinion	0.9 [0.3 to 1.5]

Method

Study design: an online randomised, scenario-based experiment with blinded participants

Participants (n=2229) : Adults with no history of neck pain (n=763) and had previous / current neck pain (n=1466)

Procedures: Participants read a scenario describing a patient with neck pain after a road traffic injury and randomly received the following five labels: *'whiplash injury', 'whiplash-associated disorder (WAD)', 'post-traumatic neck pain', 'neck pain'*, and *'neck strain'*.

Outcome measures: Participants rated (0-10): recovery expectations (primary outcome), need for a second opinion, avoiding work and physical activity, intensive treatments; perceived injury seriousness, intention to make a compensation claim.

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RECOVER Injury Research Centre, The University of Queensland

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THE LOW-DOWN ON ELECTROLYTE REPLACEMENT AFTER SURGERY

Gemma Clark[1], Erin Dunn[1], Martin Canning[2]

1. Department of Pharmacy, The Prince Charles Hospital
2. Metro North Hospital and Health Service

Prescribing HYPO-Electrolyte Disturbances in Adults

BACKGROUND

Suboptimal electrolyte replacement can increase a patient's risk of morbidity and mortality. Gastrointestinal surgical patients are susceptible to these changes due to disruptions in homeostasis and electrolyte losses.

AIM: To assess compliance with the Queensland Health guideline 'prescribing for hypo-electrolyte disturbances in adults' in patients with gastrointestinal surgical related admissions and determine whether compliance enhances electrolyte repletion.

METHODS

Patients with a gastrointestinal surgical related admission from 1st March to 31st May 2021 were identified from a clinical coding report

Patients were included if they had and low **potassium**, **magnesium** and/or **phosphate.**

Data was collected from the intravenous (IV) fluid form, national inpatient medication chart (NIMC), and AUSLAB laboratory software

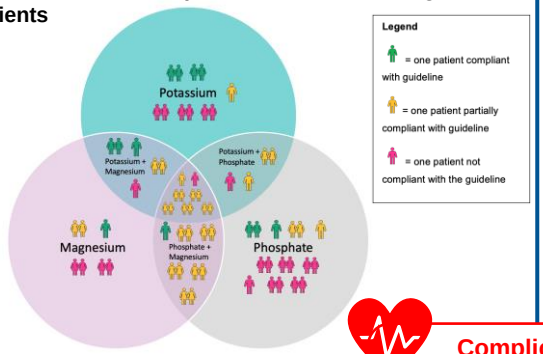
71 patients were identified however, 3 were excluded due to age < 18 years

RESULTS

Prescriber replacement according to guideline was

- Compliant with guideline for 18%
- Partially compliant with guideline for 47%
- Non-compliant with guideline for 35%

Figure 1. Prescriber compliance with state-wide guideline for patients



The audit found that both compliant and non-compliant replacement may be effective in achieving electrolytes within the target range.

Compliance was associated with a **statistically significant** reduction in patients' median LOS for potassium and magnesium, but not for phosphate.

- 13.5 days for potassium
(95% CI [-3.66 to -23.33], *p=0.009*)

- 6.25 days for magnesium
(95% CI [–0.49 to -12.01], *p=0.034*)

Complication: One patient suffered a cardiac complication. This patient had moderately low magnesium for 5 days throughout their 28-day admission however, received nil replacement despite their low level.

DISCUSSION

A hospital wide audit is required to determine extent of guideline adherence and the impact on a LOS, 30-day readmission, cardiac complications, and mortality. Pharmacists may improve guideline compliance via prescriber education and use of synchronous and asynchronous clinical handover tools.

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Low- versus high-Level disinfection of ultrasound transducers: a non-inferiority RCT.

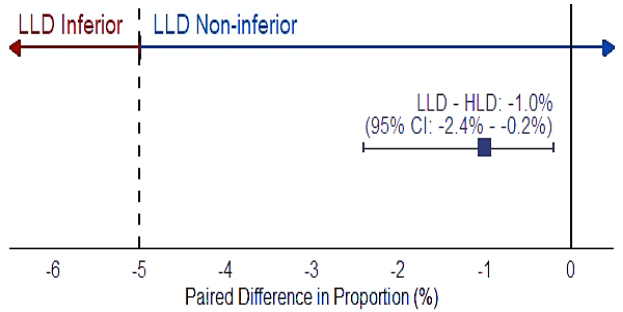
Peters N[1,2], Williamson F[1,2], Bauer M[3], Llewellyn S[4], Snelling P[2,5], Marsh N[1,2], Harris P[3,7], Stewart A[3,7], Rickard C[1,2,3,6]

1. RBWH 2. UQ 3. UQCCR 4. QIMR. 5.Gold Coast University Hospital. 6.Herston Infectious Diseases Institute. 7.Pathology Queensland

Purpose - To resole the international uncertainty over whether high- or low-level disinfection (HLD or LLD) is required for ultrasound (US) transducers used during percutaneous procedures.

Methods – Two transducers applied to each participant forearms. Swabs of US before and after disinfection were plated and incubated with colony forming units (CFU) counted and identified. Hypothesis being the difference in US transducers with no CFUs after LLD and HLD is ≤ -5% (non-inferiority margin).

Results - 654 participants, 73% (n=478) microbial growth both forearms. All CFUs eliminated by HLD in 100% (n=478) & LLD in 99.0% (n=473). Non-inferiority hypothesis satisfied with difference of -1.0% (p <0.001).



Conclusion - **Disinfection with LLD is non-inferior to HLD for skin microorganisms. Therefore using LLD for US transducers involved in percutaneous procedures would present no higher infection risk compared to HLD.**

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Clinical utility and validity of a new outcome measure for hand burn injuries

Andrea Mc Kittrick[1,2], Professor Louise Gustafsson [2], Dr Tenelle Hodson[2] & Dr Amelia Di Tommaso[2]

[1]Department of Occupational Therapy, RBWH, [2] Griffith University, Nathan

Background

A new specific outcome measure for hand burns was developed using co-design within a Participatory Action Research framework with expert clinicians and individuals with hand burn injuries. The outcome measure includes 18 activities which are designed to review activities which are commonly interrupted post hand burn injuries. All newly developed outcomes measures must be investigated to determine psychometric properties and establish suitability for clinical practice and research.

Aim

To establish the clinical utility, face, and content validity of a new outcome measure for hand burns

Methods

Study Design

Cross sectional design

Ethics

Metro North Human Research Committee A (HREC/2022/MNHA/84511*)*
Griffith University Human Research Ethics Committee (GU Ref No: 2022/726)

Participants

Occupational Therapists or Physiotherapists working in burn care across Australia and New Zealand.
Individuals who have sustained deep dermal/ full thickness burns to one or both hands.

Funding

2022 RBWH and RBWH Foundation- Anglo American Burns, Skin, and Wound Care Research Project Grant

Data Collection

Two surveys were developed for the testing of this outcome measure, one for clinicians and one for individuals with hand burn injuries. The surveys contained Likert scales and open-ended questions.

Procedure

Clinician participants were sent a copy of the outcome measure for testing. Clinician participants were asked to complete the outcome measure with five individuals at their burns centre who had surgical repair to one or both hands post deep dermal/ full thickness burn. Clinician participants were asked to complete an online survey using RedCap which measured the three constructs of interest.

Hand burn injury participants were provided with a copy of outcome measure for review. They were asked to complete the outcome measure during an occasion of service at RBWH. They were then asked to complete a survey to measure the three constructs of interest.

Data Analysis

Raw data were extracted at the end of the study and processed using IMB® SPSS® statistical package. Data were summarized descriptively.

Results

Participants

n= 8 clinician participants (n= 7 OT, n=1 Physio)
n= 20 individuals with hand burn injuries (n =16 M, n=4 F)

Mean age = 48.15 years
Mean time post burn injury = 187.73 days
Hand affected by Burn Injury = Left 35%, Right 35%, Bilateral 30%

Face validity:

There was 100% agreement from clinicians and 85% agreement from individuals for face validity.

Content Validity

Content validity was tested in terms of relevance and clarity. Tables 1 and 2

Clinical Utility

Clinical utility was measured as appropriateness, accessibility, practicability, and acceptability. Figure 1 and 2

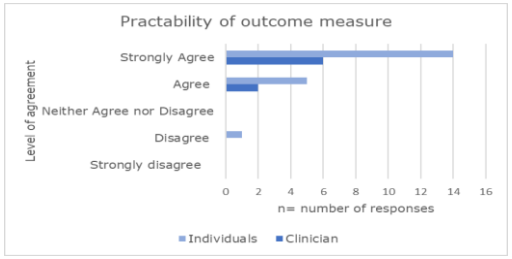


Figure 1 Practicability of outcome measure

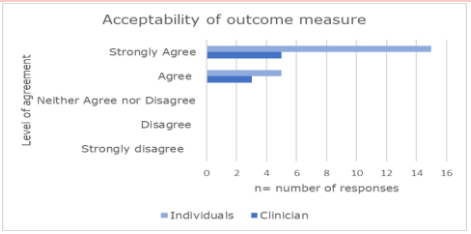


Figure 2 Acceptability of outcome measure

Table 1 Agreement -activity highly relevant for inclusion in outcome measure

Activity	Clinician	Individuals with hand burns
Use of knife and fork to cut food	87.5%	85%
Use of tablespoon to scoop liquid from a bowl	87.5%	85%
Open toothpaste and squeeze onto toothbrush	87.5%	100%
Pairing socks	75%	85%
Pick up and hold 500mls water bottle	62.5%	90%
Unscrewing lid on 500mls bottle	100%	95%
Pick up and hold 1L water bottle	75%	90%
Use of a mobile phone to write a text message	75%	75%
Unscrewing lid on 550ml jar	100%	95%
Removing card in/out of wallet sleeve	75%	85%
Opening a medication bottle	50%	85%
Squeezing a 600ml bottle used for cleaning	87.5%	90%
Folding a long sleeve shirt	87.5%	85%
Wiping surface after a liquid spill	100%	90%
Wringing out a face washer	100%	95%
Changing batteries in remote control	87.5%	90%
Opening lock using key	87.5%	95%
Carrying grocery bag containing items	75%	95%

Table 2 Agreement - activity very clear

Activity	Clinician	Individuals with hand burns
Use of knife and fork to cut food	87.5%	100%
Use of tablespoon to scoop liquid from a bowl	87.5%	100%
Open toothpaste and squeeze onto toothbrush	100%	100%
Pairing socks	100%	100%
Pick up and hold 500mls water bottle	100%	100%
Unscrewing lid on 500mls bottle	100%	100%
Pick up and hold 1L water bottle	100%	95%
Use of a mobile phone to write a text message	62.5%	90%
Unscrewing lid on 550ml jar	100%	100%
Removing card in/out of wallet sleeve	87.5%	100%
Opening a medication bottle	100%	85%
Squeezing a 600ml bottle used for cleaning	100%	100%
Folding a long sleeve shirt	87.5%	100%
Wiping surface after a liquid spill	75%	100%
Wringing out a face washer	87.5%	100%
Changing batteries in remote control	100%	100%
Opening lock using key	100%	100%
Carrying grocery bag containing items	87.5%	100%

Discussion

The findings of this study show favourable results to support the preliminary psychometric testing of this newly co-designed outcome measure for hand burn injuries. The results of this study demonstrate face validity has been achieved for the newly co-designed outcome measure for hand burn injuries. Agreement for content validity for this outcome measure was high in this study. The results of this study found high levels of agreement for clinical utility of this outcome measure.

Conclusion

Evidence supports further item refinement of activities and the administration guide to gain standardisation. Future studies will be completed for validation and reliability testing, inclusive of a Rasch analysis.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Development of an evidence-based outcome measure for hand burn injuries using co-design

***Andrea Mc Kittrick*[1,2]**, *Professor Louise Gustafsson*[2], *Dr Tenelle Hodson*[2] *and Dr Amelia Di Tomaso* [2]
[1]*Department of Occupational Therapy, RBWH,* [2] *Griffith University, Nathan,* [3]*UQ*

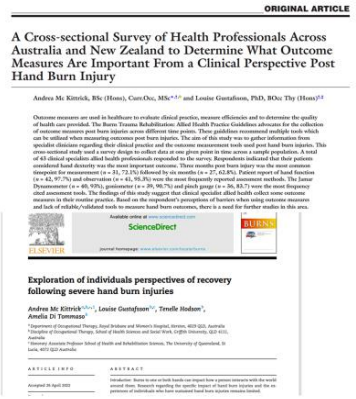
Background

Hand function is defined as the ability to manipulate the hand to interact with the surrounding environment and partake in activities[1]. The hand is a complex body part with multiple patterns of movement. The link between function, the environment and social interactions plays a significant role in body image[1].

Outcome Measures

Recovery is an important end point in healthcare. Measurement is important to assess 1) intervention effectiveness, 2) impact of injury on an individual and 3) effectiveness of health care. Outcome measures should be reliable, valid and responsive and should be used to 1) measure progress, 2) monitor symptoms, 3) direct treatment and 4) measure impact of interventions.

PhD Research Findings



The impairment-based measures often used by clinicians are not aligned with individuals perspective of outcomes through everyday activities across the recovery period.

Aim

To develop an evidence based outcome measure for severe hand burn injuries using co-design.

Methods

Study Design

This study utilised co-design within a Participatory Action Research (PAR) approach. PAR was chosen as it enables action through a reflection cycle to determine the next stage of action. PAR also advocates for intentional sharing of power for research, thus blurring lines between clinicians and individuals who have experienced a hand burn injury as they become co-researchers with shared objectives and decision-making powers from the commencement of the study.

Ethics

GU Ref No: 2021/781

Co-researchers

Expert clinicians were occupational therapists or physiotherapists working in senior roles, with 5 or more years clinical experience, at specialist burn centres across Australia and New Zealand.

ANZBA Australian & New Zealand Burn Association

Individuals who sustained deep dermal/full thickness burns to one or both hands, requiring surgical wound repair, aged 18 years or older, a minimum of 12 months post injury, and who were treated at a specialist burn centres across Australia and New Zealand.

BeyondBurns

Funding

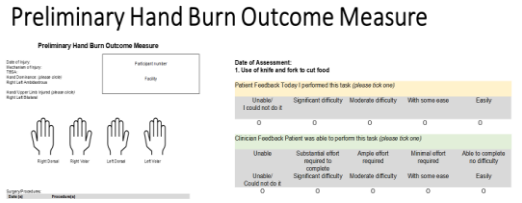
2021 RBWH and RBWH Foundation Post Graduate Scholarship
2022 RBWH and RBWH Foundation- Anglo American Burns, Skin, and Wound Care Research Project Grant

Results

Co- researchers

Expert allied health clinicians n=3
Individuals with hand burn injuries n= 2
Pre- existing research team n = 4

In the first meeting areas of importance were identified. During the second meeting the preliminary features of the outcome measure were discussed. In the third meeting the collection of activities was reviewed and collated, the wording of the rating scales was discussed and refined. In the first meeting of cycle two the practical implications for including activities and considerations for standardisation was reviewed. The activities for inclusion were finalised in this meeting. It became clear in this meeting that the remaining processes pertaining to finalisation of the rating scales could be managed via a feedback round.



The preliminary version of the hand burn outcome measure was finalised and the administration guide for use was developed. Participatory action research methods were used to facilitate co-design of a specific outcome measure for hand burn injuries. To our knowledge this is the first outcome measure developed for hand burn injuries created and designed in this manner.

Conclusion

Deep dermal and full thickness burn injuries to the hand impact all areas of daily life. Rehabilitation post burn injury is protracted and measurement of recovery over this time period is challenging. The hand burn outcome measure was developed using co-design principles. This process was guided by the participatory action research method that included researchers, expert clinicians and individuals with hand burn injuries who required surgery. The preliminary version of the outcome measure required further testing to determine how beneficial and easy the outcome measure is to use in clinical practice, how well the outcome tool measures what is supposed to measure and how relevant and clear the outcome tool is. T

Acknowledgements: Natalie Sands, Darren Stevens, Helen DeJong, Stephanie Clarke & Jessica Allchin.

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Discovery and Innovation

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

How can linked healthcare and compensation data help expose the true cost of trauma?

Jacelle Warren[1,2], Victoria McCreanor[3], Matthew Hope[4] and Kirsten Vallmuur[2,1]. ([1]*Jamieson Trauma Institute;* [2]*AusHSI, QUT;* [3]*Hunter Medical Research Institute;* [4]*Department of Orthopaedics, PAH*)

Burden & cost estimates of trauma:

- routinely focused on **initial** acute hospital + deaths
- **seldom** incorporates complex treatment journeys
- **current** Australian estimates look like this:

13,000+ *deaths*/yr
500,000+ *hospitalisations*/yr
In-hospital *expenditure* = $10.72B/yr

Transport Crashes

- Large % of major trauma cases
- 68,000+ hospitalisations/yr
- Some eligible for compensation

Healthcare + Compensation Data

- Treatment journeys **extend beyond acute care**
- However, journey **data** currently **fragmented**
- **Data linkage** methods can help

DATA LINKAGE

Method

Transport-related trauma

Statewide

11 years
Jan 2011 – Dec 2021

9 data sets
6 Health; 3 Compensation

- **All injury severities** are included
- **Patient record linkage** by QH Linkage Unit
- **Patient journey linkage logic** under development

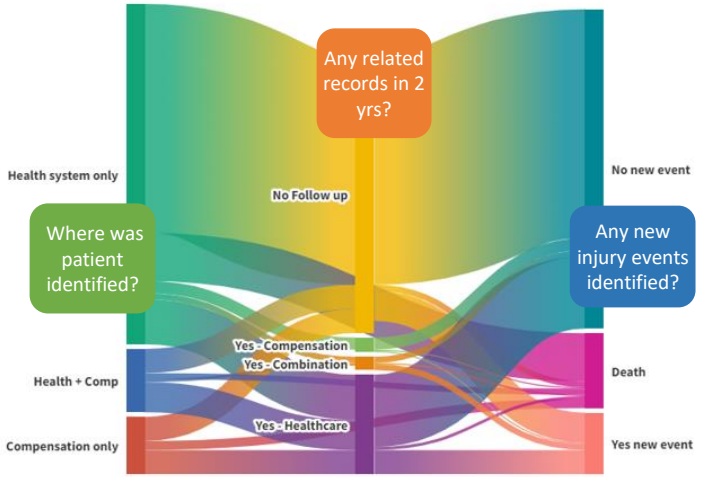
Results

For subset between 01Jan2012 & 31Dec2015 (4 years):

- **117,000+ patients** had acute care post transport crash
- **20%** had associated **healthcare use 2 years post-crash**
- **16%** appeared **only** in **compensation** datasets
- **$1.21 billion** total in-patient public hospital costs

Next Steps

- Add pre-hosp, private hosp & compensation costs
- Quantify treatment journey + costs (*example* below):



Conclusion:

Data linkage across health & compensation systems, for all injury severities, is vital for adopting a value-based healthcare approach to trauma care.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Biomechanical investigation of screw-screw fixation in the Latarjet procedure: A Finite Element Study

Hamid Reza Jarrah[1], Deniz Erbulut[2,3], Nicholas R Green[2], Ashish Gupta[3] and Kevin Tetsworth[4]

[1] School of Mechanical, Medical and Process Engineering, Queensland University of Technolog

[2] Herston Bio fabrication Institute, Metro North Hospital and Health Service

[3] Queensland Unit for Advanced Shoulder Research (QUASR), Queensland University of Technology

[4] Department of Orthopaedic Surgery, Royal Brisbane & Women's Hospital, Brisbane

Purpose:

The aim of this study is to provide a dynamic explicit Finite Element(FE) model for screw-screw fixation in the Latarjet procedure to investigate stress distribution on the graft and measure failure load post-union of the graft and the glenoid.

Methods:

In this study, we validated a dynamic explicit finite element model(Fig. 1) of the Latarjet procedure by comparing it with a cadaver study(Fig. 2). To accurately assess bone failure, distinct criteria were established for cortical and cancellous bones. Ductile damage was utilized as a failure criterion. The graft underwent a combination of loading methods, including static, dynamic, and quasi-static, before being subjected to ongoing loading until it eventually was damaged from the interface with the glenoid. Next, the graft's pre- and post-union conditions were simulated.

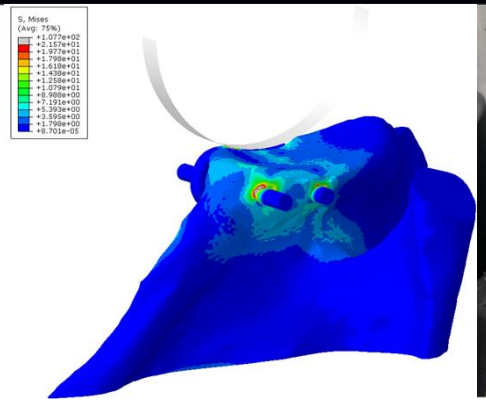

Fig. 1 FE model

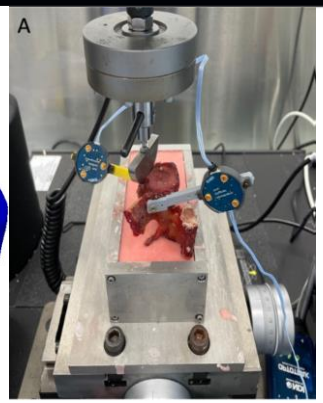

Fig. 2 cadaver test

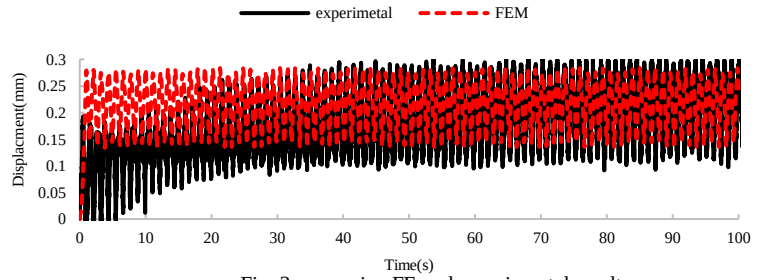

Fig. 3 comparing FE and experimental results

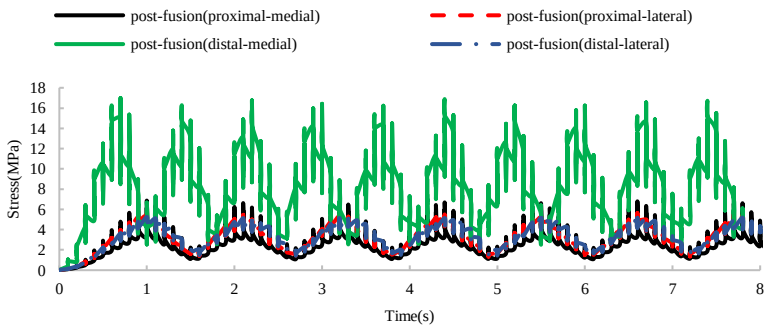

Fig. 5 Post-union simulation

Results:

The FE results closely matched the experimental results(Fig. 3), showing almost double the mean stress on the lateral section compared to the medial region (Fig. 4). Additionally, the stress value in the proximal section was higher compared to the distal section. After the union, the mean stress value in the proximal section was approximately 8 MPa, while in the distal section, it was close to 3 MPa(Fig. 5). Furthermore, post-union, the mean von Mises stress value increased by four times compared to pre-union. During the union process, there was a significant reduction in displacement amplitude, approximately 13 times lower compared to the pre-union condition. Furthermore, the failure load observed after union was approximately eight times greater than the load experienced prior to union.

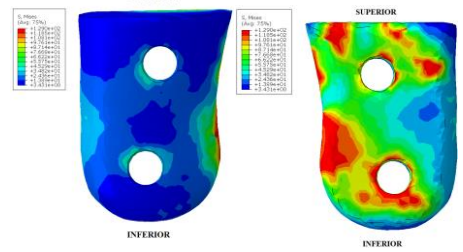

Fig. 4 Distribution of stress on the graft

Conclusion:

The stress distribution pattern in the graft tends to affect the proximal-lateral region and the areas surrounding the screws, making them more susceptible to osteolysis.

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Comparing Glycaemic Outcomes Of Digital and paper-based hospitals (GOOD study)

Peter Donovan[1], Clair Sullivan[1,2], Ben Sly[2,3], Brent Knack[4], Teyl Engstrom[2], Andrew Jones[2], Elizabeth McCourt[1,2], Syndia Lazarus[1], Jason Pole[2]
1. RBWH |2. Centre for Health Services Research, UQ |3. Metro South HHS| 4. Healthcare Improvement Unit, CEQ

Aim:

To assess the impact of digitalisation on clinical outcomes for patients with diabetes

Methods:

Cross-sectional surveys of inpatient diabetes management in 2019 and 2021

The following were compared between patients admitted to digital hospital and paper-based hospitals:

- Good diabetes days
- No hypoglycaemic days
- Prescribing and management errors

Results:

Patient bed days reviewed in hospital:

3023 paper-based

3954 digital

Using regression and controlling for potential confounders it was found:

- Good diabetes days were **45% higher** in a digital hospital
- There was no change in 'no hypoglycaemic days' between digital and paper-based hospitals

Proportion of patients with at least one error type:

Error type:	Paper	Digital	P-value
Prescribing	26%	16%	<0.001
Glucose management	24%	17%	0.002
Medication	38%	27%	<0.001
Insulin	46%	31%	<0.001

Conclusions:

Admission to a digital hospital improves the odds of patients experiencing 'a good diabetes day' and decreases the incidence of prescribing and management errors. However, admission to a digital hospital does not change the occurrence of hypoglycaemia.

Acknowledgements:

This work was supported by the Digital Health Cooperative Research Centres (CRC) Program. Funding was received from the Digital Health CRC for this project. The authors thank all those who collected data for the QUID surveys in both 2019 and 2021 and the Digital Health CRC

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

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Assessing the Capability of Large Language Models in Meeting First Year Medical Student Benchmarks

Dhaval Patel[1], Kamran Khan[1], Alexander Fang[1], Daniel Beidokhti[1], Venkata Paruchuri[1]

[1]University of Queensland-Ochsner Clinical School; Brisbane, Queensland-New Orleans, Louisiana

Introduction

Large language models (LLMs) such as ChatGPT and Google Bard have been increasingly used in educational research. Literature on ChatGPTs capability to solve medical board examination questions is readily available; however, Google Bard has largely been ignored.[1,2] As the number of available LLMs grow, it is important to determine the models that are most suited to answering medical questions. Our study compared these LLMs capability in meeting first year medical student knowledge benchmarks.

Methods

A first-year medical school examination testing basic sciences (81 question examination, 73 questions used, 8 questions omitted due to associated images) was input into ChatGPT 3.5 and Google Bard. Each model was first assessed to see if they achieved a passing grade. Then, the performance of each model was compared to determine if one had superior performance.

Results

ChatGPT answered 71% (52/73) of the questions correctly while Google Bard answered 78% (57/73) of the questions correctly. Both models answered 11 same questions incorrectly. ChatGPT answered 10 other unique questions wrong, and Bard answered 5 other unique questions wrong. There was no statistically significant difference found between the performance of the two LLM models (p=0.20).

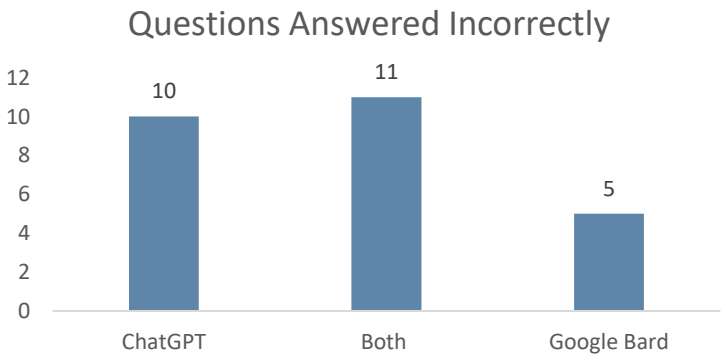

Figure 1: Graph of questions answered incorrectly with overlap

Figure 2: Table with results of the examination

LLM	Questions	# Correct	% Correct	P value
ChatGPT	73	52	71	0.20
Google Bard	73	57	78	

Discussion

Our results demonstrated that these LLMs were capable of meeting first year medical student benchmarks. ChatGPT and Google Bard both performed well above the minimum passing mark for the exam. Future studies should aim to evaluate the efficacy of LLMs in answering imaging questions which are essential in testing basic medical information. Furthermore, additional research could assess the viability of incorporating LLMs into the creation of medical school test questions in order to improve the quality of first year assessments.

Citations

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Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Optimisation of a Semi-Automated Custom HTO Surgical Guide

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4 Mechanical & Medical Engineering, Queensland University of Technology

Purpose:

Preoperative planning plays a pivotal role in ensuring successful High Tibial Osteotomy (HTO) surgeries with reduced risks and operative time. However, the current process of performing virtual procedures and designing custom surgical guides is time-consuming, leading to inefficiencies. To address these challenges, this project aimed to enhance surgical outcomes and increase efficiency by developing novel semi-automated design workflows for producing HTO surgical guides.

Methods:

A semi-automated script was developed to perform a virtual surgical procedure (VSP) in 3-matic followed by the fully automated design of a custom guide in nTop. Using 3-matic's scripting guide, the procedure was semi-automated. The nTopology workflow was built as a custom block, with custom user interfaces and simplified inputs. Additionally, automated screenshots were incorporated into the 3-matic script to streamline the creation of regulatory documentation, specifically the required Case Plan documentation.

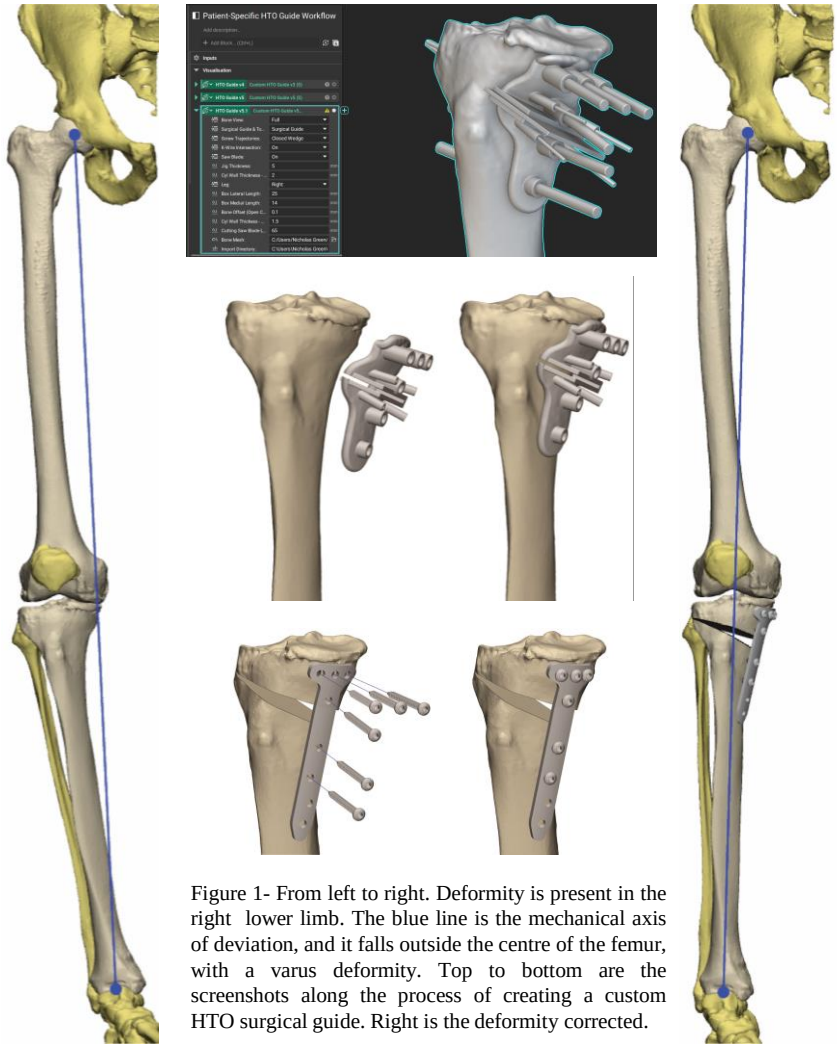

Figure 1- From left to right. Deformity is present in the right lower limb. The blue line is the mechanical axis of deviation, and it falls outside the centre of the femur, with a varus deformity. Top to bottom are the screenshots along the process of creating a custom HTO surgical guide. Right is the deformity corrected.

Results:

Using traditional CAD tools to produce a patient specific HTO surgical guide took approximately 3 hours and 15 minutes. 30 minutes for the VSP, 2 hours for surgical guide modelling, and 45 minutes for regulatory documentation. In contrast, the new semi-automated workflow in 3-matic consisted of two sections: the first, which required surgeon input, took approximately 8.5 minutes, while the second took approximately 3.5 minutes. The nTop workflow took around 2 minutes, while regulatory documentation required approximately 7 minutes. The streamlined workflow took a total of 21 minutes, 10.7% of the original time.

Conclusion:

These workflows significantly reduce the time required for virtual planning and custom guide generation, allowing for enhanced reproducibility, and facilitated easier validation from a regulatory standpoint. The enhanced efficiency and reliability of these workflows make them valuable tools for precise HTO surgical planning, ultimately improving patient outcomes.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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Simulating Cardiac Volumetric Changes Due to Alteration of the Vertical to Transverse Ratio Away from the Divine Proportion

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Introduction

The golden ratio or divine proportion has been consistently observed in patterns throughout nature. Phi, the mathematical constant used to represent the golden ratio, is approximated at 1.62. In studying the human heart, Henein et al. discovered that the vertical / transverse dimensional ratio (VTR) of the heart roughly approximates the golden ratio in healthy hearts. We explored this finding by assessing the volumetric changes in the heart following changes in the VTR away from the divine proportion.

Methods

The Model Human Heart Shape Variation During Cardiac Cycle program created by Sergei Malchenko was used to create an initial model of the heart. This model was modified to calculate the VTR of the initial heart. Then, the program was manipulated to produce new models based on changes in the VTR from which volumetric data could be gathered. Volumetric data was then subsequently gathered from VTR inputs ranging from 1.40 to 1.84.

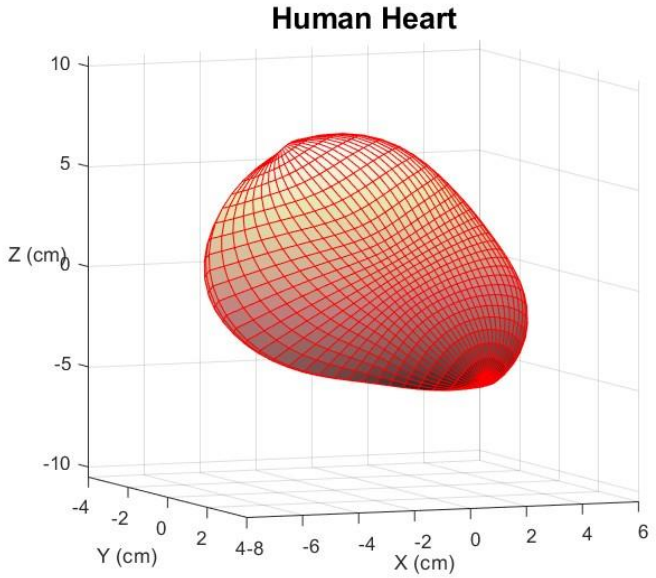

Figure 1: Simulation model of heart used in volumetric analysis.

Results

The results showed that the volume of the heart at a VTR near the golden ratio was maximized compared to values away from it. This pattern was observed for both maximum and minimum heart volumes.

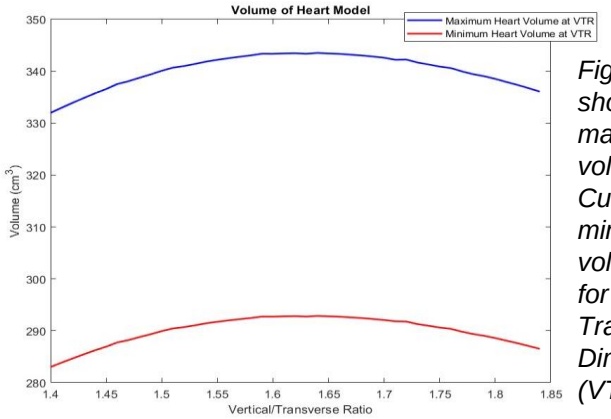

Figure 2: Graph shows the maximum heart volume (blue Curve) and minimum heart volume (red curve) for each Vertical to Transverse Dimensional Ratio (VTR).

Discussion

Our results show there are volumetric decreases moving away from the golden ratio value of 1.62. This finding suggests a possible link between volumetric decreases due to variations in the VTR and pathological states. Heinein et al. found that heart failure occurred around VTR of 1.40, and our results suggest that an decrease in volume plays a role in the pathology. Future research should focus on exploring the link between alterations in VTR and various cardiac pathologies.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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Clinical Pharmacy Outcomes – Defining quality indicators, care bundles and outcomes

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Background

Clinical pharmacists perform patient-centred activities to optimise medicines use, however quality indicators are non-uniform, measure individual processes and are not linked to patient outcomes.

Aim

To define a pharmaceutical care bundle (PCB) and outcome measures for use within Queensland Public Hospitals.

Methods

A four-round modified-Delphi approach with Queensland Directors of Pharmacy (DOPS) was performed. DOPS were asked to rate on a 5-point LIKERT scale the relevance and measurability of 32 inpatient clinical pharmacy quality indicators (CPQI) and outcome measures. They also ranked clinical pharmacy activities from perceived most to least beneficial for patients. Based upon this ranking, groups of indicators were proposed as PCB, and relevance and measurability assessed.

Results

Response rate ranged from 40% to 60% across the 4 survey rounds. Sixteen individual CPQI reached consensus. Table 1 shows the top 8 individually ranked CPQI. Nine PCB were formed from results in survey rounds 1 to 3. Only 1 PCB reached consensus (see figure 1 and Table 2). Sixteen outcome measures reached consensus. Table 3 shows the top 8.

Table 1 – Top 8 individually ranked consensus CPQI

Proportion of patients where a pharmacist…	Relevance (mean)	Measurability (mean)	% of sites which measure
documents an accurate list of medicines (medication history) during admission	4.87	4.40	100%
performs medication reconciliation on admission	4.80	3.73	93%
provides a medication list to a patient upon discharge	4.80	3.93	87%
documents an accurate list of medicines (medication history) within 24 hours of admission	4.73	3.53	80%
provides medication counselling/education at discharge	4.73	2.53	40%
performs discharge medication reconciliation	4.73	3.53	80%
performs medication reconciliation within 24 hours of admission	4.67	3.13	73%
performs a medication review	4.60	3.67	87%

Figure 1 – Consensus PCB

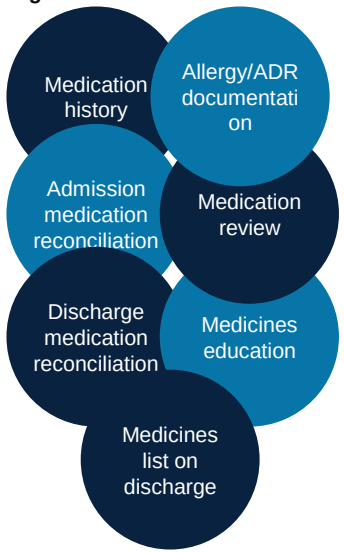

Table 2 – PCB relevance and measurability

Relevance to Monitor (mean)	Relevant activities (mean)	Measurability (mean)
4.45	4.09	2.09

Table 3 – Top 8 consensus outcome measures

Indicator description	Relevance (mean)	Measurability (mean)	% of sites which measure
Hospital acquired complications	4.45	3.40	60%
Readmission due to medication misadventure	4.40	2.90	20%
Unplanned readmission within 10 days	4.27	3.00	0%
Medication-related hospital acquired complications	4.20	3.40	70%
Cancelled planned care due to suboptimal medicines management	4.20	2.70	30%
Medication-related adverse event codes (y-codes)	4.18	3.40	40%
Patient reported confidence with managing their medications on discharge	4.18	2.50	10%
Pharmacist recorded interventions	4.10	3.80	90%

Conclusion

Consensus has been reached on one PCB to monitor clinical pharmacy service delivery and sixteen patient outcomes. Future work to measure and monitor the extent of delivery of this PCB and the link to patient outcomes is required.

This research has been supported through an Allied Health Professions Office of Queensland Health Practitioners Research Grant.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Accuracy and acceptability of 3D scanners in neonatal intensive care for improving infant continuous positive airways pressure

–Towards CustOM CPAP devices for premature InfanTs

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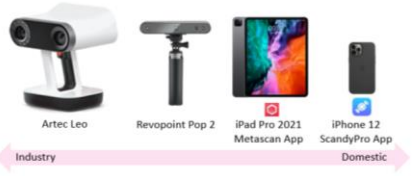
6. School of Mechanical and Mining Engineering, The University of Queensland, Brisbane, Australia

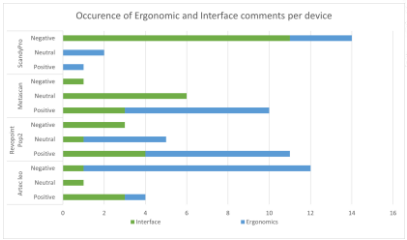
Background:
Nasal CPAP injuries are common for premature infants. Clinical use of 3D scanning is established in surgical sub-specialties, cancer care and radiology. We explored the potential for the development of custom fitted neonatal CPAP devices towards reducing injury, by evaluating the accuracy and acceptability of 3D scanning in a pre-clinical setting.

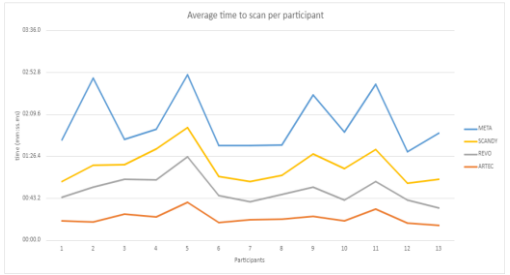
AIM:
Explore the feasibility of using 3D scanners in the NICU for i) accuracy and ii) acceptability of each device.

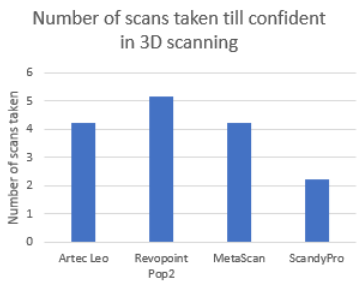
Conclusions:
3D scanning was found to be accurate, quick and user-friendly in a simulated neonatal environment. Purpose built scanners (Artec Leo and Revopoint) off er superior scan quality compared to application-based scanners.

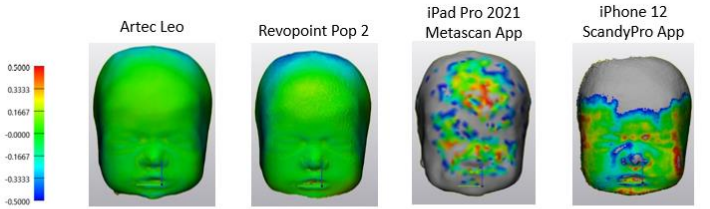
Methods:
Four 3D scanners were assessed and compared, Artec Leo, Revopoint POP2/smartphone, iPhone/ScandyPro and iPad Pro/Metascan. Trained neonatal clinicians (medical and nursing), undertook mock scans which were assessed for scanner accuracy. Accuracy was defined as mean absolute error (MAE) between 3D scan and the 3D model used to
print the manikin. Scan time, user-friendless and confidence in scan acquisition were also evaluated.

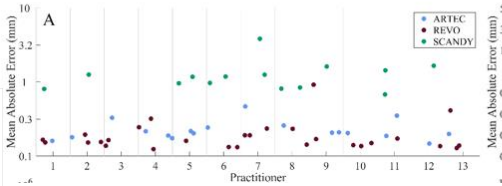


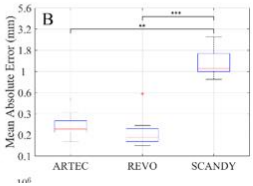












Results:
A total of 60 scans were performed by thirteen neonatal clinicians, (4 medical/nurse practitioner and 9 nursing). The median MAE was 0.21mm (IQR 0.19-0.26); 0.17mm (IQR 0.15 to 0.21); 1.08mm (IQR 1.0 to 1.63) for Artec Leo, Revopoint and ScandyPro respectively. Scan times were quickest for Artec, 22.9sec (IQR 18.5-27.0), then Revopoint 25.2sec (IQR 22.0-34.35) then ScandyPro 22.4sec (IQR 18.2-31.8). Metascan software did not provide data of adequate image quality for analysis. Artec Leo required 4 scans to learn compared to 5 scans for Revopoint. Participants were more confident about Revopoint's acceptability in the clinical space (median score 85% versus 75%).

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3D scanners in a simulated neonatal care unit

–Towards CustOM CPAP devices for premature InfanTs

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August D[1,3], Byram I[2], Forrestal D[2,6], Desselle MR[2], Stevenson N[4], Iyer K[4], Cobbald L[1], Chapple L[1], McGrory K[1], McLean M[1], Hall, S[1], Schoenmaker B[1], Clement J[1], White K[1,5], Davies MW[1,5], Lai MM[1,5]

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Background:
Three-dimensional (3D) scanning and printing is an emerging healthcare sub-speciality that can support non-invasive surface imaging and the production of customised therapeutic devices. To date, neonatal applications of 3D scanning has been limited to manikins with a paucity of information on its use in the clinical space. We evaluated handheld 3D scanners for use in neonatal intensive care.

AIM:
To explore 3D technologies with clinicians, bioengineers and health specialists in science (HBI) for neonatal individualised care.

Conclusions:
The Revopoint proved affordable and was voted the most ergonomic for the neonatal clinical setting. The Artec Leo was the most expensive, but offered a complete package for image acquisition and advanced image processing. App-based scanners present data security issues that preclude use in our neonatal intensive care unit.

Methods:
Four commercial 3D scanning technologies were assessed for suitability in the NICU: Artec Leo, Revopoint POP2/smartphone, iPhone/ScandyPro and iPadPro/Metascan. Suitability was defined using four criteria: cost, supporting equipment requirements, ergonomics and data security.


Artec Leo


Revopoint Pop 2

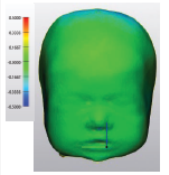
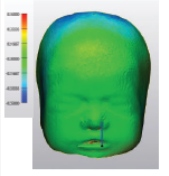
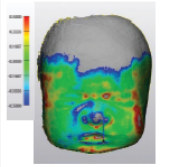
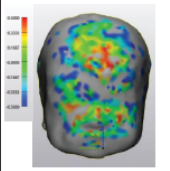

iPad Pro 2021
Metascan App


iPhone 12
ScandyPro App

Industry → Domestic

Results:
Devices cost between $1,400 and $52,000 AUD (Jan 2023). Price points were calculated on whether the device included purpose-built processing elements (Artec Leo and Revopoint) or required additional equipment for optimal use (Revopoint). All four devices were handheld, ranging in weight from a 140g smartphone, 365g Revopoint, 682g iPadPro to a 2.6kg Artec Leo with ergonomics of each qualitatively assessed by neonatal clinicians. Application based scanners had limited options for secure transfer of clinical images (social media or cloud-based). Purpose built devices offered advanced image processing with multiple data security features (SD card or cable transfer with additional security and software access).

Table 1: Comparison of scanners trialled

Scanner, publication	Surface deviation comparison *	cost, steps to image collection	Steps to image collection	Data security	Advantages	Limitations
Artec Leo (1,2)		AUD $52,000 Computer for data processing Software included in package Micro SD + converter	1. Turn on scanner 2. Adjust settings 3. Open new project 4. Scan 5. Transfer scan to USB/wifi upload 6. Open scan on PC with Artec Studio 7. Process scan- follow prompts 8. Review and export 3D file	When using SD card data transfer, data is stored on the Artec device and can be easily transferred to a secure PC.	• Industry leader • Quick to scan • Scan data maintains 1:1 scale • Once user understands screen feedback, it is easy to understand if capturing a good quality scan • Scanning range intuitively sensitive • Device stabilises captured images while scanning well • Project filing system keeps participant data together	• Heavy to hold, particularly for multiple scans. • In this case need to use with texture flash off, relying on room lighting and scanner skill to ensure no face shadowing. • Unfamiliar interface, scan shows in monochrome colour not true colour of scan. • Calibrated for larger objects. • Can be tricky to manoeuvre to capture data when subject is in a tight space . • Reliant on PC to process scan.
Revopoint POP 2 3D scanner (3)		Premium package AUD $1400 + Android phone- what is lowest quality Computer to Bluetooth transfer Free software	1. Assemble device 2. Open app 3. Start new scan 4. Scan 5. Fuse mesh cloud 6. Option to mesh on phone to create stl OR transfer file and open in Revostudio 7. Review and export 3D file	Data is stored in phone cache. Need to Bluetooth transfer	• Light weight • Scan data maintains 1:1 scale • Calibrated to smaller objects • Easier to manoeuvre to capture different angles • Screen shows scan colour as it is being captured, can view point cloud and process to stl on device • Ability to see at the bedside what the scanning result is	• 3 mini screens can be confusing- larger screen shows what has been scanned and what is missing. • Sensitive to distance changes, requires a steadier hand. • Requires android phone (not google pixel) to have options for file transfer.
ScandyPro (4)		Free app iPhone (min iphone 10) Apple ID Monthly subscription	1. Open scandy pro app on iphone 2. Open camera function in app 3. Scan 4. Review and export 3D file	Data kept on apple device. Sharing dependant on device functionality.	• Scan data maintains 1:1 scale • Familiar device, capturing data on front facing camera used to unlock phone • Scanning is in full colour and can review wireframe on device	• No visual feedback when scanning- cumbersome to scan with front facing camera when scanning. • Scan feedback on screen does not provide accurate information to show if scan was good quality. • Good detail to face, however not accurate to facial dimensions. • Difficult to stabilise camera as when scanning another subject you cannot see the screen. • Requires camera to be withing 20cm to the baby. • Easy to lose focus and distance from the baby.
Metascan (5)		Free app Iphone 12pro or newer / ipad pro Apple ID Monthly subscription	1. Open meta scan app on iphone 2. Open camera function in app 3. Select phot mode 4. Take 20-30 photos 5. Process photos 6. Review and export 3D file	Data kept on apple device. Sharing dependant on device functionality.	• Familiar device • Simple to use -Photogrammetry function relies on taking photos which is a familiar activity • Easy to manoeuvre and it is not reliant on capturing a constant view of the face • Scanning is in full colour and can review wireframe on device	• Unable to scale accurately. • Long processing time. • Baby face not accurately captured.

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Telepharmacy impact on elective surgery medication-related cancellation rates

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Introduction

Elective surgery cancellations are costly to health institutions and negatively impact patients. (1,2)

The average waiver labour spend per surgical case at The Prince Charles Hospital (TPCH) is approximately $8,785. Medication-related cancellations (MRCs) of elective surgical cases are manageable or preventable if detected prior to surgery.(3) The incidence of MRCs is not established in literature. One study reported a rate of 2.4% out of all surgical cancellations.(3) The closer to booked surgery cancellations are made, the more difficult it is to fill the resultant idle theatre time.

In 2017, a pre-surgical telepharmacy service was introduced at TPCH in addition to the established preadmission clinic (PREAC) pharmacist role.

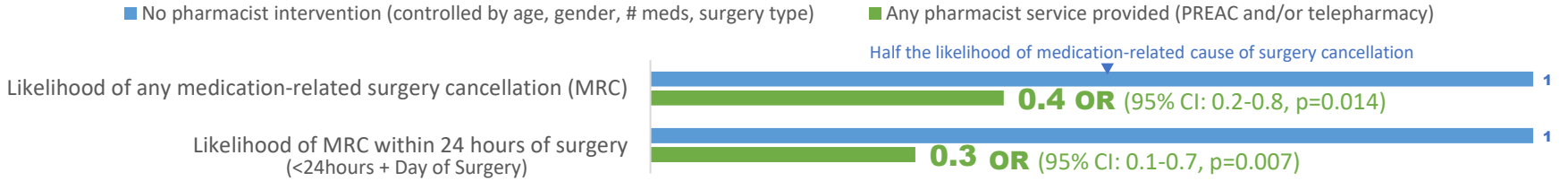
Objectives

This case-control study aimed to describe and assess the effect of telepharmacy on Medication Related Cancellations at TPCH

Methods

MRC cases between March 2015 to February 2022 were identified by database query of all surgical cancellations. Rates of MRC by specialty and time period were compared using Fisher's exact test. For cases, timing of cancellation was compared by pharmacist intervention and time period. The effects of pre-surgical pharmacist review on MRC was determined using conditional logistic regression analysis, comparing cases with matched controls (matched by time period, specialty and number of medications).

Pharmacist review strongly associated with reduced risk of medication-related surgery cancellations



Results

MRC was rare, occurring in 0.2% of all booked surgeries (n=72/35266), and 0.6% of surgical cancellations (n=72/11,270). Of patients with MRC, 43/72 (60%) had pharmacy review, with pharmacist detection in 19/72 (26%) cases which accounted for 44% (n=19/43) of those reviewed.

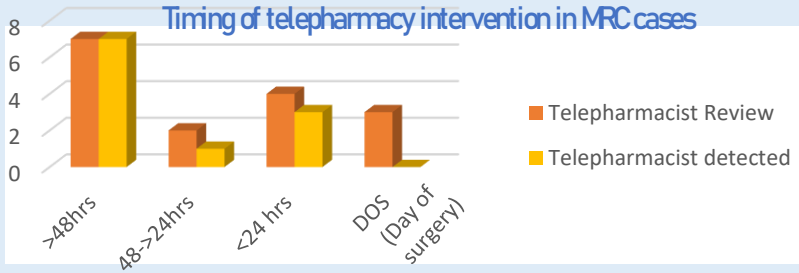
Overall, 45/72 (63%) cases were cancelled within 24 hours of surgery; 22/45 (49%) of these were not reviewed by a pharmacist and 5/45 (11%) were detected by a pharmacist.

The MRC rates were consistent pre- and post-telepharmacy implementation. However, provision of any pharmacist review was associated with lower MRC odds (OR: 0.4; 95% CI: 0.2-0.8).

Of the 16 telepharmacist-reviewed MRC cases, the telepharmacist detected and triggered 11 (69%) MRCs with 8/16 (50%) occurring 48 hours or more before surgical date.

Conclusions

Pre-surgical pharmacist review (including telepharmacy service) decreased the odds of medication-related elective surgical cancellations. MRC rate remained consistent over the study period despite telepharmacy service implementation. Pre-surgery pharmacist review contributed to over a quarter of all MRCs. No difference was detected in timing of elective surgical cancellation before surgical date due to sparse MRC case numbers.



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Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Cerebral mitochondrial function in preterm piglets

Lillian Macfarlane[1], Todd Johnson[2], Prof. Anthony Perkins[3], Dr Yvonne Eiby[1], Dr Olivia Holland[2, 4]

[1]Perinatal Research Centre, UQ Centre for Clinical Research, Faculty of Medicine, The University of Queensland [2]School of Pharmacy and Medical Science, Griffith University [3]School of Health, University of Sunshine Coast [4]Institute of Health and Biomedical Innovation, Queensland University of Technology

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Introduction

Preterm infants

High risk of poor neurodevelopmental outcomes

Susceptible to cardiovascular deterioration → **Increased risk of low cerebral oxygenation** → **Mitochondrial dysregulation** → **Bioenergetic failure**

Immature cardio-respiratory function and cerebral autoregulation

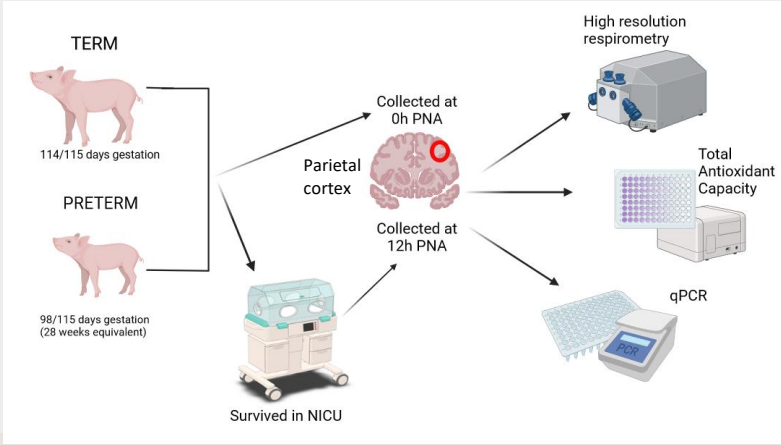
Brain highly energy dependent

Excitotoxicity & Oxidative stress

Brain injury

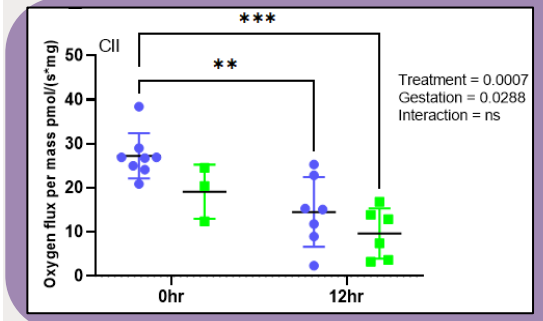
Does premature birth impact cerebral mitochondrial function?

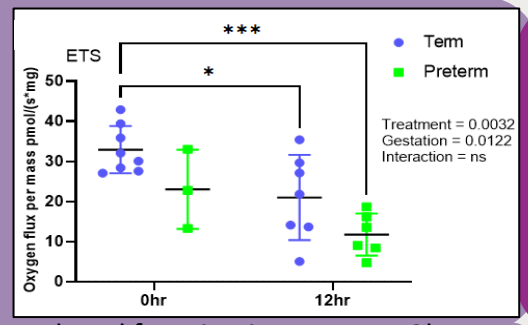
Methods

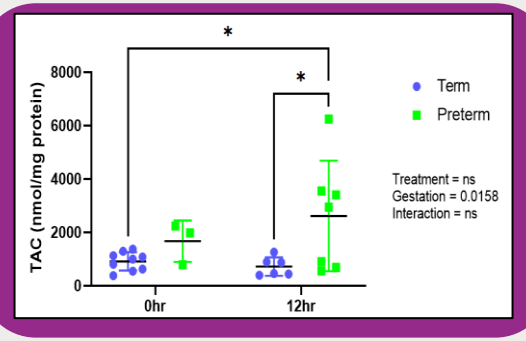


Preliminary Results & Discussion

Preterm piglets (●) vs Term piglets (●)







Complex II & Electronic Transport System reduced function in preterm 12h PNA

→ **Mitochondria in preterm brain have reduced function and unable to keep up with energy demand**

Unexpected Total Antioxidant Capacity increase in preterm piglets at 12h PNA

Next step → **qPCR to determine genetic pathways involved for this increase**

Impact

Understanding the role of mitochondria dysfunction and antioxidant capacity may lead to novel interventions to prevent preterm brain injury.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Automation of the 3D modelling and corrective anatomical measurements workflow in Lower Limb Malalignment

Shashwat Mishra[1], Nicholas Green[2], Deniz Erbulut[2] Ph.D

Herston Biofabrication Institute, Orthopaedics Department

Purpose: This project addressed pre-operative challenges associated with lower limb malalignment in orthopaedic patients, leading to chronic pain and gait abnormalities by developing an automated script that streamlines the process of measuring malalignment utilising 3D mesh models sourced from segmented high-resolution CT scans. The script aimed to enhance the accuracy, reproducibility, and efficiency of pre-operative planning for these corrective surgeries.

Method: The automation script employed the 3-Matic environment and Python scripting language, incorporating the *trimatic* and *pymatic* libraries. The process involved parsing user inputs, automating identification, and marking of key tibiofemoral landmarks. The user inputs were interpreted to determine mechanical focal points, inertial axes and calculate the final alignment measurements. The script prompted users with clear instructions, automated marking tools, and custom viewing planes to guide them through the process.

Results: The script generated precise alignment measurements, including femur anteversion, varus/valgus angles, TT-TG, LDFA, MPTA, and tibial torsion. By adopting mechanically-derived points and projection planes in lieu of manually placed anatomical landmarks, the script demonstrated increased specificity in landmark positioning, reduced human error, and improved consistency and reproducibility of measurements. It also facilitated the visualization of minute tibiofemoral alignment discrepancies which were previously challenging to observe.

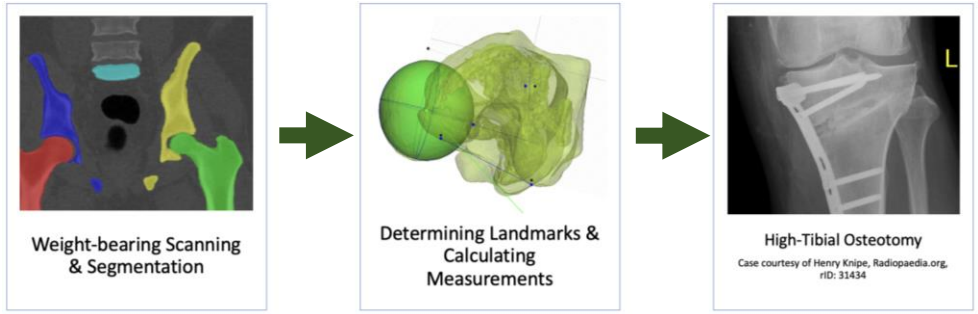


Figure 1: Lower Limb Malalignment Workflow

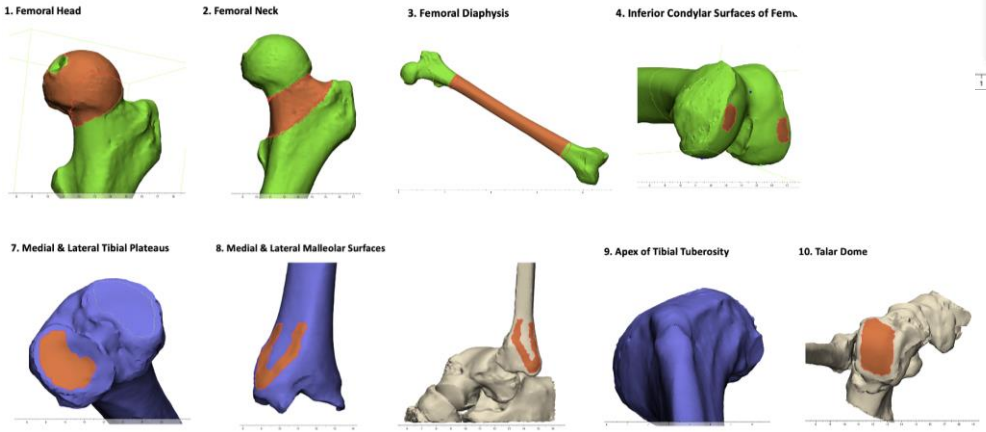
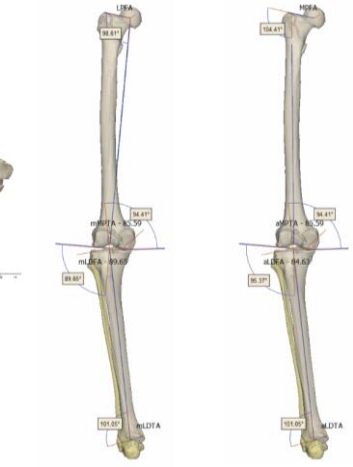


Figure 2: Prompted User Inputs

Conclusion: The automation script improved the efficiency of measuring lower limb malalignment, reducing the time required from over 30 minutes to approximately 5 minutes. The guided prompting made it user-friendly for inexperienced individuals. Future development aims to integrate the script into an overarching workflow, from imaging to custom surgical bracket generation. The script has the potential to enhance orthopaedic pre-operative efficiency and minimize wait times and ensure greater efficacy of corrective surgeries via greater precision in alignment measurements.

Figure 3: Script Output with LL Malalignment Measurements



Mechanically-derived landmarks

- creates points based on **regional center of mass**
- uses **inertial axes** of diaphysis to create **projection planes**
- greater structural relevancy
- **reduces** the influence of human error and anatomical **variation**
- **greater consistency** and reproducibility

Figure 4: Mechanical vs Anatomical Measurements

[1]UQ School of Medicine
[2]Herston Biofabrication Institute

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Prospective MRI and Neurocognitive Assessment of "Chemobrain" in Acute Myeloid Leukaemia: The MINERAL Study.

Ashleigh P Scott[1], Ada Lo[2], Ying Xia[3], Kate Thompson[2], Harriet Bodemaide[2], Amir Fazlollahi[3], Olivier Salvado[3], Katie L McMahon[4], Glen A Kennedy[1].

[1]Department of Haematology and Bone Marrow Transplant, RBWH, [2]Department of Psychology, RBWH, [3]The Australian e-Health Research Centre, CSIRO, [4]School of Clinical Sciences and Herston Imaging Research Facility, Queensland University of Technology

PURPOSE: "Chemobrain," anecdotally characterised by word-finding difficulties and short-term memory loss, is commonly reported by patients treated for Acute Myeloid Leukaemia (AML). We aimed to determine whether "chemobrain" could be objectively detected in AML patients.

METHODS: We performed a prospective, observational, longitudinal cohort study in adults commencing chemotherapy for AML, powered to capture a potential 25% incidence of "chemobrain" for exploratory analyses. Subjects underwent neurocognitive assessment (NCA) and brain MRI, including iron quantitative susceptibility mapping (QSM) as a neuro-inflammation imaging biomarker, at three timepoints: pre-treatment (T1), end of chemotherapy treatment (T2; 3-6 months), and 6 months later (T3). NCA change scores of ≥1.64 SD were considered significant.

RESULTS: Between 2019-21, 20 patients enrolled; 15 and 10 remained alive/enrolled for evaluation at T2 and T3 respectively. Although NCA and MRI findings were similar across T1-T3 for the entire cohort, exploratory analyses yielded potentially interesting findings.

Figure 1: All NCA parameters for the entire cohort were similar between T1-T2. Animal Fluency was the only domain in which multiple subjects (3; 20%) performed significantly worse (change scores ≥ -2.00 SD) over time.

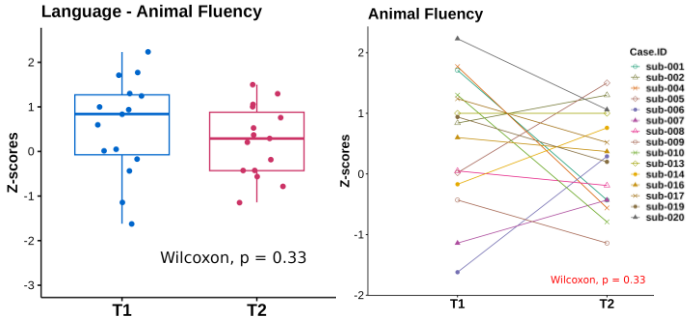


Figure 2: Worse Animal Fluency change scores correlate with MRI brain volume loss in multiple regions, particularly temporal lobe and Wernicke's area, which in turn correlate with worse quality of life (QoL).

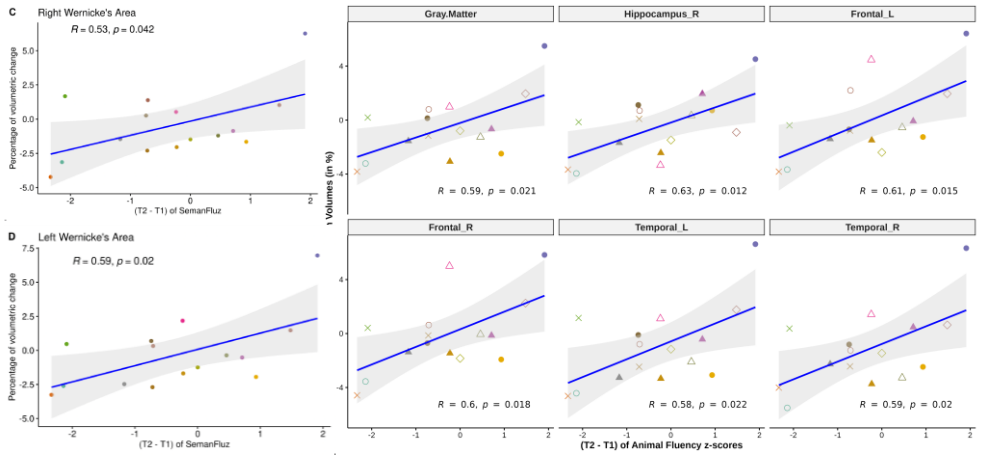
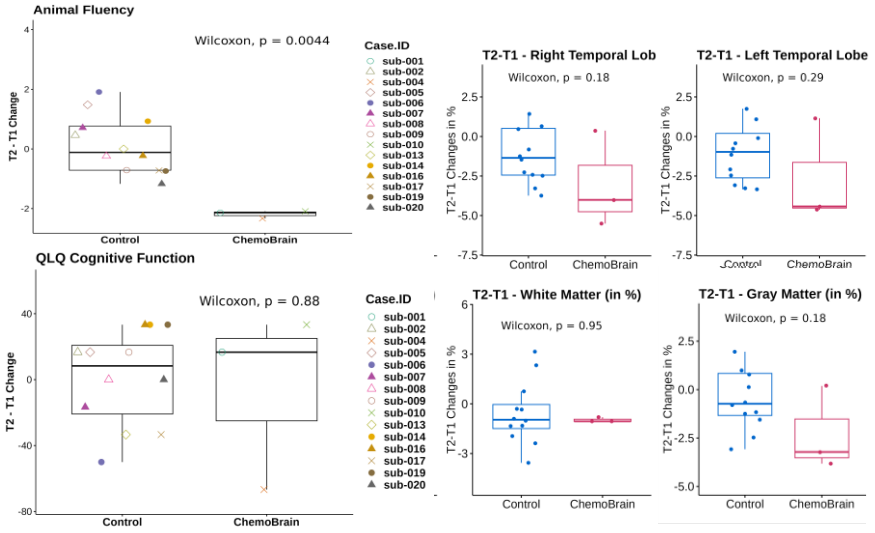


Figure 3: Putative "chemobrain" subjects, selected based upon worse (≥-1.64SD) Animal Fluency scores T1-T2, did not report subjectively worse cognitive function or demonstrate volumetric loss.



CONCLUSION: In this pilot study, despite patient-reported symptoms, objectively measurable neurological toxicity appears uncommon in AML patients. However, after completing chemotherapy, a subset appear to objectively demonstrate significant worsening of verbal fluency, which is a commonly reported symptom by patients with putative "chemobrain." Potential correlations between worse animal fluency, brain volume loss and quality of life are interesting and may support this observation. These exploratory data require further evaluation in larger cohorts.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

A Time and Motion Study of Activities in the Controlled Drug Room at RBWH

Elloise Preston[1,2], Sahra Ashley[3], Jessica Toleman[3], Julia Gaines[3], Amanda Bernhagen[3]

1. Queensland University of Technology, 2. The Prince Charles Hospital, 3. Royal Brisbane and Women's Hospital

Introduction. Completing and maintaining controlled drug registers is a paper-based process across many hospitals in Australia. While many community pharmacies have transitioned to electronic controlled drug registers, the uptake in the hospital setting is low.

Objective. Determine the time spent on key activities in the controlled drug safe at RBWH to identify areas for optimisation through digital interventions.

Method. An observational time and motion of the activities completed in the RBWH controlled drug room over one week.

Results. In the 31.3 hours that they were observed, the technician spent 48% (12.2 hours) documenting transactions into paper-based registers, with handwriting distributions records accounting for the largest time period. Pharmacists were observed and completed tasks in the controlled drug room for 6.8 hours, with the majority of time spent verifying ward orders (4.2 hours, 62%).

Pharmacist cost:

Hrs per week	Cost per year
2.4	$5,900

Technician cost:

Hrs per week	Cost per year
12.2	$25,000

Electronic controlled drug registers would result opportunities for:

- Staff allocations elsewhere that promote patient safety and quality care.
- Financial optimisation within the department

Conclusion. Implementation of Electronic Recording and Reporting of Controlled Drugs will result in changes to staffing requirements and workload within the pharmacy department. This will allow for more time and resources to be allocated towards patient safety and the quality use of medicines.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

HHPS23 Abstract067

Community opioid prescribing practices after spinal cord injury (SCI): a data linkage study

Samantha Borg,[1,2] Cate Cameron,[2,1] Timothy Geraghty[3,4], Steven McPhail[1] and Victoria McCreanor[1]

[1]AusHSI, Queensland Institute of Technology, [2]Jamieson Trauma Institute, Metro North Health, [3]The Hopkins Centre, Griffith University, [4]Division of Rehabilitation, Princess Alexandra Hospital, Metro South Health

Purpose. Chronic, persistent pain following a SCI is common. Opioids are frequently prescribed to assist with pain management and facilitate greater engagement with daily activities. Concerningly, opioid use and adverse outcomes have been increasingly prevalent in the last 30 years, including addiction, overdose, and death. Yet, little is known among Australian SCI cohorts.

Method

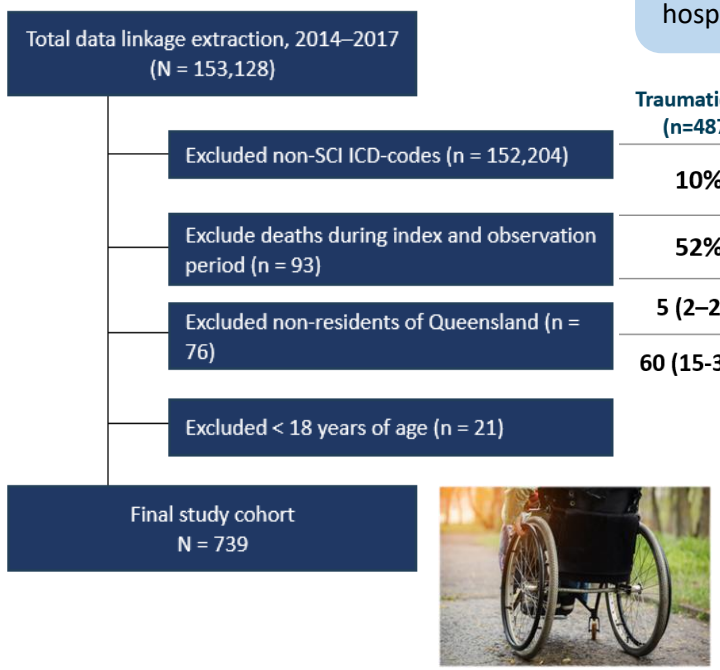
Study aim: The aim of this study is to identify the prevalence and patterns of opioid dispensing following SCI

Study design: Population-based retrospective data linkage

Study population:

- Adults residing in QLD
- Admitted to a public or private Queensland hospital over a 4-year index period (ending Dec-2017)
- Primary diagnosis of SCI
- Alive during the observation period

Data linkage: Two-year follow-up data was linked for the following datasets:
(1) community opioid dispensing
(2) hospital administrative, and
(3) death registry data.



Results. From the received data, 739 met inclusion criteria (traumatic SCI: 487; non-traumatic SCI: 252). Sixty-five percent of participants were male; and 8% were identified to have a cancer-related hospital code.

Traumatic SCI (n=487)	Preliminary findings	Non-traumatic SCI (n=252)
10%	% dispensed opioids before hospitalisation	**39%**
52%	% dispensed opioids across 2-year observation	**57%**
5 (2–21)	Median (IQR) # medications dispensed over 2-years	**9 (2–37)**
60 (15-360)	Median (IQR) Oral Morphine Equivalent over 2-yrs	**228 (22-1002)**

Opioid-related disorder
(dependence, misuse)

5% non-traumatic SCI
1% traumatic SCI

Conclusion. This study will be the first to generate information on community opioid prescribing practices for individuals with SCI in Australia. The results will be used to inform healthcare providers and policymakers about the prevalence and patterns of opioid dispensing, with the aim of improving pain management strategies and patient safety.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

TRANSFORMING PATIENT FEEDBACK ON FOOD SERVICES

Instantly available feedback

Efficient data collection & analysis

Improves patient experience & outcomes

PURPOSE:

To **create, validate,** and **implement** a digital tool at STARS to:

- Support real-time improvements to food service
- Improve patient outcomes and experience
- Reduce waste
- Save time on audits

METHOD:

- The Digital Meal Rating Tool (DMRT) was developed and tested with patients through a series of interactions
- The **usability** and **validity** of the DMRT in comparison to the traditionally used Meal Assessment Tool (MAT) was tested

Digital Meal Rating Tool (DMRT)

How would you rate the flavour, taste and quality of the meal out of 5 stars?

- 5-point Likert scale rating, visually represented by stars
- Accessible via electronic device

Feedback has been used to efficiently enhance the provision of high-quality food services

>800 meal responses collected to date

>5000 individual meal ratings

FINDINGS:

- 492 paired responses collected from the DMRT and MAT.
- Patients preferred providing feedback via the quicker DMRT
- Face validity demonstrated through statistically significant correlation ($p<0.05$) between breakfast & lunch scores

FUTURE DIRECTIONS:

- Ongoing validity testing - Dinner
- Integration into menu management system
- Supporting adoption at other hospitals

Jennifer Ellick[1,2], Hannah Olufson[1,2], Jessica Kinneally[1], Eliana Taylor[1,2], Vineet Joshi[1,2], Danielle Cave[2], Olivia Wright[2] | 1: STARS, 2: UQ

GRIFFITH UNIVERSITY · QIMR Berghofer Medical Research Institute THE FUTURE OF HEALTH · CSIRO · QUT · THE UNIVERSITY OF QUEENSLAND AUSTRALIA CREATE CHANGE · HERSTON HEALTH PRECINCT · Metro North Health · Queensland Government

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Early experience of a vascular outreach program to prevent and treat serious foot disease in Aboriginal & Torres Strait Islander people

Teal Derboghossian[1], Michelle McGrath[1], Annette Redhead[1], Suzy Warren[1], Samantha Cullen[2], Murray Ogg[1] & Jason Jenkins[1]
[1]Royal Brisbane & Women's Hospital, [2]Redcliffe Hospital

Background

Diabetes is the underlying cause of 8% of all deaths for Aboriginal and Torres Strait Islander people, and this is likely underestimated given this figure is based on death-certificate data[1]. The prevalence of diabetes in these populations is one of the highest in the world at 10-30%[2-3]. Additionally, diabetes management and treatment is often poor and complications more frequent[1-4]. A study in Western Australia found that diabetic Aboriginal and Torres Strait Islander people were 38 times more likely to require major amputation and 27 times more likely to require minor amputation than diabetic non-indigenous Australians[5]. The higher prevalence of diabetes as well as the known poorer outcomes for Aboriginal and Torres Strait Islander people highlights the need for a culturally safe preventative foot health service for Aboriginal and Torres Strait Islander communities.

Multi-disciplinary foot clinics are considered international best practice for treating diabetic foot disease, alongside preventative approaches including foot screening, education, and appropriate footwear[6]. The Deadly Feet model of care delivers early detection, risk modification and intervention by delivering podiatry, vascular sonography and vascular specialist services to Aboriginal and Torres Strait Islander people to improve health outcomes and quality of life of people at risk of, or with foot disease. Early experience in the delivery of the project as well as barriers faced are presented.

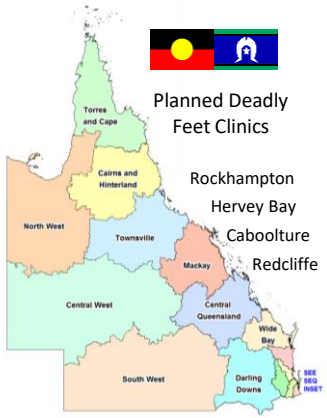


Figure 1: Queensland Health District Map, Hospital and Health Service maps | Queensland Health

Figure 2: The first patient at the Redcliffe Deadly Feet clinic with the team Podiatrist and Vascular Sonographer. Patient media consented.

Methods

The program is co-designed and co-implemented with three objectives: detect disease early, promote risk modification, and treat foot disease related to diabetes mellitus (DM) and peripheral vascular disease (PVD). The Deadly Feet clinical team includes a podiatrist, vascular surgeon, vascular sonographer, and an Identified clinical nurse. The project and clinical team worked in partnership with Aboriginal and Torres Strait Islander patients, communities, leadership and peers to understand the needs and barriers community face accessing care. A Steering Committee was established with representation from local Aboriginal and Torres Strait Islander community and health teams, Hospital and Health Services (HHS), Primary Health Networks (PHN), and Institute for Urban Indigenous Health (IUIH) and an Identified consumer. The Steering Committee provided expert counsel that guided decision regarding clinic location, recruitment and referral pathways in and out of Deadly Feet. Patient-reported experience measures (PREMs) are collected after each clinic in an informal manner through yarns.

Results

Progression from community consultation to providing services was seamless due to the expert guidance provided by community and rapport developed with community through extensive engagement activities. Recommendations received through yarning with Aboriginal and Torres Strait Islander consumers and communities led to changes to the model of care including:

Figure 3: Early consumer feedback.

- Education and opportunistic screening by Deadly Feet clinicians at local community events and gatherings.
- Assistance with transport costs associated with attending the clinic.
- A second MNH service delivery site based at a primary care facility, in partnership with IUIH.
- Established processes to support self-referral option for patients on MNH external facing websites.

The first Deadly Feet clinic was at Redcliffe Hospital in April with monthly services held from then on. To date, Deadly Feet has received 73 eligible referrals and 32 out of 32 consumers felt Deadly Feet was culturally appropriate and would recommend the Deadly Feet clinic to family, friends, and community, demonstrating success. Evidence of peripheral artery disease on duplex ultrasound was identified in eleven (58%) patients. One patient that was self-referred required surgery for critical limb ischaemia.

Discussion

The main reported barriers by community were difficulty accessing transport and GP appointments. Deadly Feet addressed these barriers by providing care closer to home (Figure 1), establishing the requirements to accept self referrals and facilitating transport options including taxi and parking vouchers. Through consultation with peers and community the benefits of a mobile space became apparent, and the project evolved to include a screening service in collaboration with the Better Together Van. The Better Together Van is a specialised clinic vehicle (Figure 4) that includes an examination table, desk, patient lift, and hand-washing facilities. Mobile education and screening clinics have been performed at 11 community events since April 2023. This model has the benefit of meeting community where community organically meets, a larger reach than stand-alone referral-based clinics and allows for other preventative activities such as group education events. Overall, the Deadly Feet program has been overwhelmingly accepted and endorsed by Aboriginal and Torres Strait Islander community, patients, leadership and peers. The project team are excited for Deadly Feet to expand to include a community site in collaboration with IUIH at Caboolture MATSICHS as well as a clinic site in Wide Bay and Central Queensland.

Figure 4: The better together van and project nurse at a local community event (left). A patient having their feet screened inside the van, patient media consented (right).

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Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Feasibility of using wearable devices to non-invasively measure energy expenditure in patients with burn injury

There is a strong case for targeting measured Energy Expenditure (EE) in patients with severe burn injury. Predictive equations estimating EE used in practice have low to moderate accuracy and do not account for the heterogeneity of EE within this population (1). Wearable devices may provide an opportunity to measure EE in patients while also measuring other relevant clinical parameters. Current evidence in this space is limited and suggests that current available wearable devices over or underestimate EE (2,3).

Introduction

To our knowledge, there are no studies establishing feasibility and accuracy of measuring EE in patients with burns where factors such as location and size of burns and metabolic response need to be considered. Burn injury to the forearms is a common presentation, which precludes the effective use of most wrist-worn wearables and necessitates the pursuit of alternative ergonomics solutions. Wearable devices are promising innovative approach to determining the total EE in patients with burns, with the potential to improve the nutritional management and outcomes of these patients.

Objective

To determine if it is feasible to utilise wearable technology in patients with burn injury, to measure Energy Expenditure (EE) and other observations that can directly influence clinical care.

Devices	Physiological Parameters									Location worn	TGA Approval
	HR	*VE*	*RR*	*Skin TEMP*	*Accelero -meter*	*TDS*	*Sleep*	*SpO2*	*BVP*		
Respiree	✓	✓	✓	✓	✓		✓	✓		Chest	Yes
Embrace Plus	✓		✓	✓	✓	✓	✓	✓	✓	Wrist	No
Sleep Sense	✓		✓				✓			Bed leg	No
Oura Ring	✓[1]			✓[2]	✓	✓	✓			Finger	No

1. *Resting HR + HRV*
2. *Variation from baseline*


Respiree


SleepSense


OuraRing


EmbracePlus

Methodology

Study Type: Feasibility Trial
Inclusion criteria:
- All adult patients admitted with burn injury >10% TBSA
- Projected hospital length of stay more than 2 weeks

Sample Size: n = 12

Data collection:
- Four 4-hour data collection sessions within a 2-week period
- Physiological biomarkers of EE will be measured using wearable devices attached to participants body and/or to their bed
- Ground truth REE will be measured via indirect calorimetry
- Activity will be measured using a patient activity dairy
- Participant acceptance and satisfaction will be measured using a modified validated User Satisfaction Evaluation Questionnaire

Analysis

Physiological data recorded by the wearable devices will be used to estimate EE through predictive equations and iterative algorithms and will be compared against the REE measured by the indirect calorimetry.

Outcome measures

- Measured Resting Energy Expenditure (indirect calorimetry)
- Calculated Energy Expenditure from measured biometrics using validated equations and developed algorithms
- Participant acceptability and tolerance

Authors Bronwyn Segon (PhD Candidate)1,2, Dr Merrilyn Banks1 , Dr Jason Brown1, Dr Marlien Varnfield3, Dr Elizabeth Vujcich1, Anita Plaza1, Andrea McKittrick (PhD Candidate) 1, Dr David Silvera-Tawil3, Dr Wei Lu3, Dr Deepa Prabhu3, Dale Trevor1 and Prof Judy Bauer2. 1. RBWH 1. Monash 3. CSIRO

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Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

ID # AB 051

Neonatal skin injury scales: a scoping review with narrative synthesis

August, D [1,2]; Hall, S[1,2,3], Marsh, N [2,3,5]; Coyer, F[2,3,4,5]

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2-The University of Queensland, School of Nursing, Midwifery and Social Work, **3-** Griffith University,
4-Center for Clinical Nursing, Midwifery and Social Work, **5-** Intensive Care Services, Royal Brisbane and Women's Hospital




Background: Neonatal skin injuries concerning since the 1980s (August et al., 2020), (Cartlidge et al., 1990)

At least 60% attributed to hospital care & life-saving devices (August et al 2021; Fischer et al 2010) identifying numerous injuries (Image 1)

Injury assessment confirmed by visual assessment and experience/knowledge

Image 1: Preterm baby with injuries

Aim: Investigate severity scales used to report hospital acquired skin injuries for neonates.

Methods: Searched 2001-2023 for outcomes and inclusion criteria (Fig 1). Review of titles, full text and data extraction done by two authors (with third author for any disagreement). JBI, PRISMA-S rand MMAT frameworks used.

Fig 1: Outcomes

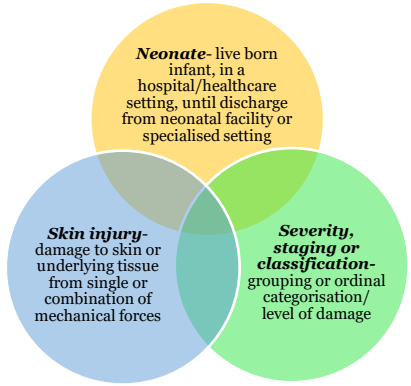
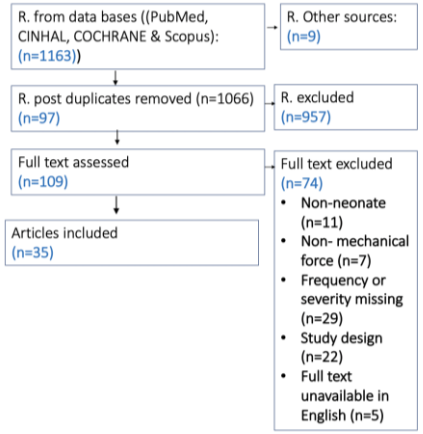


Fig 2: PRISMA



Results: Searched returned 1163 records (Fig 2). After full test review of 109 studies, 35 studies included. A majority were cohort or action research and conducted in the USA (Figure 3). Most (51%, n=20) reported skin injuries acquired throughout the body, 15 (45%) of the studies reported the nasal area alone (Figure 4).

Nine severity scales or combination of scales were utilised within studies (n=31) and four studies did not report a scale. Various versions of scales from the National Pressure Ulcer Advisory Panel (n=15), European Pressure Ulcer Advisory Panel (n=6) or Neonatal Skin Condition Score (n=5) were reported, compared to locally developed classifications/scales (n=4), (Fig 3).

Scales were predominantly of ordinal grouping (74%, n=26) or categorical assessment (14%, n=5). ***Only one scale from 2004 was validated for neonates.***

Fig 3: Study Type and Location

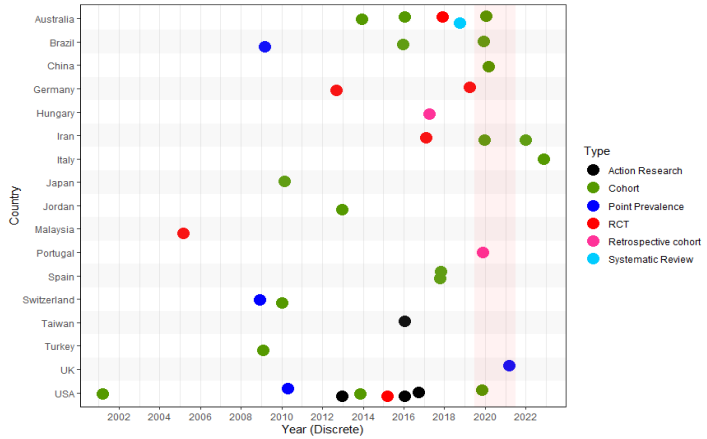


Fig 4: Injuries Studied

Conclusion: Neonatal skin injuries are inconsistently reported, using tools developed for non-neonates. However, assessment uniformity will improve examination of effectiveness of skin care treatments.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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Contact Precautions versus Standard Precautions for preventing MRO transmission in hospitalised patients

Anoopa Mathew, CN-Infection Monitoring and Prevention Service, RBWH; Amanda Corley, Research Fellow, Nursing Research, RBWH; Nicole Marsh, Director – Nursing & Midwifery Research, RBWH

BACKGROUND: Antimicrobial Resistance (AMR) is on the path to claim 10 million lives per year globally(1). The Australian Commission on Safety and Quality in Health Care (ACSQHC) recommends applying contact precautions when caring or patients colonised or infected with Multi Resistant Organisms (MRO)(2). The persistence of hospital acquired MRO events and infections with an increasing amount of antibiotic resistance is a clear marker that decades old conservative control measures have not been effective in mitigating the risk of MRO colonization and infections in hospitalised patients(3).

OBJECTIVE: To assess the benefit of Contact Precautions (specifically gloves and gowns) Vs Standard Precautions in reducing the transmission of VRE, MRSA, and ESBL.

METHODS: Types of studies: Randomised controlled trials (RCTs) and cluster randomized trials. Types of participants: All adult patients in acute healthcare facilities.

Primary Outcome: Benefit of Contact Precautions (specifically gloves and gowns) Vs Standard Precautions in reducing transmission of MROs. **Secondary Outcome:** Hand hygiene (HH) compliance, antimicrobial stewardship, Adverse Events and Length of Stay.

MAIN RESULTS: Two studies (4,5) reported VRE incidence in ICU population and the meta-analysis demonstrated less VRE events with standard precautions compared with contact precautions (OR 1.28, 95% Confident Interval (CI) 1.14 to 1.44; p<0.0001). Further, the meta-analysis of the two studies (4,5) found that MRSA incidence in an ICU population cared for under standard precautions was also significantly less compared to those under contact precautions (OR 1.15; 95%CI 1.02, 1.30; p<0.02]. Meta-analysis of three studies (4,5,6) (Figure1) to determine the incidence of combined MRO events (including VRE, MRSA and ESBL) when contact precautions was applied versus standard precautions demonstrated the incidence of new MRO events was significantly lower in patients cared under standard precautions versus contact precautions [OR 1.15; 95%CI 1.07, 1.25; p=0.0002].

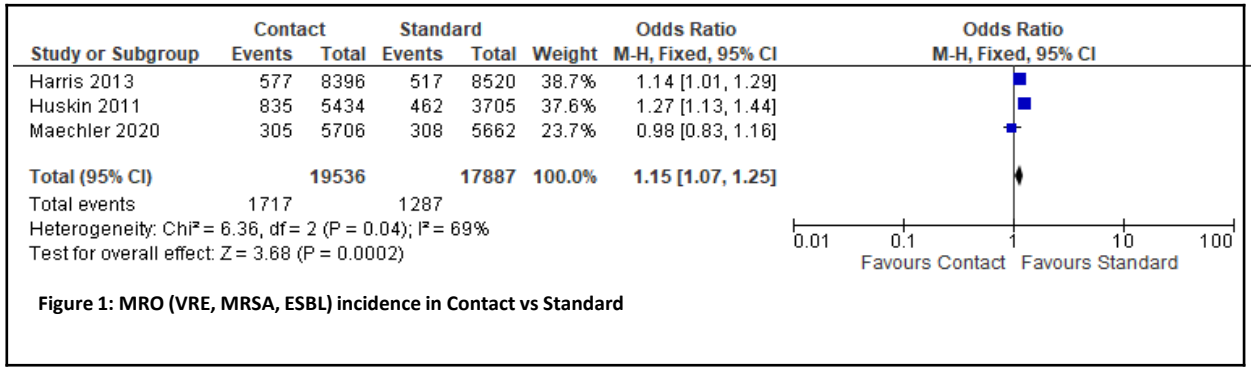

Figure 1: MRO (VRE, MRSA, ESBL) incidence in Contact vs Standard

Conclusion: The review has found no additional benefit in applying contact precautions versus standard precautions in preventing the transmission of MROs. The benefits of contact precautions is contentious as a strategy to prevent healthcare acquired MRO transmissions (6) and lacks evidence supporting its application. Considering the increased medical costs and vast resources required for applying contact precautions, the effectiveness of this decades old common practice needs to be revaluated. Further studies are required to evaluate the effectiveness of contact precautions for all types of MROs. No meta-analysis could be performed on secondary outcomes of hand hygiene (HH) compliance, antimicrobial stewardship, adverse events and length of stay due to differences in reporting.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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Background

- Cognitive impairments after traumatic brain injury (TBI) are hidden and often pervasive, impacting on functioning
- Occupation-based approaches to cognitive rehabilitation are effective. This involves engaging the person in meaningful activities incorporating evidence-based strategies (ie. metacognitive approaches, learning strategy use) to improve function
- Virtual reality (VR) has potential to be used as a modality to deliver cognitive rehabilitation and cognitive rehabilitation guidelines (INCOG 2.0) recommend considering adding VR to rehabilitation programs for people with executive dysfunction
- Despite development and research in VR with people with TBI (PwTBI), use in practice is limited, which may be explained by lack of involvement of consumers and clinicians in co-design of VR

Study Aims

1. Explore perspectives of PwTBI about VR, their rehabilitation goals and views about potential usefulness of VR to address their goals
2. Explore perspectives of experienced occupational therapists about VR (usefulness, barriers and facilitators of uptake) and views about the most useful scenarios to design in VR to facilitate occupation-based rehabilitation

PURPOSE: identify key priority areas and perspectives about VR design to inform co-design and development of occupation-based VR for use with PwTBI to address the impact of cognitive impairment

Acknowledgements: we would like to thank all people with lived experience of TBI and clinicians involved. This project was funded by a UQ Knowledge Exchange and Tranlsation Fund Award and UQ SHRS Summer Research Program.

Methods

DATA COLLECTION

1. **Semi-structured interviews** with PwTBI and **focus-groups** with Occupational Therapists involving:
- Information about VR and immersive experience in 3D VR kitchen environment following by generation of ideas for use and gathering views and perspectives about use of VR for cognitive rehabilitation
- Use of Activity Card Sort to reflect on rehab goals (with PwTBI) and discuss potential use of VR to address goals

1. **Usefulness ratings** (1 not useful – 10 extremely useful) taken on generated VR design scenarios

DATA ANALYSIS

1. **Ideas ranked according to usefulness ratings**
2. Considered **frequency** activity was identified across groups/interviews
3. **Thematic analysis** of qualitative data (Braun & Clarke, 2021)

Participants

PwTBI (n=7)

- Age M=49 years, 5 males/2 females
- 6 severe/1 moderate TBI (mean PTA duration=25.1 days)
- All had inpatient and outpatient specialist brain injury rehabilitation
- 3 previously used VR for gaming, none reported use during rehab

Occupational Therapists (n=21, 4 focus groups)

- Age M=33 years, 1 male/20 females
- STARS (n=5), RBWH (n=4) and PAH (n=12)
- Qualified in profession M=11.2 years
- Years experience TBI rehabilitation M=4.7 years
- 19 had never used in rehabilitation/2 used non-immersive VR for upper limb rehabilitation

Results

IDEAS FOR VR DESIGN

14 VR Scenarios (PwTBI)

37 VR Scenarios (OTs)

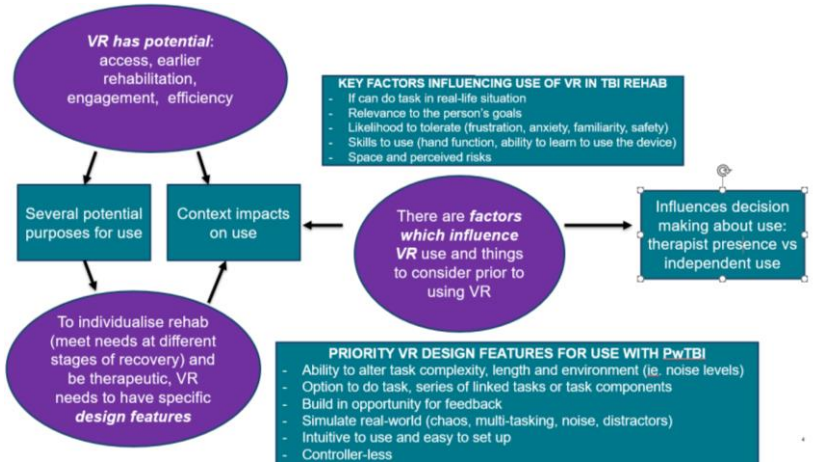
TOP 3 PRIORITIES FOR VR DESIGN

PUBLIC TRANSPORT

SHOPPING

DECISION MAKING (SAFETY/JUDGEMENT)

THEMES IDENTIFIED



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Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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When will an aneurysm rupture? When is surgical intervention required?

Current knowledge and predictive scoring systems, such as PHASES, do not give us a clear answer.

We need to learn more about how our cells are behaving to help find an answer.

Bio-fabrication of *in vitro* Models of Intracranial Aneurysms (IAs)

Chloe de Nys[1,3], Ashley Murphy[1], Craig Winter[2], James Novak[3], Mark Allenby[1]

1. UQ School of Chemical Engineering, 2.RBWH Neurosurgery Department, 3. Herston Biofabrication Institute

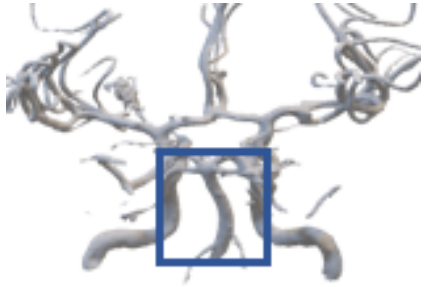
Aim

To develop a **platform** that can recapitulate the **anatomical**, **mechanical** (haemodynamic), and **biological factors** of IA pathophysiology.

Method

Medical scans from RBWH that will be uploaded in online repository.

Segmentation and Modelling:



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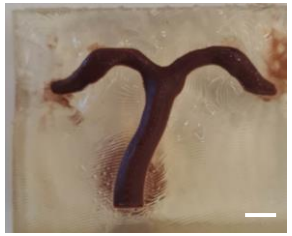
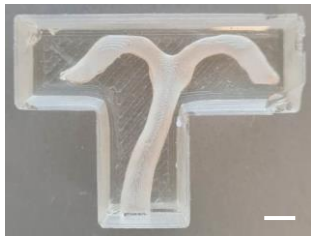




Scale = approx. 3 mm

<u>1. 3D Printing</u>

Stereolithography, Material Jetting

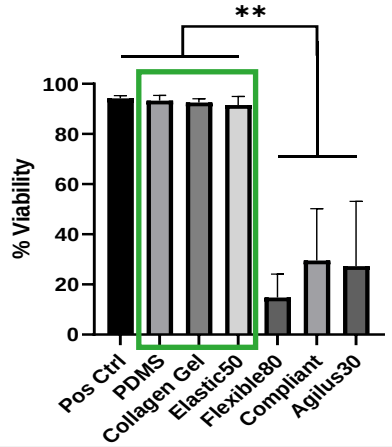
Flexible Materials: Elastic50A, Flexible80A, Compliant resin, Agilus30

<u>2. Injection Moulding (IM)</u>

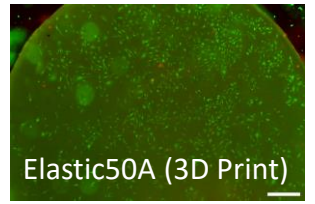
3D printed mould, injected with **melted chocolate** and solidified. Embedded in PDMS (silicone), or hydrogels and washed out.

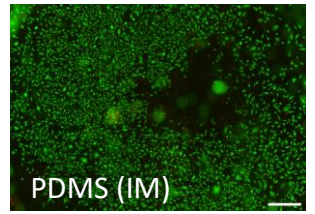
Results

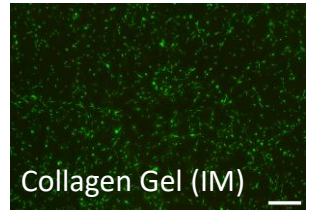
Live/Dead viability of human brain endothelial cells evaluated for 48 hrs on materials used for IA model fabrication.



Scale = 500 um
Green = Live,
Red = Dead







Conclusion

Stereolithography (3D Printing) and Injection Moulding **can fabricate IA models** with materials suitable for **maintaining cell viability**.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Regional Neurotrauma Training with 3D Printed Models

- Five neurosurgeons conducted burr holes on eight different 3D printed materials.
- Determine the optimal material to reproduce the skull by comparing the mechanical, visual, and haptic attributes.
- Data collected via surveys and semi-structured interviews.
- The best 3D printed skull materials were produced using low-cost desktop 3D printers, not expensive industrial 3D printers.
- PETG & White Resin polymers were the best materials to replicate the human skull for burr hole simulation.

- Neurotrauma training workshop conducted at the Sunshine Coast University Hospital (regional centre) in 2023.
- 26 clinicians and nurses simulating burr hole and craniotomy procedures, feedback through a survey.
- 81% of attendees of the workshop felt more confident to perform a burr hole and craniotomy procedure.
- 96% of participants would recommend this model to colleagues for training.
- There was a high interest in gaining increased access to low-cost 3D printed models for training.

Authors: Nalinda Dissanayaka, Hamish Alexander, Danilo Carluccio, Luigi-Jules Vandi, Michael Redmond, James I. Novak

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Artificial Intelligence Fails to Improve Colonoscopy Quality – A Single Centre Retrospective Cohort Study

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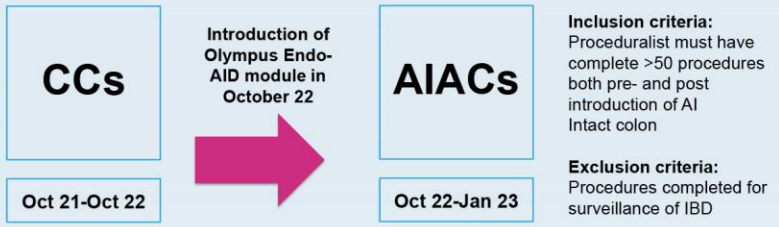
Background and Aims

- **Artificial Intelligence Assisted Colonoscopy (AIAC)** is a rapidly evolving area of research and development with a promise to improve colonoscopy quality, though published data on its clinical utility is limited.
- Our study aimed to determine the **impact of AIAC on surrogate markers of colonoscopy quality** including **adenoma detection rate (ADR), sessile serrated lesion detection rate (SSLDR)** and **withdrawal time** compared with **conventional colonoscopy (CC).**

Methods

- Single-centre retrospective observational cohort study of all patients undergoing colonoscopy at a secondary centre in Brisbane, Australia.
- Outcomes from CC between October 2021 and October 2022 were compared to those from AIAC after the introduction of the Olympus Endo-AID module in October 2022 until January 2023.
- Endoscopists were able to toggle the AI module on and off at their discretion.
- ADR and SSLDR were calculated for both AIAC and CC. Wilcoxon-rank sum test was used to compare continuous variables and Fisher's exact test was used to compare frequencies of categorical variables.

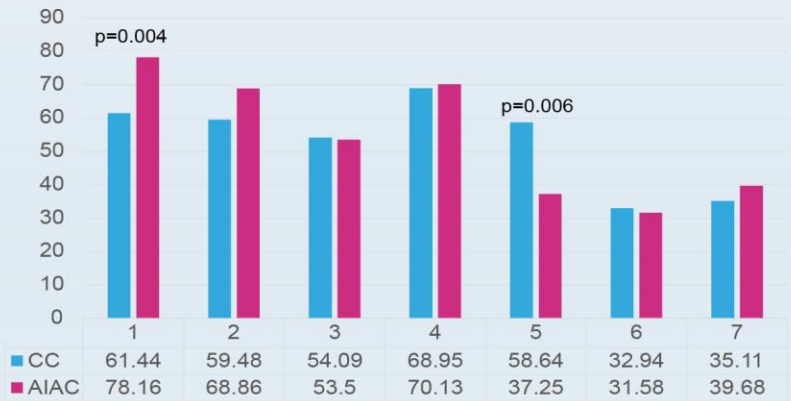


Inclusion criteria:
Proceduralist must have complete >50 procedures both pre- and post introduction of AI
Intact colon

Exclusion criteria:
Procedures completed for surveillance of IBD

Results

- A total of **746 AIACs** were compared with **2162 CCs** performed by seven endoscopists, three surgeons and four gastroenterologists.
- **Baseline patient demographics were comparable between groups**, with a median age of 60 years (IQR 49-70) and 52.1% were female.
- The **most common indications for the procedure** were symptoms (35.1%), surveillance after previous polyps (31.2%) and positive faecal occult blood test (14.8%).
- Procedure indication, bowel prep quality and caecal intubation rates were **well matched between groups** (p>0.05).
- **Introduction of AIAC did not result in a significant change in either the ADR** (52.1% for AIAC vs 52.6% for CC, p=0.91) **or SSLDR** (17.4% for AIAC vs 18.1% for CC, p=0.44).



	1	2	3	4	5	6	7
CC	61.44	59.48	54.09	68.95	58.64	32.94	35.11
AIAC	78.16	68.86	53.5	70.13	37.25	31.58	39.68

Fig 1: By-proceduralist analysis of Adenoma Detection Rate (ADR) for CC and AIAC.

Results

- A **per-proceduralist analysis (Fig. 1)** revealed significant results for two individuals, with a 16.8% increase in ADR for one (61.4% for CC to 78.2% for AIAC, p=0.004) and a 21% decrease in ADR for another (58.6% for CC to 37.6% for AIAC, p=0.006).
- **Withdrawal time (Fig. 2)** was longer in the AIAC group than the CC group (13 min 18 sec vs 12 min 29 sec), though this did not reach statistical significance (p=0.48).
- Analysis by **adenoma or SSL size (Fig. 3)** was not significant between groups.

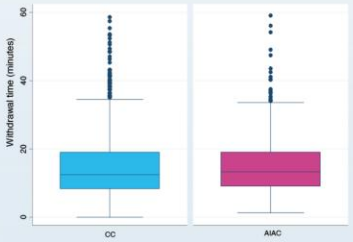


Fig 2: Median withdrawal time for CC and AIAC.

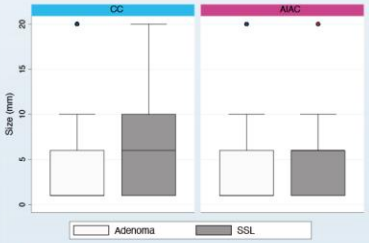


Fig 3: Median adenoma and SSL silze (mm) for CC and AIAC.

Conclusions

- In the present study, **AIAC did not improve surrogate markers of colonoscopy quality**, including withdrawal time, ADR and SSLDR.
- A limitation of our study is the comparatively short period of observation post introduction of AIAC, the fact that the 'on time' of the AI module was not captured and the retrospective nature of the study.
- Further data is needed to assess the utility and cost-effectiveness of AIAC in centres with high performing baseline key performance indices.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Minimum lumen diameter in haemodialysis access arteriovenous fistulae

Teal Derboghossian, Samantha Hill, Tony Lightfoot | Royal Brisbane & Women's Hospital Professor Philip Walker Vascular Laboratory

Background

Duplex ultrasound (DU) is the imaging modality of choice for haemodialysis access arteriovenous fistula (AVF) investigation because there is no ionising radiation and no requirement for nephrotoxic contrast [1]. Many studies have attempted to define diagnostic criteria for AVF dysfunction using Doppler peak velocities, minimum lumen diameter (MLD) and blood volume flow, though none have provided an all-encompassing set of criteria that would be sufficient for routine use [2-4]. A study by Fahrtash et al., (2011) showed that radiocephalic AVF with a MLD of <2.7 mm were not able to effectively dialyse [5]. There has been widespread adoption of this diagnostic criteria, though the accuracy and reproducibility of the measurement has not been investigated, which forms the aim of this study.

Methods

Twenty-one haemodialysis access patients attending their usual DU appointment at the RBWH Vascular Laboratory were recruited. The following images were recorded for offline evaluation: B-mode longitudinal, B-mode transverse, power Doppler longitudinal and power Doppler transverse (overlaid onto B-mode). Measurement of the MLD (figure 1) was performed by two sonographers blinded to the others result. Ethics approval was obtained from the RBWH ethics committee (HREC/2021/QRBW/77834).

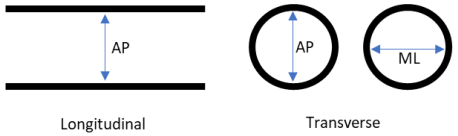


Figure 1: Measurement planes performed with longitudinal and transverse imaging. AP = anterior-posterior, ML = medial-lateral.

Results

The mean MLD was 2.88 +/- 1.20 mm. Ten patients met criteria for a haemodynamically significant stenosis (<2.7 mm), and in eight of these the MLD would have been above that criteria using another measurement technique. The largest average difference in MLD was 1.4 mm (P = 0.004) between B-mode longitudinal AP measurements and power Doppler transverse ML measurements (figure 2). The AP measurements in both B-mode and Power Doppler, and in both longitudinal and transverse planes, were not significantly different.

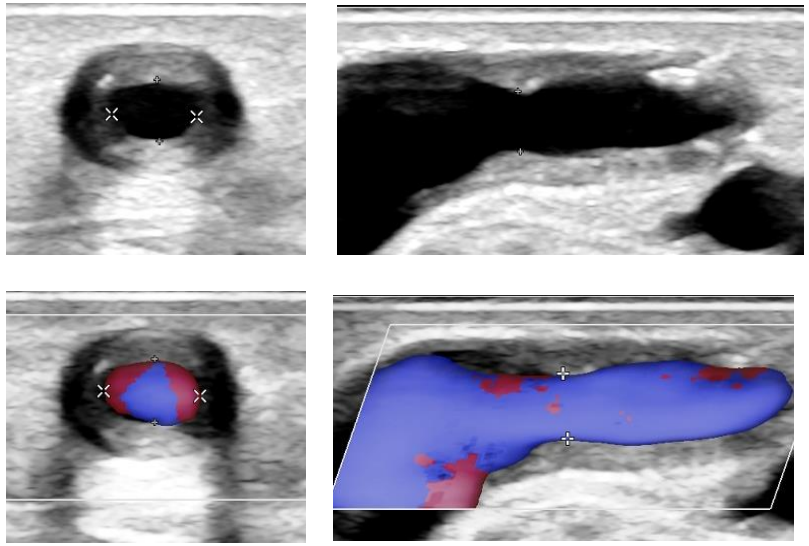


Figure 3: Example case subject with B-mode transverse (top left), B-mode longitudinal (top right), power Doppler transverse (bottom left) and power Doppler longitudinal (bottom right). The transverse views contain both an antero-posterior measurement and medial-lateral measurement.

Table 1: Mean minimum lumen diameter (mm) from two observers across measurement techniques.

Subject	B-mode Long AP	B-mode Trans AP	B-mode Trans ML	Power Long AP	Power Trans AP	Power Trans ML
1	5.1	5.8	6.9	6.1	5.4	7.6
2	3.4	3.7	5.5	3.9	4.2	6.0
4	1.7	1.8	2.5	2.3	2.2	2.9
5	3.3	3.5	3.9	3.6	3.4	4.2
6	2.1	2.5	3.1	2.5	2.7	3.4
7	3.5	4.8	4.7	3.8	5.1	5.1
8	2.8	2.9	4.2	3.3	2.8	5.1
9	3.3	4.3	4.7	3.4	4.7	4.6
10	1.2	1.3	1.4	1.4	1.9	2.0
11	3.8	4.0	5.7	4.3	4.2	6.8
12	2.9	2.8	4.1	3.0	2.9	3.4
13	2.0	2.1	2.2	2.0	2.4	2.4
14	3.5	2.9	4.3	3.7	4.1	4.7
15	2.6	2.4	2.9	2.3	2.7	2.9
16	2.7	2.6	3.5	2.8	2.8	4.9
17	2.3	2.7	5.4	2.7	2.5	5.6
18	2.2	2.2	2.5	2.6	2.5	2.6
19	2.7	2.7	4.2	3.0	2.9	4.6
20	4.4	4.3	5.9	4.5	4.9	5.2
21	7.1	7.0	7.8	7.6	6.3	6.7
MEAN	3.1	3.3	4.3	3.4	3.5	4.5
STDEV	1.31	1.40	1.62	1.42	1.24	1.56

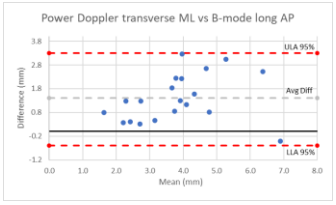


Figure 2: Bland-Altman plot of power Doppler longitudinal anterior-posterior measurement with 95% limits of agreement and average difference (+1.4 mm).

Discussion

The result of this study indicates significant variability in MLD depending on the scanning plane and the measurement axis used. The ML measurements were consistently larger than the AP measurements which is a finding related to asymmetric disease (figure 3) and beamwidth limitations inherent with ultrasound [5]. In the ML axis the ultrasound beam is wider and the incidence of the beam with the structure is not perpendicular, leading to potential overestimation of measurements [6-7]. The use of power Doppler did not result in any significant difference in MLD using the same plane and measurement axis. Whilst the difference was not statistically significant, the average difference between B-mode and power Doppler AP measurements was up to 0.3 mm, suggesting that these measurements should not be directly compared or interchanged. Power Doppler in this setting should be used as a corroborative modality, to endorse the MLD finding measured by B-mode and exclude an anechoic lesion [5].

Take Home Message

Haemodialysis Access AVF lumen diameter measured by ultrasound is considerably variable highlighting the need for laboratories to adopt a specific protocol to ensure accurate and reproducible findings.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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Pharmacogenomic profile of an Australian Indigenous population

Sumudu Samarasinghe, Wendy Hoy, Sudhir Jadhao, Brenden McMorran, Henk-Jan Guchelaar, Shivashankar Nagaraj

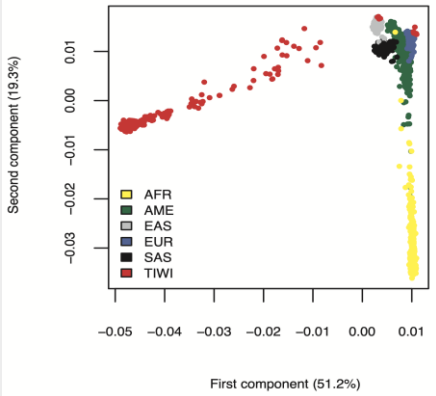
BACKGROUND & AIM

Indigenous Australians face significant health challenges, burdened by chronic diseases that often necessitate long-term pharmacological treatments. However, they have been largely overlooked in pharmacogenomics (PGx) research, which hinders their access to the benefits of genomic medicine advancements. By addressing this gap, we can pave the way for personalised and effective pharmacotherapy in Indigenous patients, ultimately improving health outcomes and reducing health disparities.

METHODS

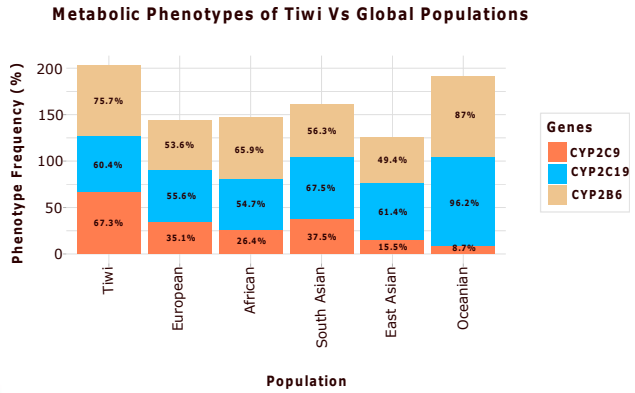
We used whole genome sequencing data of 473 Tiwi Indigenous individuals & characterized their unique PGx profile by screening 19 clinically actionable pharmacogenes.

RESULTS



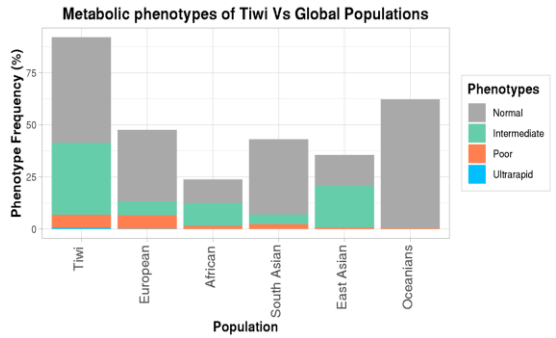
Tiwi people are genetically distinct from other global populations.

Every individual in the cohort carry at least one clinically important genotype associated with drug response



41% of the cohort predicted an impaired CYP2D6 metabolism compared to global populations.

>50% displayed an impaired metabolism in CYP2C9, CYP2C19, and CYP2B6.



Significant implications for the processing of commonly used analgesics, anticoagulants, antiplatelets, antidepressants, & antipsychotics

CONCLUSION

Our results highlight the critical need to incorporate PGx testing into routine clinical practice to ensure safe & effective medications tailored to the specific needs of this population.

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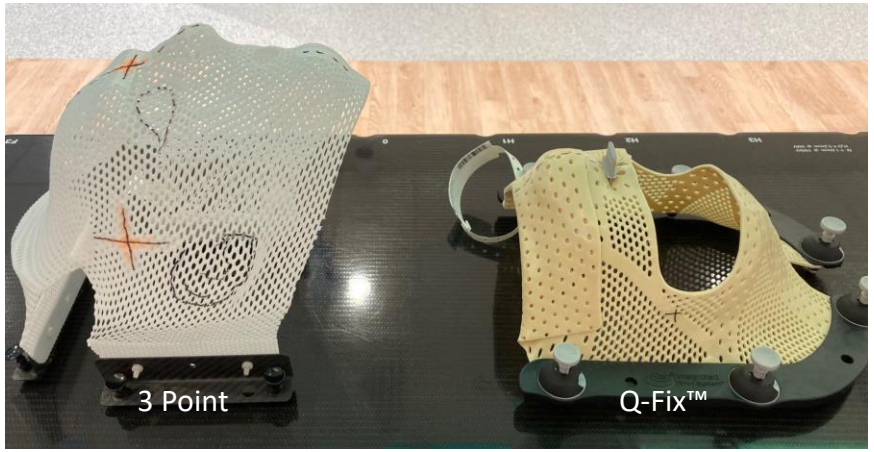
Can you judge an x-ray by its cover?

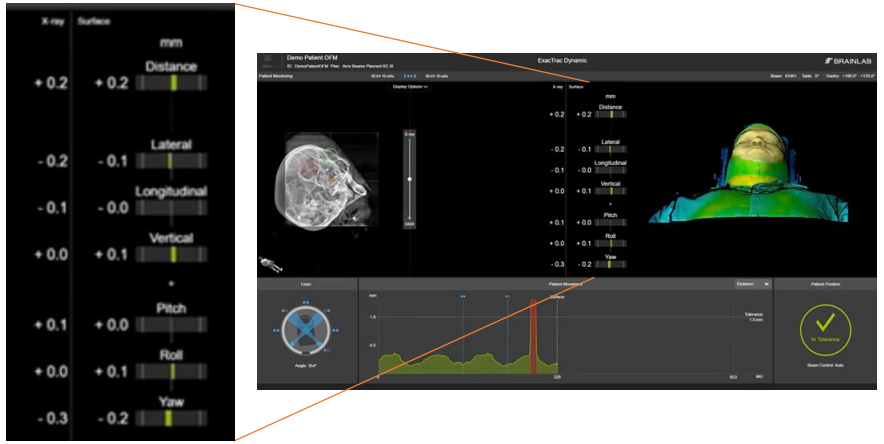
Kate Stewart, Dr. Samuel Peet, Dr. Jeremy Briggs
RBWH Cancer Care Services – Radiation Therapy

Purpose:
There is interest in utilising surface tracking to reduce the radiation burden during cranial radiation therapy by reducing the amount of x-ray imaging required when monitoring patient position during treatment delivery. For surface tracking to effectively reduce x-ray imaging burden however, its accuracy relative to x-ray image-based monitoring must be established.



Methods:
This retrospective study compared the patient positioning translational and rotational corrections relative to the initial verified patient position detected by ExacTrac™ surface tracking with the corrections detected at the same time-point by more traditional kV x-rays to determine the accuracy of the surface tracking system for patient monitoring. Surface tracking accuracy was also compared between conventional 3-point fixation masks which cover most of the face with Q-Fix™ stereotactic fixation masks which are more open faced and therefore more comfortable.

Results:
20 patients were reviewed for each mask type resulting in 2587 individual comparison points. The results show good correlation between surface tracking and x-ray verification. The largest variations between surface tracking and x-ray verification were seen with the use of 3-point masks (1.23mm and 1.13 deg) whilst the maximum variation for Q-Fix™ masks were smaller (0.51mm and 1.02deg). The average variation between surface tracking and x-ray verification across all translations and rotations for both mask types were under 0.1mm and 0.1deg.



Conclusions:
This study demonstrated excellent concordance between surface tracking and kV x-ray image monitoring for detecting movement relative to the initial verified patient position. The results also indicate that the use of more open fixation masks for patient comfort can be considered without a reduction in patient positioning accuracy. Surface tracking has the potential to reduce the use of x-ray imaging during cranial radiation therapy.

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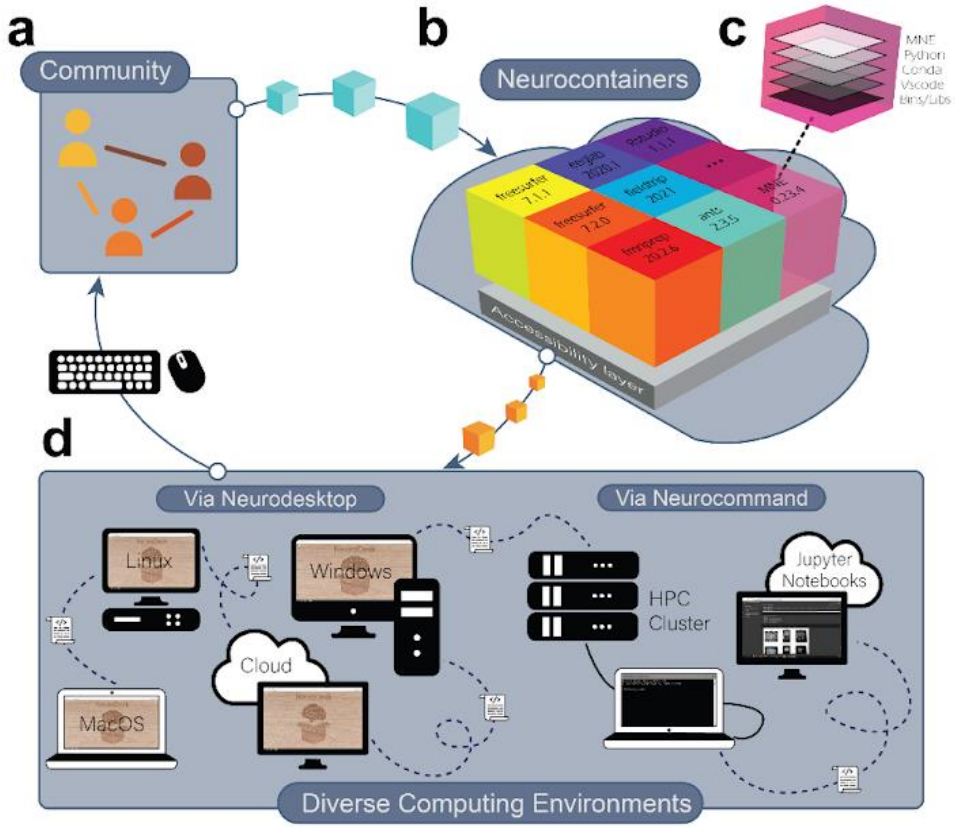
Neurodesk - An accessible, flexible, and portable data analysis environment for reproducible neuroimaging

Aswin Narayanan[1], Thuy Dao[2], Steffen Bollmann[2,3]

[1]Australian National Imaging Facility; [2]School of Electrical Engineering and Computer Science, The University of Queensland; [3]Queensland Digital Health Centre, The University of Queensland

INTRODUCTION

Neuroimaging data analysis can be a difficult process, where researchers often spend considerable time setting up various bespoke neuroimaging software packages. The resulting analysis may also produce different results when replicated across computing environments due to variations in software environment and dependencies. Neurodesk addresses four key issues with the research software landscape: accessibility, flexibility, portability and reproducibility, and it does this through software containers with a comprehensive and growing suite of neuroimaging software (https://www.neurodesk.org/).



www.neurodesk.org
@neuro_desk

Scan to check for available applications in Neurodesk

BACKGROUND

Accessibility, flexibility and portability are addressed by the core Neurodesk design and architecture. Software containers are contributed by the community (a). Containerised analyses (b) include all dependencies (c) and look, feel, and run the same way across different computing environments (d). The Neurodesk software library is delivered via a CernVM File System (CVMFS)[1] which allows users to have access to terabytes of software while only having to download the parts that they use. The Neurodesk platform includes a browser-accessible Linux desktop environment integrated into Jupyterlab[2], a cross-platform desktop client and a command line interface (d). These mediate access to the containerised Neurodesk software libraries from a variety of systems, including personal computers, cloud computing, high-performance computers, and Jupyter notebooks. Both the Neurodesk software containers and the virtual desktop work across any computing environment and bring the same dependencies to all supported platforms.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

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The Epidemiology of Surgical Intervention for Sports Related Injuries in Queensland

Daniel Brimm[1,2], John Roe[2,3,4], Jacelle Warren[2,5], Tanya Smyth[2], Kirsten Vallmuur[2,5], Shahera Banu[2,6]

1. Sunshine Coast University Hospital 2. Jamieson Trauma Institute 3. The Wesley Hospital 4. The Royal Brisbane and Women's Hospital 5. Australian Centre for Health Services Innovation, Centre for Healthcare Transformation, Queensland University of Technology 6. School of Clinical Sciences, Queensland University of Technology

Background:

No formal investigation of the epidemiology of surgical interventions for sport related injuries has ever been undertaken in Queensland. It is important to have reference data for this cohort to establish a baseline of burden, adequately distribute funding, and focus efforts on preventative measures.

Aims:

To examine and characterise the epidemiology of sports/leisure-related injury hospitalisations in Queensland and their surgical interventions.

Methods:

A retrospective examination of person-linked hospitalisation data between 1 January 2012 to 31 December 2016 was conducted for all public and private Queensland Hospitals. Patients were included for analysis if they were admitted hospital for acute care, and had a principal diagnosis code related to injury sustained during sports/leisure activity, identified using ICD-10-AM.

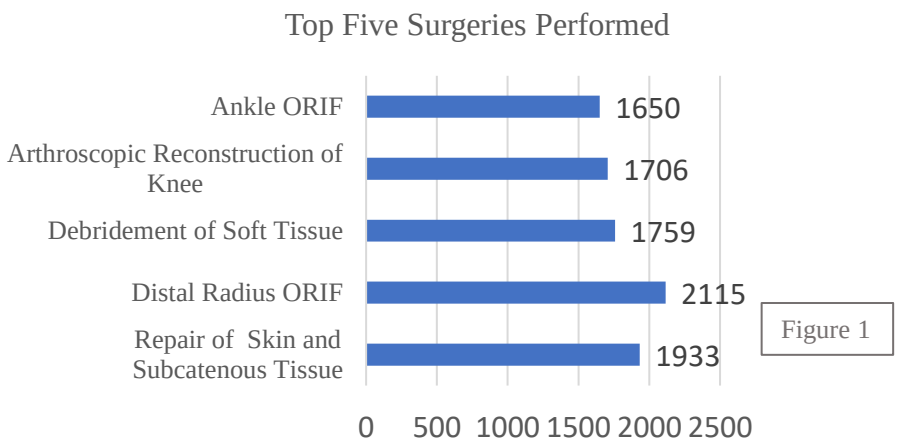

Figure 1

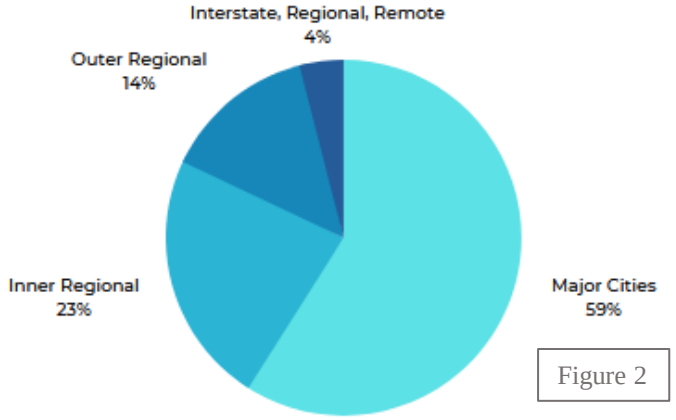

Figure 2

Results:

- 88,528 hospital admissions (76,982 distinct patients)
  - 35,473 (46.1%) patients underwent surgery
- 41% (n = 14671) were treated outside of major cities
- Fractures were the most common specified type of injury (n = 35,018; 148.6/100,000 population)
- Extremities were the most commonly injured body region (n = 46,644; 198.0/100,000 population)
- Open reduction of fracture of distal radius with internal fixation was the most common surgery (4.1% of surgeries performed; n = 2115; Figure 1)
- More patients were admitted acutely to a public hospital (n = 65,747; 85.4%) than a private hospital (n = 11,235;14.6%).

Conclusions:

Public hospitals perform the majority of acute surgical interventions for sports related injuries in Queensland, most often for fractures. Nearly half of surgeries occur outside of metropolitan areas (Figure 2), which has implications for allocation of funding for surgical resources, post-hospital care, and preventative efforts.

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4–7 September 2023
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EXAMINING THE ROLE OF RAPID MOLECULAR ANTIMICROBIAL RESISTANCE ASSAYS TO STRENGTHEN *NEISSERIA GONORRHOEAE* ANTIMICROBIAL STEWARDSHIP

Sara FE Bell[1], Robert S Ware[2], David A Lewis[3,4], Monica M Lahra[5], David M Whiley[1]

1: PROBLEM Gonorrhoea control threatened

Gonorrhoea: common sexually transmitted bacterial infection, frequently asymptomatic, high reproductive health morbidity

Antibiotic resistant *Neisseria gonorrhoeae* threatens gonorrhoea treatment and control strategies globally

Gonorrhoea treatment options are limited – ceftriaxone, last available empiric treatment

Antibiotic use increases selective pressure for antimicrobial resistance (AMR)

2: SOLUTION Resistance-guided individualised treatment

Novel molecular AMR assays detect *N. gonorrhoeae* genetic mutations associated with antimicrobial resistance

Improved sensitivity and timely results for known resistance mutations versus culture-dependent methods

Potential to delay ceftriaxone AMR by,

i. Reducing ceftriaxone use could decrease ceftriaxone selective pressure

ii. Individualise treatment using older antibiotics

Developing AMR assays has proved challenging

3: AIM Inform priorities for molecular AMR assay development

Consider the effect of *N. gonorrhoeae* antimicrobial resistance and co-resistance on the utility of theoretical molecular AMR assays

4: METHODS Retrospective *N. gonorrhoeae* AMR data analysis

Comparison of seven theoretical molecular AMR assay-guided treatment strategy outcomes to current practice (empiric ceftriaxone-based treatment)

For each hypothetical strategy, isolates susceptible to non-ceftriaxone antimicrobials, determined by AMR assay used, were allocated to receive non-ceftriaxone treatment, remaining isolates allocated to ceftriaxone treatment

More favourable strategies,

i. Reduce overall ceftriaxone use

ii. Reduce ceftriaxone exposure on *N. gonorrhoeae* harbouring ceftriaxone resistance mechanisms

iii. Use fewer AMR assays

5: FINDINGS Antibiotic co-resistance of circulating *N. gonorrhoeae* strains will impact benefits to developing a suite of molecular AMR assays to reduce ceftriaxone use

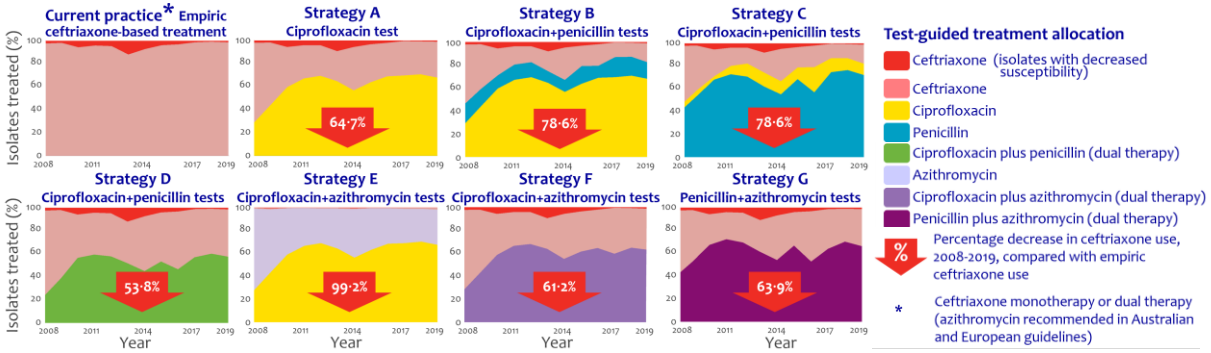

Figure: Theoretical molecular antimicrobial susceptibility assay-guided treatment allocations for ceftriaxone, ciprofloxacin, penicillin, and azithromycin, modelled on *Neisseria gonorrhoeae* isolate susceptibility data, New South Wales, Australia, 2008-2019 (n=23,189)

All strategies using molecular AMR assays reduced ceftriaxone use (current practice versus Strategy A-G; p<0·001)

Most strategies (Strategy A-D, F-G) using AMR assays (singly or in combination) minimally reduced ceftriaxone exposure on infection with ceftriaxone decreased susceptibility due to co-resistance with ciprofloxacin (odds ratio 7·8; 95% CI 6·6-9·3) and penicillin (OR 25·1; 19·5-32·3)

Using two versus one AMR assay did not substantially reduce ceftriaxone use due to co-resistance between ciprofloxacin and penicillin, e.g., Strategy A (64·7%) versus Strategy B (78·6%)

6: CONCLUSIONS

AMR assay development priorities

Ceftriaxone susceptibility assays identifying *N. gonorrhoeae* harbouring ceftriaxone resistance mechanisms e.g., infection most at risk of treatment failure

Point-of-care testing capability supporting same-day resistance-guided treatment to shorten duration of infection and transmission period

Antimicrobial Stewardship

Comprehensive surveillance of *N. gonorrhoeae* AMR and antibiotic use is essential to monitor impact of treatment changes

Enduring mechanisms of antimicrobial resistance may impact efficacy of future antibiotics

THE LANCET Microbe

Affiliations
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Human Research Ethics Approvals
The University of Queensland Human Research Ethics Review Committee (UQHREC2015001699); South Eastern Sydney Local Health District (LNR/14/POWH/146).

Acknowledgements
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4–7 September 2023
Education Centre, RBWH

Testing usability and effectiveness of "A Wanderer's Tale" a virtual reality application during burn wound care procedures

Andrea Mc Kittrick[1 2], Mathilde R Desselle[2], Jason Brown[2 3], Lucy R Holland[4], Allan James[4], Thom Saunders[4], Paul Gray [5 6]

[1]Department of Occupational Therapy, RBWH, [2]Herston Biofabrication Institute, Metro North Health, [3]Professor Stuart Pegg Adult Burns Centre, RBWH, [4] VISER-QUT, [5]Tess Cramond Pain and Research Centre, RBWH, [6] Faculty of Medicine, UQ

Background

Pain related to burn wound care procedures is well documented and management strategies include both pharmacological and non-pharmacological approaches[1]. Immersive virtual reality (VR) has been used as an adjunct to pharmacological management for procedural pain in burn care[2]. Based on feedback from co-design sessions[3], the VR application's location and setting were chosen to be the Australian bush setting with native animals and plots that echoed First Nations Dreamtime concepts. The outcome– an interactive gaze-based experience, **"A Wanderer's Tale- Celebration of the Century"**[4] was compiled with the involvement of an interdisciplinary project team for use on **Meta Quest** headsets.

Aim

To determine the usability and effectiveness of this VR application during burn wound procedures.

Methods

Study design: This study used a within-subjects experimental design

Ethical approval: RBWH- HREC/2020/QRBW/59754 & QUT-3057

Eligibility: Patients admitted to the burns centre requiring a minimum of 2 wound care procedures were considered for enrolment. Enrolled participants were randomised to one of two groups. See Table 1.

Procedure: Potential participants were identified by the burns MDT during the daily ward round. Once enrolled individual participants were offered a VR technology familiarisation session with "Nature Treks"[5] for a duration of 5 minutes. Disposable masks were used with the headsets as an infection control barrier. In the VR group data collection occurred at three time points 1. Pre-intervention, 2. Immediately post-intervention and 3. Delayed post-intervention (2-4 hours). Patient outcomes collected included: medications pre and during intervention, distress, boredom, pain, anxiety, and depression scores. For the No VR group, medications pre and during intervention were collected. Patients and clinicians completed technology acceptance surveys.

Table 1
Randomisation

Allocations	1st Wound Care Procedure	2nd Wound Care Procedure
Group One	VR	No VR
Group Two	No VR	VR

Results

n= 8 patients (male n=7, female n=1) and n= 8 clinicians were enrolled in this study. The mean TBSA was 10.4%. Body areas requiring wound care: upper limb n=5, axilla n=2, lower limbs n=4 and flank n=2.

Subjective feedback from patients:

Wound Procedure with VR "*very relaxing*" P1 and "*helped (me) to relax*" P8.
Wound Procedure with No VR "*the worst pain ever*" P1 and "*very painful*" P5.

To download the VR application from SIDEQUEST please scan the QR code. Also available from Oculus App Lab.

Acceptability of VR Technology: Acceptability of technology was evaluated against cognitive, physical and experiential criteria for patients and clinicians performing the wound care procedures. Table 2 and Table 3.

Table 2.
Acceptability of the VR experience by individual participants

Evaluation approach	Evaluation aspects	Results
Cognitive	Ease of learning	87.5% agreed the VR system was easy to learn.
	Enjoyment	87.5% agreed they enjoyed the VR experience.
	Level of interaction	5 participants used the VR intervention in the story mode and 3 used the interactive mode.
Physical	Comfort	87.5% agreed the VR system comfortable to wear.
	Nausea	No participant experienced nausea.
	Dizziness	No participant experienced dizziness.
	Eye strain	No participant experienced eye strain.
Experiential	Previous use	75% had previously used VR.
	Duration	63% agreed the duration of the VR intervention was appropriate with one participant asking for it to be longer in duration.

Table 3.
Acceptability of the VR experience by clinician participants

Evaluation approach	Evaluation aspects	Results
Cognitive	Ease of learning	50% agreed it would be easy for them to become skilled at delivering the VR intervention.
	Effectiveness	100% agreed the VR intervention enhances the effectiveness of their job.
Physical	Ease of cleaning	75% agreed that the VR headset was easy to clean between each session.
Experiential	Previous use	75% had previously used VR.
	Duration	75% agreed that the duration of the VR intervention was appropriate.
	Usefulness	75% agreed that the VR intervention was useful for individuals receiving wound care to assist with pain and anxiety management.

Discussion and Conclusion

This Australian designed VR application was found to have good usability and effectiveness during wound care procedures at our facility. While pain medication is still required, the acceptability of the technology was supported by both patients and clinicians. **This VR application can be used as an adjunct to wound care procedures in the future.** Larger studies are warranted to generalise the findings.

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4–7 September 2023
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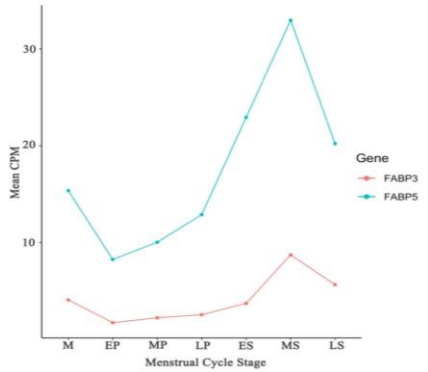
Fatty Acid Binding Protein 3 (FABP3) as potential therapeutic target for endometrium related conditions

Keisuke Tanaka[1,2], Sharat Atluri[1], Surgarniya Subramaniam[1], Grant Montgomery[1], Akwasi Amoako[1,2], Brett McKinnon[1]

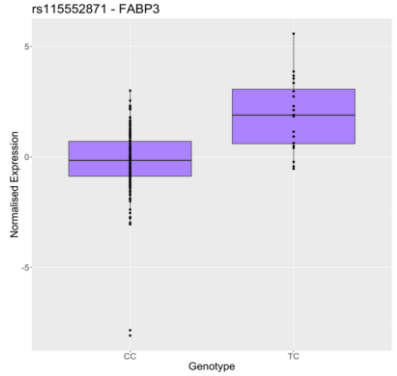
1. Institute for Molecular Bioscience, St Lucia, QLD, Australia 2. Department of Gynaecology, Royal Brisbane and Women's Hospital, Herston, QLD, Australia

Gene expression is regulated across the menstrual cycle



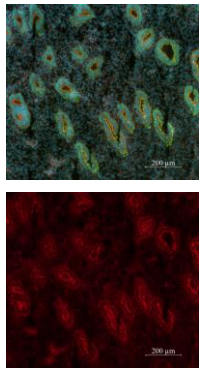
- RNA was extracted from endometrium from 206 women at different times of menstrual cycle
- FABP3 was significantly upregulated in the transition from the early secretory (ES) to mid secretory (MS) stage (p = 0.0005)

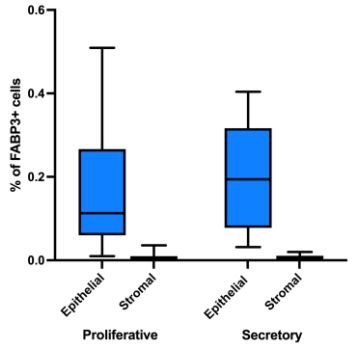
Genetic variants influences gene expression



- Associations between genotypes and RNA expression was analysed
- Single Nucleotide Polymorphism (SNP) at rs115552871 on chromosome 1 showed significant influence on FABP3 gene expression

Proteins are predominantly expressed in the epithelial cells





- Protein expression was examined with Immunofluorescence staining
- Epithelial cells showed more expression than stromal cells in both proliferative (mean 0.1732 vs 0.007866, p=0.0087) and secretory phase (mean 0.2016 vs 0.00741, p=0.0017)

Conclusions

- Human endometrium undergoes a number of cellular events during the menstrual cycle including apoptosis, tissue repair, angiogenesis, proliferation and decidualization
- Endometrium has implications in menstrual problems, fertility, malignancy and endometriosis
- FAPB3 plays a key role in the endometrium
- RNA expression is upregulated during the secretory phase
- FABP3 is essential for degradation of endocannabinoids
- Women with a particular genotype (genetic variant) have different levels of FABP3 expression
- Protein expression of FABP3 in the human endometrium have been shown for the first time
- FABP3 presents a potential therapeutic target to modulate endocannabinoid levels and to influence cellular functions

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A systematic review and meta-analysis: Sustained Low Efficiency Dialysis (SLED) versus Continuous Renal Replacement Therapy (CRRT) in the treatment of acute kidney injury in critically ill patients

Helma Mathew, RN, 4A ICU, RBWH & Prof. Nicole Marsh, Nursing and Midwifery Director, Research, RBWH

Purpose

Acute kidney injury (AKI) in critically ill patients is associated with high morbidity and mortality. Approximately 5-10 % of critically ill patients admitted in intensive care unit (ICU) receive renal replacement therapy due to AKI. This review aims to compare the effectiveness of sustained low efficiency dialysis (SLED) versus continuous renal replacement therapy (CRRT) in the treatment of acute kidney injury in critically ill patients.

Methods

Electronic data bases including PubMed, Embase (Elsevier), CINAHL (EBSCOhost), Cochrane Library (Wiley) were searched on 30th June 2022 and reference lists of potentially useful articles were searched. Randomised control trials comparing treatment modality of SLED versus CRRT in critically ill adult patients with AKI, that were published in English were included. RCTs were assessed for their appropriateness against the inclusion criteria and for their quality using Cochrane "Risk of Bias" tables. Data was extracted using a standard data extraction tool. Meta-analysis was undertaken when deemed appropriate and feasible.

Results

In total, 482 participants from five studies included in this review.

30-day mortality: Results from the three studies (190 participants) were combined in the metanalysis and showed no significant difference (p = 0.07) in 30-day mortality between patients treated with SLED and CRRT; Odds Ratio (OR) 0.51, 95% Confidence interval (CI) (0.25 - 1.06).

Renal dialysis dependency: Meta-analysis of combined results of three studies (190 participants) showed no significant difference (p = 0.89) in renal dialysis dependency in survivors between patient treated with SLED and CRRT; OR 0.96, 95% CI (0.55 - 1.68).

Length of ICU stay: Meta-analysis of combined results of four studies (422 participants) showed no significant difference (p = 0.86) in length of ICU stay in two groups; Mean difference (MD) 0.20, 95% CI (-1.99 – 2.39).

Cost of RRT: Two studies (140 participants) measured the cost of RRT, and meta- analysis of combined results showed that the cost of RRT is significantly lower (p < 0.00001) in SLED compared to CRRT; MD -637.53, 95% CI (-789.64 – -485.42).

Hemodynamic stability: There was only one study (60 participants) which measured hemodynamic stability so meta-analysis was not performed.

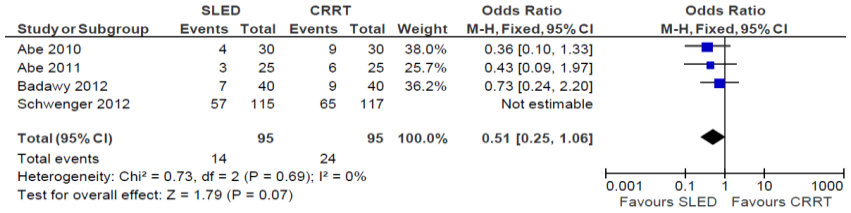

Figure 1:30-day mortality

Conclusions

Based on this meta-analysis, SLED has similar outcomes compared to CRRT. This systematic review suggests that there is no clinical advantage of CRRT compared to SLED and that SLED is more cost-effective alternative compared to CRRT. The RCTs included in this review were small, single site studies and may been associated with allocation and selection biases. There is a need of further high quality, multi-centre RCTs with robust health economic analyses to compare outcomes between these two treatment modalities.

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Australia, [3]Jamieson Trauma Institute, Metro North Health, Brisbane, Australia, [4]The School of Electrical Engineering and Computer Science, The University of Queensland, Brisbane, Australia, [5]RECOVER Injury Research Centre

Background

- Wearable devices are increasingly accepted and available in rehabilitation to detect and measure movement.
- To be clinically useful, the development of current and emerging technologies must meet the needs and priorities of clinicians, consumers and rehabilitation services.
- Perspectives of clinicians, consumers, researchers, and engineers (rehabilitation service) were gathered to address the following aims:

(1) To explore unmet needs and priorities of in-patient rehabilitation that could be supported by wearable sensor technology

(2) To understand how current technology might be used or modified to meet identified needs and priorities.

Methods

Workshop 1 (2hrs)

- ***Aim:*** *understand rehabilitation context and how mobile sensor technologies might enhance rehabilitation*
- ***Analysis:*** *Qualitative content analysis (20 potential priorities identified)*

Workshop 2 (2hrs)

- *Nominal Group Technique (adapted)*
- ***Aim:*** *collaboratively identify and reach consensus on leading priorities*

Workshop 3 (2hrs)

- *Co-design methods*
- ***Aim:*** *refine concepts associated with leading priorities and rank design features*

Acknowledgements
We would like to thank all involved, who gave up their time to contribute to this research. This project was funded by the Australian Government via their Research Support Package funding to the University of Queensland.

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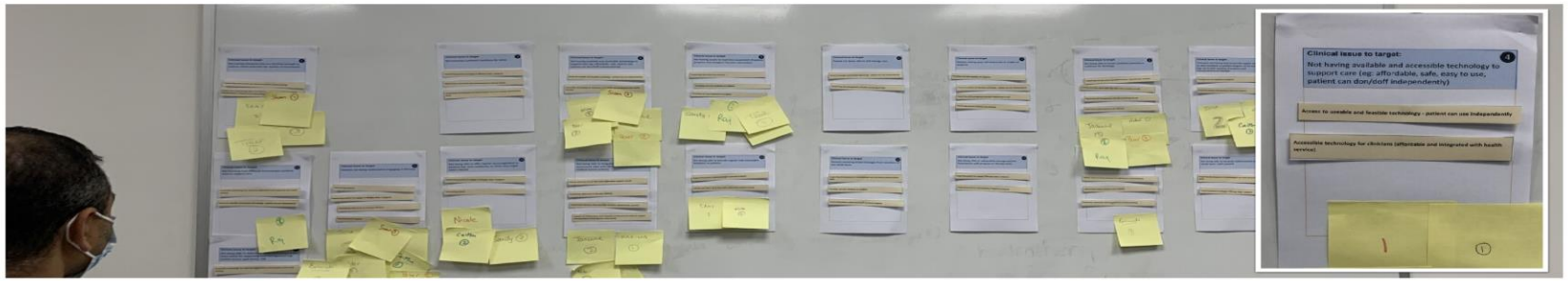

Figure 1: Workshop 2 voting process

Participants

- **Clinicians (n=10)**
  - *Physicians, physiotherapists, occupational therapists*
- **Biomedical engineers/researchers (n=6)**
- **Rehabilitation researchers (n=8)**
- **Consumers (n=2)**

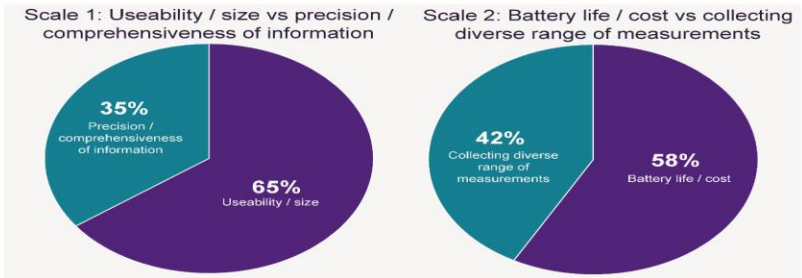

Figure 2: Workshop 3: identifying design features to address priorities (overview of four design feature domains that were compared on two 9-point scales)

Results

Top priorities

1. Help patients feel motivated to engage in or initiate rehabilitation activities
2. Affordable and accessible (easy and safe to use) technology to support rehabilitation
3. Capture quality of movements (eg: type, range, intent of movement)

Most valued design features (figure 2)

- Useability / size (65%) **vs** precision / comprehensiveness of information (35%)
- Battery life / cost (58%) **vs** collecting a diverse range of measurements (42%)

Conclusions

- **Useable and affordable** wearable devices are needed.
- **Design features** should include: ***gamification*** (eg: range of self-selecting, individually motivating activities), ***self-management*** (eg: clear incremental feedback on rehabilitation goals), and ***adaptability*** (eg: patient can set their own targets).
- **Other considerations:** language impairments, incorporate suite of scalable sensors to support self-management and rehabilitation after discharge.

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Plasma loss from the circulation in preterm and term piglets

Victoria P. Hinkley[1], Shaun L. Sandow[1,2], Ian M.R. Wright[1,3], Paul B. Colditz[1,4], Barbara E. Lingwood[1,4], Yvonne A. Eiby[1]

1. Perinatal Research Centre and UQCCR, The University of Queensland. 2. Biomedical Science, University of the Sunshine Coast. 3. College of Medicine and Dentistry, James Cook University. 4. Neonatology, RBWH.

Background and Aims

- Preterm neonates have leaky capillaries and rapid plasma loss from the circulation after birth (***Figure 1***).
- This leaves preterms vulnerable to hypovolemia, low brain oxygenation and poor neurodevelopmental outcomes.
- No data is available on the mechanism/s underpinning excess plasma loss at the capillary.
- **This study aims to determine the mechanism/s involved in plasma loss in a preterm and term piglet model.**

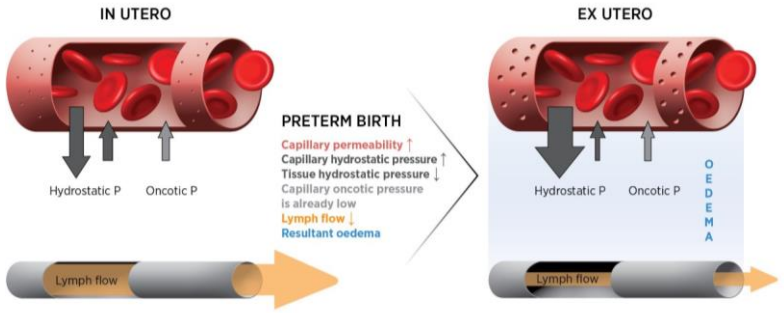

Figure 1. Factors that may drive excess capillary plasma loss in preterm neonates.

Methods and Preliminary Results

Sub-cutaneous tissue was collected and fixed for confocal immunohistochemistry (IHC) and electron microscopy (EM) from preterm (~28wk gestation infant) and term piglets (birth & 12h old).

- Capillary endothelium is **non-fenestrated** (endothelial pores/holes are absent; electron microscopy/EM).
- Caveolae membrane vesicles (*possible albumin transport mechanism*) and its primary protein constituent caveolin-1 are **prevalent** in capillary endothelium (EM and IHC; ***Figure 2***).
- Clathrin-coated vesicles (*possible albumin transport mechanism*; EM) are **absent** in capillary endothelium; while clathrin expression (IHC) is diffuse and low.

Conclusion + Future Directions

Caveolae are a potential mechanism for vesicle-mediated bulk fluid movement out of the circulation in preterm piglets but fenestration and clathrin are unlikely mechanisms. Ongoing studies focus on identifying the transport mechanism/s underlying plasma loss.

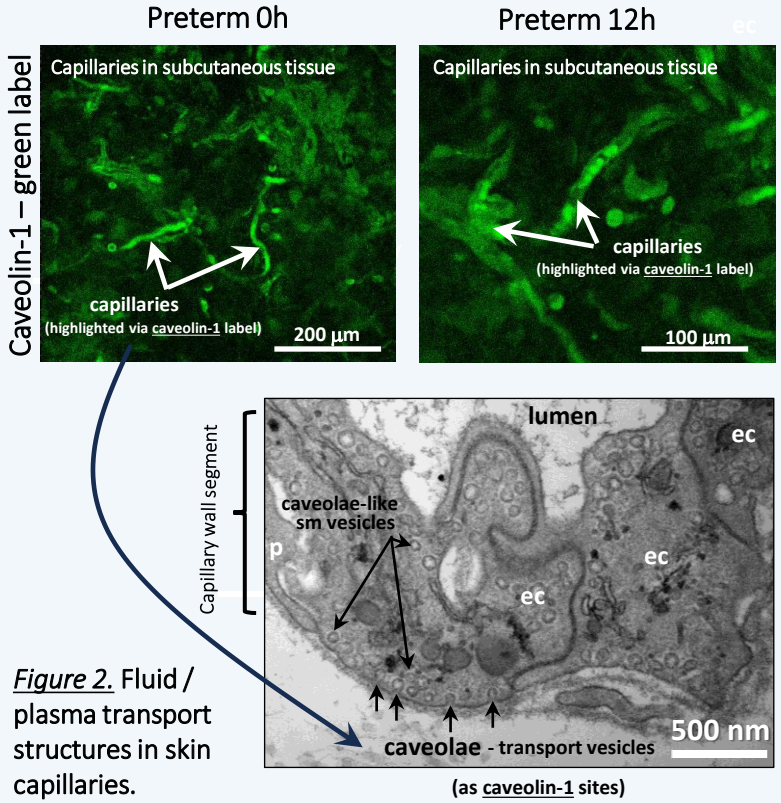

Figure 2. Fluid / plasma transport structures in skin capillaries.

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Have bananas been wrongly accused? A review of dietary potassium and hyperkalaemia in chronic kidney disease.

Belinda Mason, Erynn McAuley, Kate Morgan, Natalie Moran, Emilie Crosier, Lisa McGuire, Helen MacLaughlin

1. Evidence review

International Guidelines Systematic review 2019 – no studies, OPINION based guideline

Additional 19 papers reviewed

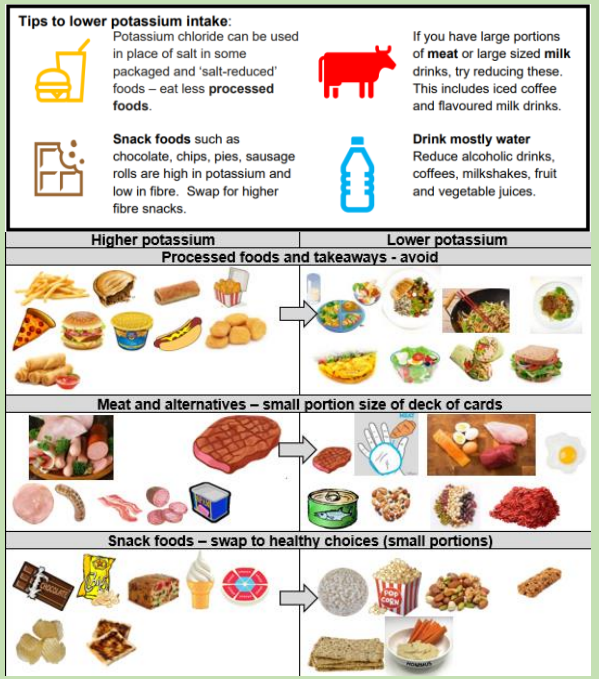
- No relationship between dietary K and serum K
- Mechanisms to shift K intracellularly
- **No evidence for dietary potassium lowering as a therapeutic treatment for hyperkalaemia**

2. Practice Recommendations

- High K is multifactorial, look for other causes first
- Significant changes to diet likely to have a very small impact on serum K (0.2-0.4 mmol/L)
- Increasing bowel movements can decrease serum K by 0.4mmol/L
- Restricting fruit and veg may be harmful – safe to aim for 2 and 5
- Limit processed foods and reduce large serves of meat and milk

3. Dissemination

REVISED Patient Education Resource



https://www.health.qld.gov.au/data/assets/pdf_file/0021/1206471/renal-k-high.pdf

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How good is delirium care in Metro North?

A Mudge, S Anderson, A Arjunan, A Byrnes, M Byrnes, M Cahill, A Craswell, J Dulhunty, A Fox, N Gavin, K Lee-Steere, S Lin, P Lawrenson, A Teodorczuk, E Treleaven, L White, C Yap

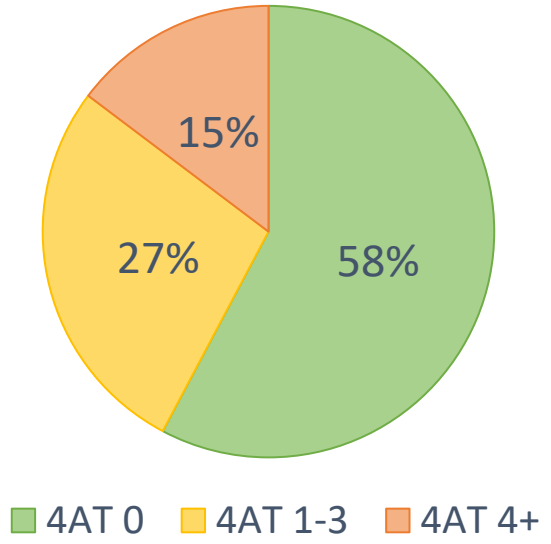
Aims:

- Measure prevalence of cognitive impairment and delirium in Metro North inpatients
- Assess performance against Delirium Clinical Care Standards (version 2)

Methods:

- Prospective audit in 7 Metro North facilities on a single day in May 2023
- Aiming to audit all adult inpatients
- 4AT screen + chart review + pt/family question
- HREC exemption
- Trained clinician auditors
- Data collected for 1291 adults in 70 wards
  - median 71 years, 49% male

On audit day, **480/1136 (42%)** adults had cognitive impairment on 4AT (4AT>0), and **167 (15%)** had likely delirium (4AT 4+)



Delirium Clinical Care Standards:

Standard 1: early identification of risk (screen for CI)
Only 55% were screened using 4AT at admission

Standard 4: assess and diagnose delirium using diagnostic tool (if screen positive)
Only 36% with 4AT4+ on admission had delirium documented in first 3 days; valid tools rarely used

Standard 3: Patient-centred information and support
Only 13% of patients or families recalled receiving information about delirium, although 89% patients had one or more recognised risk factors

Delirium is very common across Metro North.
It remains under-recognised and poorly communicated despite available tools.

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Pharmacist-Led Perioperative Diabetes Pilot

Jesseca Eglington, Kristiana McFarlane, Ashlee Peacey, Alison Wong - STARS Pharmacy Department

01. Purpose

Historically, anesthetists confirmed all diabetes preoperative plans proposed by preadmission pharmacists at STARS. This was a time-consuming process and contributed to excessive interruptions in anesthetist's clinical shift. In November 2021, an audit found >97% of diabetic medication plans suggested by the preadmission pharmacists were confirmed with no changes by the anaesthetist.

02. Methods

A pilot project was commenced with pharmacist-led advice provided to patients without anaesthetic confirmation for all who did not meet the exclusion criteria as per the STARS Perioperative Management of Diabetes Medication Guideline.

Senior pharmacists underwent training to provide diabetes medicines plans for eligible patients.

Pharmacist-led diabetes medicine plans were peer reviewed by a second endorsed pharmacist.

EXCLUSION CRITERIA FOR PHARMACIST-LED DIABETES PLAN (ANAESTHETICS REFERRAL)

- On insulin
- Moderate OR Major procedures AND either HbA1c >9%, OR No available HbA1c within 6 months
- Significant concerns about diabetes management (e.g. recent hypoglycaemia)
- Does not meet guideline advice (e.g. SGLT2 combination tablet)

03. Results

414
patients required a diabetes medication plan

52.4%
of plans were provided by the Pharmacist

95.3%
of cases the peer reviewer agreed with the plan provided

0
clinical incidents associated with pharmacist-led plans

04. Conclusion

Pharmacists provide safe, guideline driven preoperative diabetes medication plans, freeing up anaesthetist time and streaming the pre-admission process. Collaborative work between anaesthetists and pharmacists continues for complex and poorly managed diabetes patients with the plan to expand the pharmacist-led process.

REFERENCE

STARS Perioperative management of diabetes medication 006395

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Co-designing solutions to optimize choice in telehealth

Kelsey Pateman[1], Anja Christoffersen[2], Michelle Cottrell[1], Clare Burns[1], Amber Jones[3], Kate Dickson[4].
1. RBWH Allied Health 2. Champion Health Agency 3. TPCH Allied Health 4. RBWH SOPD.

Background & aims

- Despite its many demonstrated benefits, sustaining telehealth post-COVID-19 is a challenge faced by health services globally[1-3].
- Strategies addressing consumer awareness and advocacy to choose telehealth as an option for care are priorities to improve telehealth sustainability[4].
- **This study aimed** to co-design solutions to improve consumer awareness and choice in accessing telehealth services (video call).

Methods

- Modified experience based co-design was utlised two stages (see figure 1).
- *Stage 1:* workflow mapping of 11 MN services and semi-structured interviews with patients who had received telehealth (n = 33).
- *Stage 2:* a) community engagement with n = 45 consumers from priority communities (First Nations, CALD, people with disability, LGBTQIA+ communities); b) four participatory virtual co-design workshops involving 10 consumers and 10 MN staff + 1 academic partner.

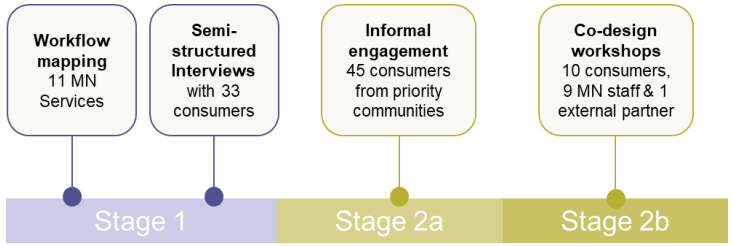

Figure 1: Consumer engagement summary

Results

Four linked solutions were designed to improve consumer choice to access telehealth services:

- **Telehealth Assist Model of Care:** patient-facing telehealth clinician to coordinate care, and administration team, to provide support pre- and post-telehealth appointments.
- **Digital Resources and Online Information Hub**: inclusive and accessible consumer-facing telehealth information and resources.
- **Waiting Room Video**: building awareness and education of how telehealth works and its benefits.
- **System flexibility and support:** integrated referrals, choice and changing mode of appointments, flexibility supported by the workforce and community hubs with telehealth capacity.

Discussion & conclusions

- Consumer participants shared that their telehealth care was as good as in-person appointments, and they would like ongoing access to telehealth as part of their hospital care.
- System reform is needed to support consumer choice to receive care in-person and/or via telehealth.
- Addressing clinician barriers to telehealth uptake is essential to support this change, alongside streamlined and flexible administrative workflows.
- Appointment information needs to be communicated in multiple modes, in response to consumer preferences.
- Consumer resources should be co-developed with the community to ensure the production of plain and easy English, aphasia-friendly, and translated resources.

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A high impact antimicrobial stewardship strategy targeting high volume ophthalmological antimicrobials

Nicola Farrell, Kristiana McFarlane, Madeleine Murray STARS Pharmacy Department

Purpose

Cataract surgery is the most frequently performed elective surgery worldwide and is our largest surgical cohort with **180** procedures carried out each month.

Our aim was to assess compliance of antimicrobial prescribing with the Cataracts Clinical Care Standard and local guidelines to strategically influence **high volume** work.

Method

Pre-intervention Audit
Surgical National Antimicrobial Prescribing Survey

Significant **non-compliance** with post procedural antimicrobials identified.
ALL cases related to chloramphenicol 0.5 % eye drops exceeding a 7-day course duration

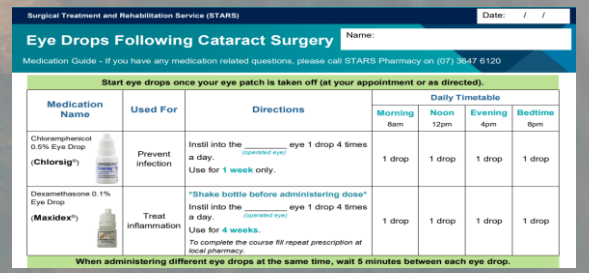
Impact assessment
High volume work
Double the amount of product required
Double the **Cost** to patients **$$**

29- day course Vs 7-day course

x 180 / month

Method

Intervention Consumer Brochure & Stakeholder Collaboration


Surgical Treatment and Rehabilitation Service (STARS) Date: / /

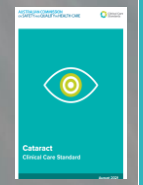
Eye Drops Following Cataract Surgery Name:

Medication Guide - If you have any medication related questions, please call STARS Pharmacy on (07) 3647 6120

Start eye drops once your eye patch is taken off (at your appointment or as directed).

Medication Name	Used For	Directions	Daily Timetable: Morning 8am	Noon 12pm	Evening 4pm	Bedtime 8pm
Chloramphenicol 0.5% Eye Drop (Chlorsig®)	Prevent infection	Instil into the _____ eye 1 drop 4 times a day. (operated eye) Use for 1 week only.	1 drop	1 drop	1 drop	1 drop
Dexamethasone 0.1% Eye Drop (Maxidex®)	Treat inflammation	*Shake bottle before administering dose* Instil into the _____ eye 1 drop 4 times a day. (operated eye) Use for 4 weeks. To complete the course fill repeat prescription at local pharmacy.	1 drop	1 drop	1 drop	1 drop

When administering different eye drops at the same time, wait 5 minutes between each eye drop.



Post-intervention Audit

Conclusion

By **reducing** the excessive prescribing of topical antimicrobials we have contributed to the **prevention** of multi-drug resistant microorganisms. By implementing strategies to **standardise** high volume work we have supported discharge **efficiency** and reduced the **cost** of medicines to patients. The pharmacist has demonstrated their commitment to **value-based** healthcare.

Results

Before Intervention (April- May2022)

93% (N=30)

Inappropriate
Chloramphenicol prescriptions

29 days
Median course duration

x 347
bottles / month

After Intervention (April – May 2023)

10% (N=30)

Inappropriate
Chloramphenicol prescriptions

7 days
Median course duration

X 198
bottles / month

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Semi-automated scaffold design workflow to facilitate clinical translation of scaffold guided bone regeneration

Buddhi Herath[1,2,3], Markus Laubach[1,2,3,6], Sinduja Suresh[1,2,3,4], Beat Schmutz[1,2,3], J. Paige Little[1,2,3,4], Prasad K. D. V. Yarlagadda[1,2,3], Dietmar W. Hutmacher[1,2,3,5], Marie-Luise Wille[1,2,3,5]

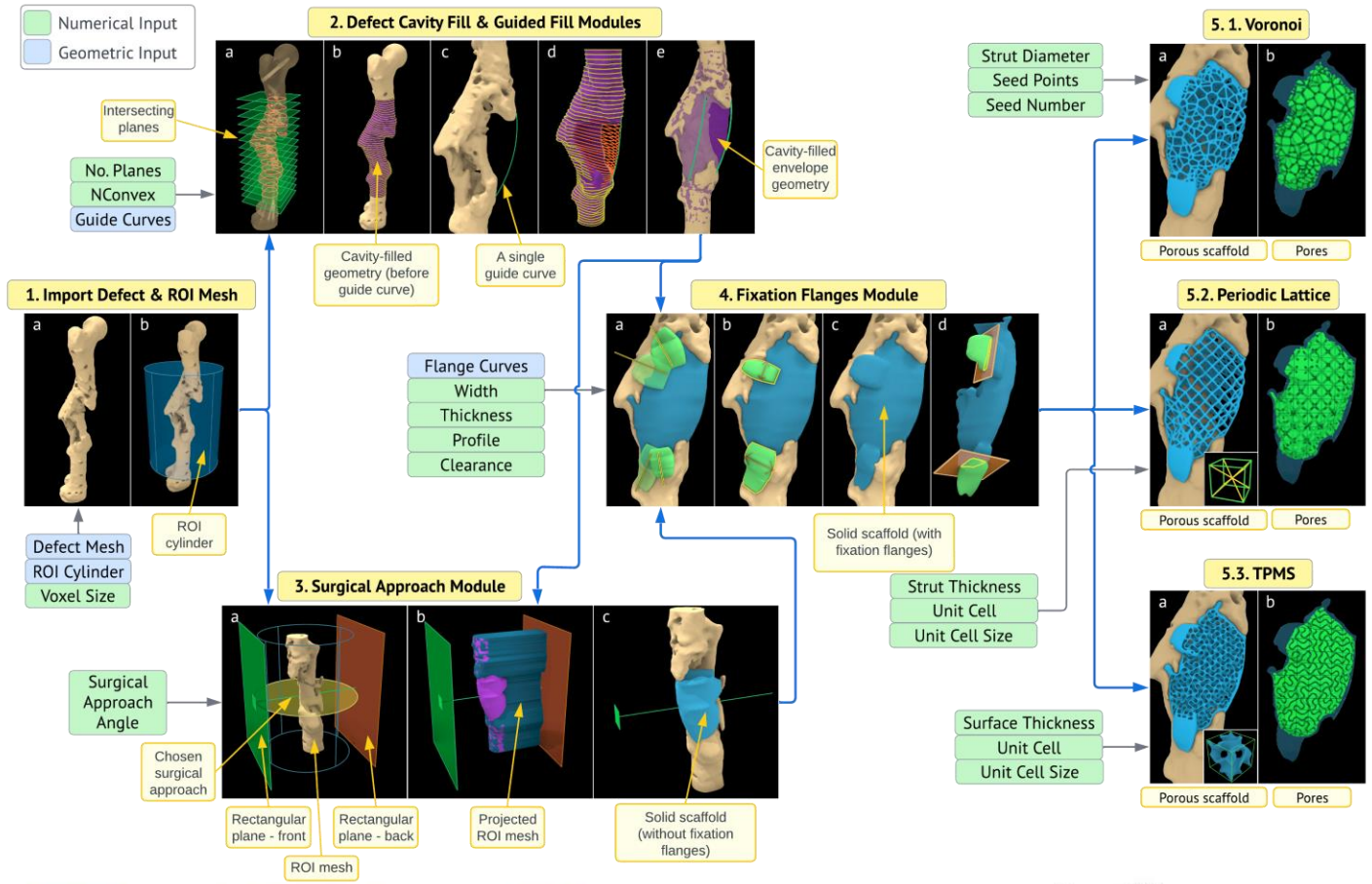
[1]ARC Training Centre for Multiscale 3D Imaging, Modelling, and Manufacturing, QUT; [2]Centre for Biomedical Technologies, School of Mechanical, Medical and Process Engineering, Faculty of Engineering, QUT; [3]JTI, Metro North Hospital and Health Service; [4]Biomechanics and Spine Research Group, Centre for Children's Health Research, South Brisbane; [5]Max Planck Queensland Centre for the Materials Science of Extracellular Matrices, QUT; [6]Department of Orthopaedics and Trauma Surgery, Musculoskeletal University Centre Munich, LMU University Hospital, LMU Munich, Munich, Germany.

Purpose: The need for a streamlined bone scaffold design workflow has been recognized to overcome design challenges that arise during the routine clinical translation of scaffold-guided bone regeneration (SGBR), which is currently a highly manual process.

Methods: An algorithmic workflow was developed to generate patient-specific scaffold geometries, fill defect cavities, ensure unobstructive surgical scaffold insertion for a given surgical approach from existing bone, add fixation points to secure scaffolds to prevent dislodgement and create a multitude of pore architectures. The workflow was validated by applying it to a complex multi-fragmentary femoral bone defect.

Results: The workflow was able to design scaffolds for a given surgical approach complete with fixation points as requested by surgeons with minimal user input, with near real-time responsiveness. The designs showed successful patient-specific fit and unobstructive insertion when inspected digitally as well as physically via 3D printed prototypes. The output models were free from mesh errors which can prevent 3D printing when checked with the commercial slicing software thanks to the employment of implicit geometry.

Conclusions: The developed workflow is successful in designing patient-specific scaffolds with real-time responsiveness to overcome the above-mentioned design challenges.



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HHPS23-071

INTRAVENOUS ANTIBIOTIC ADMINISTRATION VIA SYRINGE PUMP SAFETY SOFTWARE: AUDIT

Ashley S[2], McCourt E[2], Dutt C[5], Davies K[1,2,4], Pham-Nguyen A[3] , Losinski K[2], Donovan P[2,4], Coombes I[2,3,4]

1. Herston Infectious Diseases Institute, 2.Clinical Pharmacology RBWH, 3. Pharmacy Department RBWH, 4. University of Queensland 5. School of Pharmacy QUT

PURPOSE

Peripheral intravenous catheters (PIVC's) have a 69% complication rate resulting in removal and incomplete therapy. To reduce this, intravenous antibiotic (IVAB) profiles were added to Intravenous (IV) syringe pumps to improve nurse adherence with correct administration. The aim of this audit was to determine the usage, cost, and staff acceptability of the IVAB drug profiles in IV syringe pump drug libraries.

METHOD

A single centred snapshot audit of inpatients in general wards receiving IVAB therapy via volumetric pump, bolus dosing, or IV syringe pump with pre-set IV safety software (IVSS) concentration and rate was conducted. Cost of consumables for each modality was calculated. Nursing staff were surveyed on the barriers and enablers of therapy modalities.

RESULTS

Of the **33 patients reviewed**, the percentage of patients on IVABs administered via IV syringe pump was **ZERO**. Consumables cost an extra $6.15 for every IVAB dose **NOT** administered via a syringe pump.

Nurse Enablers for IVSS syringe pump adoption

- Cost
- Patient mobilisation with ability to disconnect between doses

Nurse Barriers to IVSS syringe pump adoption

- Lack of immediate ward access to syringe pumps
- Volumes > 50mls required for administration of IVAB
- Lack of IV syringe pump education
- Lack of awareness of perceived syringe pump benefits to patient and user

CONCLUSION

This audit found utilisation and user acceptability of IV syringe pumps for administration of IVABs is **low**. Education, training, and greater access to these pumps, can assist user adoption in utilising IVSS to ensure IV infusions are given at the correct rate and concentration.

The project team would like to acknowledge the work of the following departments for their assistance with this project: Acknowledgements:

- RBWH Administration, Nursing and Medical Clinical Units
- RBWH Pharmacy Department

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BLOOD PRESSURE MEASUREMENTS AND LEFT VENTRICULAR GLOBAL LONGITUDINAL STRAIN IN CHRONIC KIDNEY DISEASE

Dharmenaan Palamuthusingam[1], Corbin Evans[1], Nuwan Dahanayake[1], Rathika Krishnasamy[2], Kassia Weston[3], Carmel Hawley[4], Nikky Isbel[4]

1. Royal Brisbane and Womens Hospital | 2. Sunshine Coast University Hospital | 3. University of Queensland | 4. Princess Alexandra Hospital

Background

- Hypertension is a well recognized major risk factor for adverse cardiac remodeling.
- Global Longitudinal Strain (GLS) is a subtle and early measure of left ventricular dysfunction (LV) & limited studies have examined the association of blood pressure and GLS in Chronic Kidney Disease (CKD).
- We aimed to determine which method of blood pressure (BP) measurement was best correlated with GLS and to examine the relationship between nocturnal dipping status and GLS.

Methods

- Cross sectional study of patients with moderate CKD stages 3 and 4
- Multivariate models were used to explore the relationship between GLS and BP measuring modality
- Patients underwent:
  - 24-hour Ambulatory Blood Pressure Measurements (ABPM)
  - Office BP readings
  - Central BP measurements via pulse-wave analysis
  - Resting transthoracic echocardiogram to determine GLS

Figure 1: Mean Systolic BP (mmHg) by modality

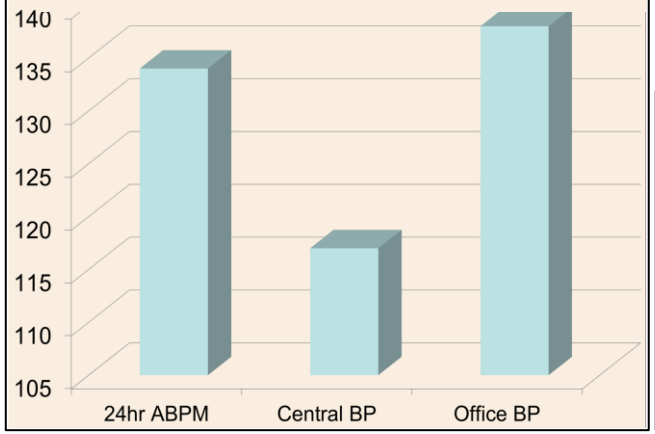
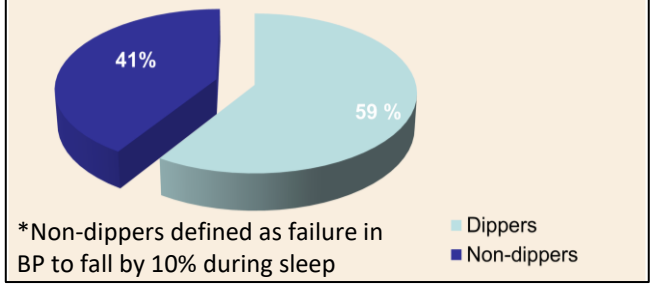


Figure 2: Dippers and Non-dippers* on 24hr ABPM



*Non-dippers defined as failure in BP to fall by 10% during sleep

Results

After adjustment for demographics and baseline morbidities, Office Systolic BP and Central Systolic BP were independently associated with GLS (R^2 = 0.2, p=0.001).

Non-dippers had poorer strain compared to dippers (-18.1 ± 3.6% v -19.6 ± 2.8%, p=0.02).

Table 1: Patient Data

Characteristic:	Total population n = 136
Age (years)	59±9.8
Males (%)	58
eGFR	44.4± 10 ml/min/1.73m²
Diabetes (%)	42
Hypertension (%)	94.8
BMI (kg/m²) ± SD	33 ± 6.5
Medications:	
ACE-i/ARB (%)	85
Beta-Blockers(%)	39
Ca^{2+} Channel Blockers (%)	49.6

Conclusions

- In the CKD population, Office BP and Central BP closely correlated with GLS
- Nocturnal non-dippers identified on 24hr ABPM may have early cardiac dysfunction

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

Accuracy and Completeness Of Pharmacist Generated Medicine Administration Records For Aged Care Patients

Selena Lee[1], Mika Varitimos[1], Erin Dunn[1] *([1]The Prince Charles Hospital Pharmacy Department)*

Purpose:

*To improve the **continuity** of **medicines management** and **administration** for patients discharging from hospital to their Residential Aged Care Facility (RACF), by evaluating if **effective documentation** and **written handover** is used when pharmacists are generating Interim Medication Administration Records (IMARs)*

Methods:

IMAR audit tool created based on standardised criteria adapted from the Australian Commission on Safety and Quality in Healthcare (ACSQH) National Inpatient Medication Chart Audit Tool

Prospective IMAR audit conducted

3 month timeframe (April 2023 - July 2023)

Documentation for all regular, when required (PRN), variable dose and high risk medicines (warfarin, insulin) assessed for accuracy and completeness

Audit Criteria Including:

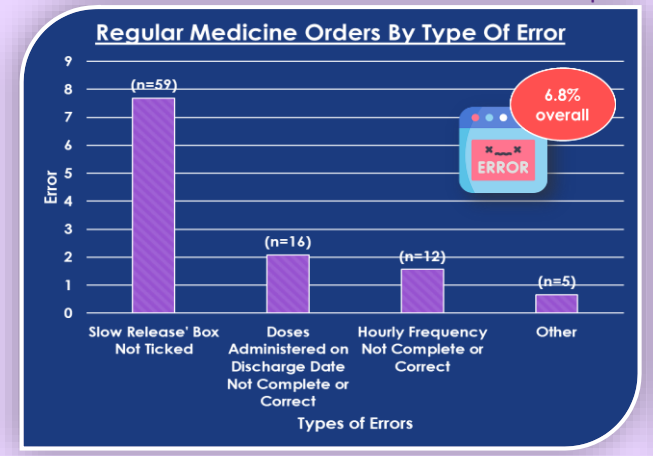
- Dosing times
- Hourly frequency
- Route of administration
- Indication
- Doses administered on discharge date

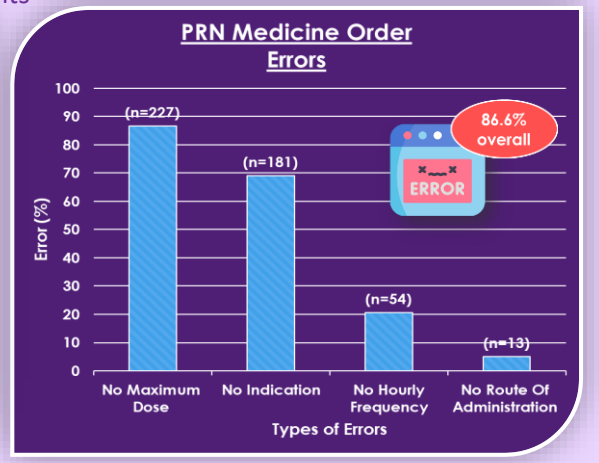
Results:

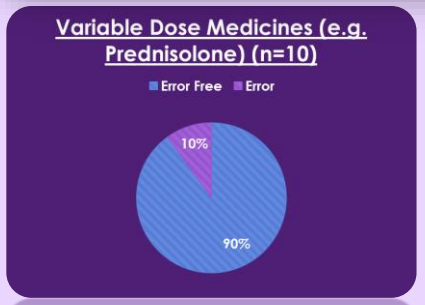
768 regular medicine orders

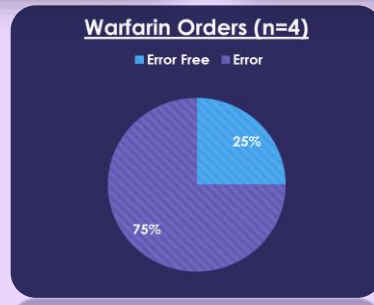
77 patients

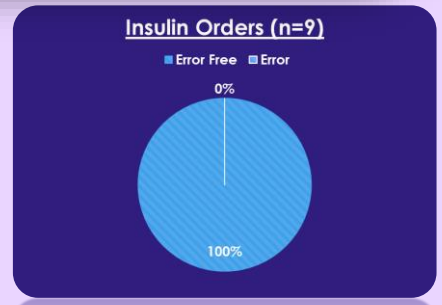
262 PRN medicine orders











Conclusions:

***Accurate** and **complete** medicine administration records are **critical** for the **safe care transition** between hospital and RACF. There is an opportunity for pharmacists to **improve documentation** on IMARs, particularly for **PRN** medicines*

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Simplifying our molecular approach to detect antimicrobial resistance in *Mycoplasma genitalium*, to facilitate individualized treatment

Emma L Sweeney, Nicole G Ertl, Taylah K Anderson, Elisa Mokany, Eszter Sagi-Zsigmond, Catriona S Bradshaw, Gerald L Murray, David M Whiley

Background:

Mycoplasma genitalium is a sexually-transmitted infection which is becoming increasingly difficult to treat. A recent systematic review and meta-analysis of *M. genitalium* antimicrobial resistance demonstrated that macrolide resistance exceeds 50% in urban centres globally, while fluoroquinolone resistance is currently at 7% globally; however, resistance is much higher in the WHO Western Pacific region, and is estimated to be ~25% in Australia, but is as high as 60-80% in China/Japan.

A lack of effective antimicrobials, coupled with the rising rates of resistance to mainstay treatments further complicates patient management, and treatment failures are now commonplace. Given this, there is an important need for commercial diagnostic tests for precision treatment of *M. genitalium* infections.

Methods:

We investigated the prevalence of *M. genitalium* antimicrobial resistance markers for macrolides (23S rRNA) and fluoroquinolones (*parC* and *gyrA* genes). We focused primarily on fluoroquinolones, since there are limited commercial tests available.

Results:

Macrolide resistance remains strongly linked to five 23S rRNA mutations (87%; 95% CI 76-94%), each of which are strongly linked to treatment failure with macrolides. Clinicians also report that macrolide susceptibility markers (**23S rRNA wildtype**) are extremely valuable in 'ruling in' and 'ruling out' macrolide treatments.

For fluoroquinolones, the **ParC-S83I mutation** is the most common mutation that is strongly associated with moxifloxacin treatment failure (62.5%; 95% CI 45.8-77.3). Importantly, **ParC wildtype** is strongly predictive of treatment success with fluoroquinolones (98.3%; 95% CI 93.9-99.8), and hence this diagnostic marker is also useful in 'ruling in' treatment with fluoroquinolones. **Other ParC mutations are not strongly linked to treatment failure**, and their role in individualized treatment remains controversial.

Data has recently emerged on the importance of **dual ParC and GyrA mutations** in moxifloxacin treatment failure.

Notably, the co-occurrence of these mutations **substantially increases the risk of treatment failure with fluoroquinolones**, when compared to the ParC-S83I mutation alone (80.6% vs 43.2%, $p = 0.0027$).

Conclusion:

Diagnostic assays have considerable value for enhanced individualized treatment of patients.

Commercial assays which include markers with high predictive values for moxifloxacin cure, coupled with markers which can predict fluoroquinolone treatment failure, with a high degree of precision, provide the optimal balance for clinicians to select the best possible treatments for patients.

Improved commercial diagnostic assays are currently being developed as part of a Researcher Exchange and Development within Industry (REDI) Fellowship, with Industry partner **SpeeDx Pty Ltd**.

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4–7 September 2023
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Piloting a dietetics and speech pathology interprofessional clinical assistant role in an inpatient rehabilitation setting

Contact
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Jennifer Ellick[1], Kylie Short[2], Lauren Wright[2], Jessica Kinneally[1]

1. Dietetics and Food Services, STARS.
2. Speech Pathology, STARS

BACKGROUND

Evidence demonstrates that an interprofessional approach to health care improves patient care in regard to:

- Quality
- Outcomes
- Safety
- Cost effectiveness

Interprofessional clinical assistants is a relatively novel area of practice.

PROJECT AIM

Support interprofessional clinical assistant (IPCA) clinical activity that targets patient goals and increases value-based, patient-centre health care.

METHODS

A Dietetics and Speech Pathology interprofessional clinical assistant role was piloted on two wards at a metropolitan tertiary rehabilitation service for three months.

Evaluation included:

- Clinical activity
- Task Distribution
- Role satisfaction

RESULTS

23% INCREASE IN CLINICAL ACTIVITY
after implementation of interprofessional tasks compared to single profession tasks.

5% INCREASE IN CLINICAL TIME *(MINUTES)*

Positive feedback:
"Patients that I had worked with were very grateful and could see the value in the joint role"

A resource bank of interprofessional tasks were developed that met patient goals and combined discipline-specific objectives.

CONCLUSIONS

This project has demonstrated the feasibility of dietitian and speech pathology IPCA role through increased clinical efficiency and clinical activity.

CHALLENGES

- Prolonged training
- Dual reporting
- True IP tasks

FUTURE DIRECTIONS

Measuring patient experience, outcomes and health economics

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Nourishing Stroke Survivors: Optimising Outpatient Dietary Education

Madelaine Raymond1, Amanda Adams1, Hannah Olufson1, Jennifer Elick1

1: Surgical, Treatment and Rehabilitation Service (STARS)

Methods

- Develop a stroke education pathway to provide personalized dietary advice for stroke survivors.
- Address the gap in meeting Stroke Foundation Guidelines for individualized dietary advice.
- Collaborative effort between STARS and Royal Brisbane and Women's Hospital (RBWH)

Purpose

- Initiated June 2021, the project aimed to provide dietary advice to stroke patients at STARS and RBWH in the outpatient setting
- Project initiated in June 2021 to provide dietary assessment and intervention to stroke patients in outpatient setting.
- Referral pathway developed after consulting with key stakeholders from STARS and RBWH.
- Leveraged existing STARS outpatient resources to establish the service.
- Chart audit conducted in March 2023 to evaluate the service's effectiveness.
- Staff feedback collected to assess the service's impact.

Conclusion

- **Service successfully provides individualised dietary advice for secondary stroke prevention, addressing the lack of local stroke education pathways.**
- **Focus on future improvements including planned engagement with staff and consumers to enhance service delivery, increase attendance and referral rates.**

Figure 1. - Number of referrals from clinicians

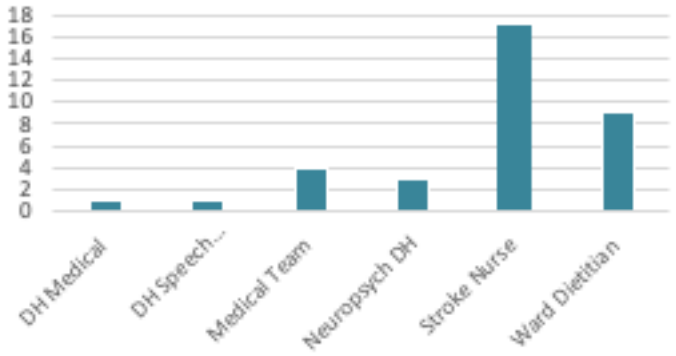
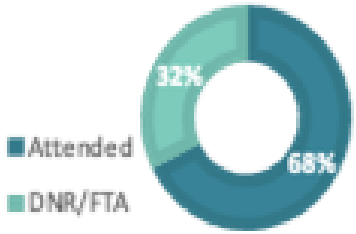


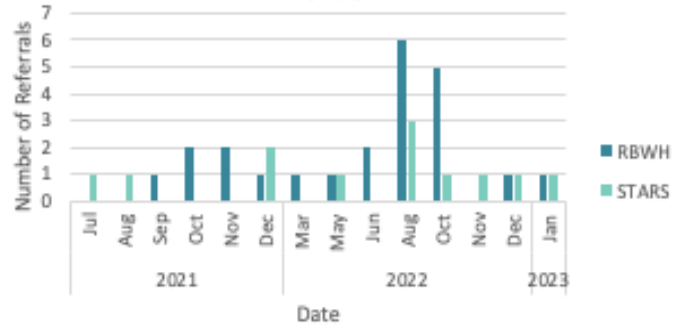
FIGURE 3. OUTCOME OF INITIAL APPOINTMENTTS



Results

- 35 patients referred from Sep 2021 to Mar 2023 (66% from RBWH, 34% from STARS)
- Conducted 52 appointments (face-to-face, telehealth, phone)
- Patients attended one initial and two review appointments on average
- Missed appointments: 6 telehealth, 4 face-to-face, 1 phone
- Staff-identified barriers: limited referral capacity, patient reluctance, travel concerns, telehealth confidence.

Figure 2. Monthly referral comparison betwen RBHW & STARs



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EXAMINING THE FACTORS INFLUENCING SELF-EFFICACY OF HEALTHCARE PROFESSIONALS TOWARDS END-OF-LIFE CARE IN ACUTE CARE SETTINGS.

Co-authors: Robyn Matthews, Ray Chan, Elise Button, Patsy Yates

Introduction

Caring for patients with life-limiting illnesses in an acute care setting is complex. Healthcare professionals (HCPs) can be unprepared and lack confidence to deliver this vital care.

Aim

To examine the factors influencing self-efficacy of HCPs towards end-of-life care (EOLC) in acute care settings.

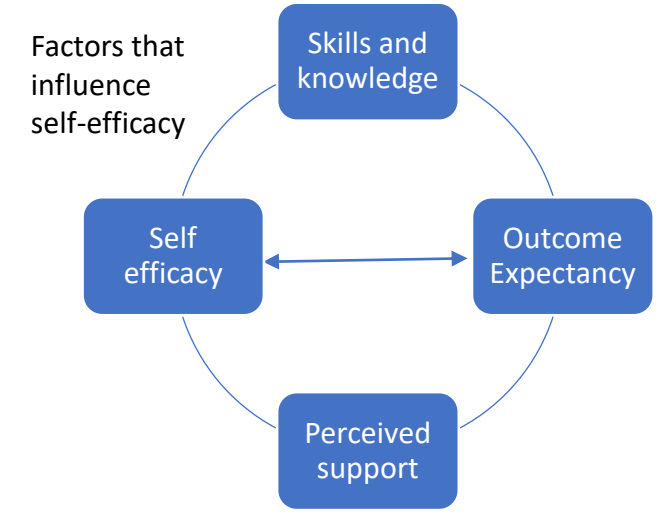
Methodology

This study employed a cross-sectional descriptive survey design using a paper-based and online questionnaire which included four instruments: the Self-Efficacy in Palliative Care Scale, Thanatophobia Scale, End-of-Life Questionnaire, and End-of-Life Care Toolkit: clinician survey. The survey was distributed to 1,264 HCPs in 11 wards across the oncology, medical, surgical and critical care settings at RBWH, in July – August 2020.

Results

Response rate was 27% (n=343/1261) and consisted of nurses (n=280), medical practitioners (n =36), and allied health professionals (n=27). Lower levels of self-efficacy towards EOLC were associated with those younger in age, worked in medical and surgical settings, less than 10 years' experience in the role, less frequent contact with patients/families with a life-limiting illness, no education or training in palliative care, and low interest in future palliative education. Higher levels of self-efficacy were associated with higher levels of self-perceived competence (r=.31, n=333, p=< 0.000), lower levels of thanatophobia (r=-.39, n=337, p=< 0.000), higher levels of perceived personal support (r=.55, n= 340, p=< .001), and recognition of dying (r=.12, n=339, p=.03).

Factors influencing Self-Efficacy	Negative association (and %)
Age	**Under 40 yrs (72%)**
Ward setting	**Medical and surgical settings (60%)**
Years of experience	**< 10 years (71.7%)**
Frequency of contact with patients/families with life – limiting illness in past 12 months	**Monthly or several times a year (50%)**
Previous and recent education and training in palliative care	**Didn't attend any – (35%)**
Interest in participating in future educational opportunities regarding palliative care	**Not at all or somewhat interested (29.4%)**



Conclusion

Various factors were identified as influencing HCPs' self-efficacy towards EOLC. This study has provided evidence to inform the development of education and training programs targeted at meeting HCPs' specific learning needs. Targeted education and training in palliative and EOLC, delivered using learning methods that increase HCPs' self-efficacy could assist HCPs to provide this vital care.

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The Lymphatic System, Lymphoedema & Medical Curricula – Survey of Australian Medical Graduates

Natalie Kruger [1,2,3], Melanie L Plinsinga [1,2], Rhian Noble-Jones [4], Neil Piller [5], Vaughan Keeley [6] and Sandra C Hayes [1,2]

[1] Menzies Health Institute Queensland, Griffith University ; [2] School of Health Sciences & Social Work, Griffith University ; [3] Physiotherapy Department, Royal Brisbane & Women's Hospital ; [4] Lymphoedema Clinical Network Wales, Swansea University ; [5] School of Medicine, Flinders University ; [6] Lymphoedema Department, University Hospitals of Derby and Burton NHS Foundation Trust

Figure 1. Left lower limb primary lymphoedema in 32-year female, diagnosed following pregnancy.

References

[1] Moffatt et al 2003 doi:10.1093/qjmed/hcg126
[2] Fu et al 2013 doi:10.1002/pon.3201
[3] International Society of Lymphology 2020
[4] Kruger et al 2022 doi:10.3390/cancers14246219

Acknowledgements

We sincerely thank our survey participants and the Australasian Lymphology Association.

Background

- Lymphoedema is a common, chronic health condition [1] and has a profound impact on people [2]
- While early identification and treatment offers greater treatment success [3], it is unknown if Australian medical graduates are equipped with the knowledge required to optimise lymphoedema outcomes

Aims

- To survey the perceptions of recent Australian medical graduates regarding their understanding of the lymphatic system and lymphoedema, and the extent to which the lymphatic system and lymphoedema were covered within their medical degree

Methods

- 17-item online survey asked respondents to rate their level of agreement (using a 5-point Likert scale) to statements that explored 'understanding' and 'medical degree comprehensive' relating to the lymphatic system and lymphoedema
- Responses to each item were described using n (%)
- Subscale scores for understanding and medical degree comprehensive were computed by summing scores of individual items and were described using means (SD)

Results (*n* = 230)

- Between 40.5% and 47.0% of respondents strongly disagreed or disagreed that they had a thorough understanding of the anatomy, physiology and pathophysiology of the lymphatic system, and differential diagnosis of lymphoedema (Figure 2)
- The majority strongly disagreed or disagreed with having a thorough understanding of the methods available to assess lymphoedema (67.4%) and treatment options available (61.4%) (Figure 2)
- The majority strongly disagreed or disagreed with five of seven statements relating to medical degree curricula comprehensively covering the lymphatic system and lymphoedema (Figure 3)

Key Message

- Improvement of medical graduates' understanding of lymphoedema may facilitate greater awareness of this chronic condition, thus optimising the timeliness of diagnosis, access to treatment, symptom burden for people, and costs to global healthcare services

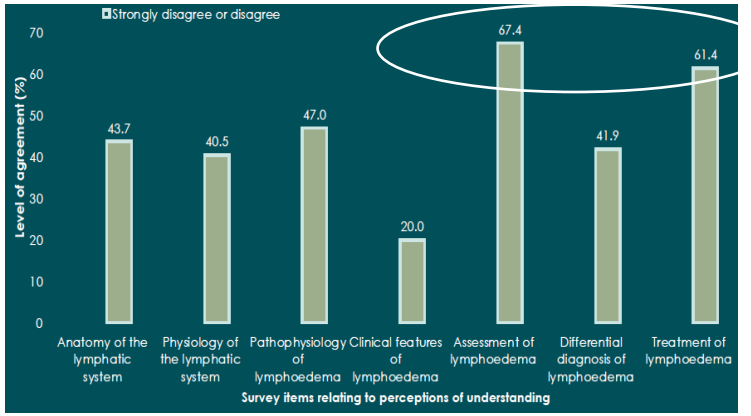

Figure 2. Level of agreement as to whether items listed are understood by medical graduates [4].

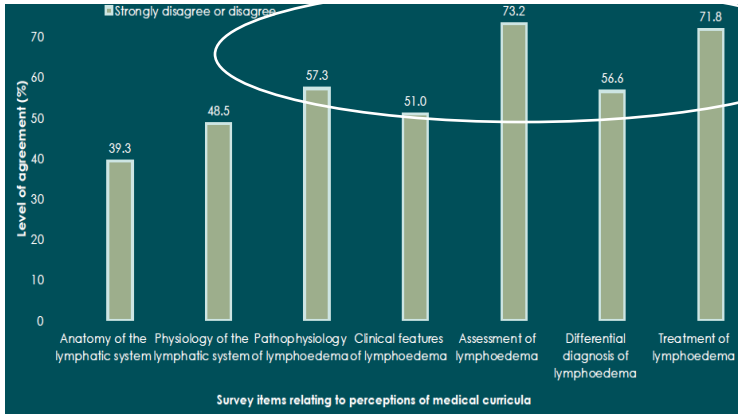

Figure 3. Level of agreement as to whether items listed were comprehensively covered during medical training [4].

Socioeconomic inequality in combination HIV prevention services over time in Ethiopia: a population-based study

Aklilu Endalamaw[1,2*], Charles F Gilks[1], Resham B Khatri[1], Yibeltal Assefa[1]
[1]The University of Queensland,, Australia; [2]Bahir Dar University, Ethiopia

1. Background

- There was evidence gap in inequality in HIV/AIDS services in Ethiopia.
- This study assessed socioeconomic inequality and contributors in knowledge, attitude, and HIV testing over time in Ethiopia.

2. Methods

- Data source: Ethiopian Demographic Health Surveys among Adults (15 to 49 years old)
- Variables: Dependent variables: Knowledge about HIV/AIDS, attitudes towards people living with HIV, and HIV testing; Independent variables: socioeconomic and demographic variables
- Statistical analysis: Socioeconomic analysis (e.g., Erreygers' Concentration Index) and Decomposition analysis using a generalised linear regression model with the logit link function.

3. Results

- Socioeconomic inequality in comprehensive knowledge about HIV/AIDS was declined, but it was increased in accepting attitude towards people living with HIV and HIV testing based on Erreygers' Concentration Index (ECI).
- Socioeconomic inequality in knowledge about HIV/AIDS, attitudes towards people living with HIV, and HIV testing over time in Ethiopia is graphically presented in Figure 1.

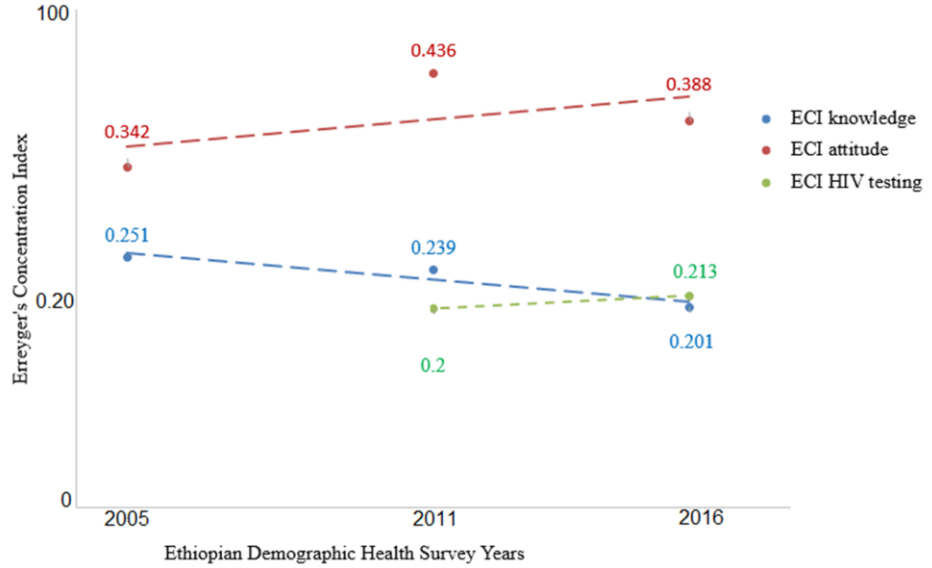

Figure 1: **Trend of socioeconomic inequality in knowledge, attitudes, and HIV testing between 2005 and 2016 in Ethiopia**

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Intersectional inequity in combination HIV prevention services in Ethiopia

Aklilu Endalamaw[1,2*], Charles F Gilks[1], Resham B Khatri[1], Yibeltal Assefa[1]
[1]The University of Queensland,, Australia; [2]Bahir Dar University, Ethiopia

1. Background

•Intersectionality pinpoints intersecting and overlapping factors that empower or oppress people who live with many disadvantages.

•This study examined intersectional inequity in comprehensive knowledge about HIV/AIDS, attitudes towards people living with HIV, and HIV testing among adults aged 15 to 49 years old in Ethiopia.

2. Methods

- Data source: Ethiopian Demographic Health Surveys among Adults (15 to 49 years old)
- Variables: Dependent variables: Knowledge about HIV/AIDS, attitudes towards people living with HIV, and HIV testing; Independent variables: multiple (dis)advantages groups, generated from employment status and gender, and residence, education status and wealth status
- Statistical analysis: Multilevel logistic regression; P-value ≤ 0.05 were considered statistically significant.

3. Results

- Percentage of adults with comprehensive knowledge about HIV/AIDS, exhibit accepting attitude towards people living with HIV, and undergo HIV testing was 47.0%, 75.7%, and 36.1% among triple advantages, compared to 13.9%, 16.0% and 8.7% among triple non-advantages, respectively (Figure 1).
- Behaviours (knowledge and attitude) and HIV testing were lower among those with multiple intersecting disadvantages.

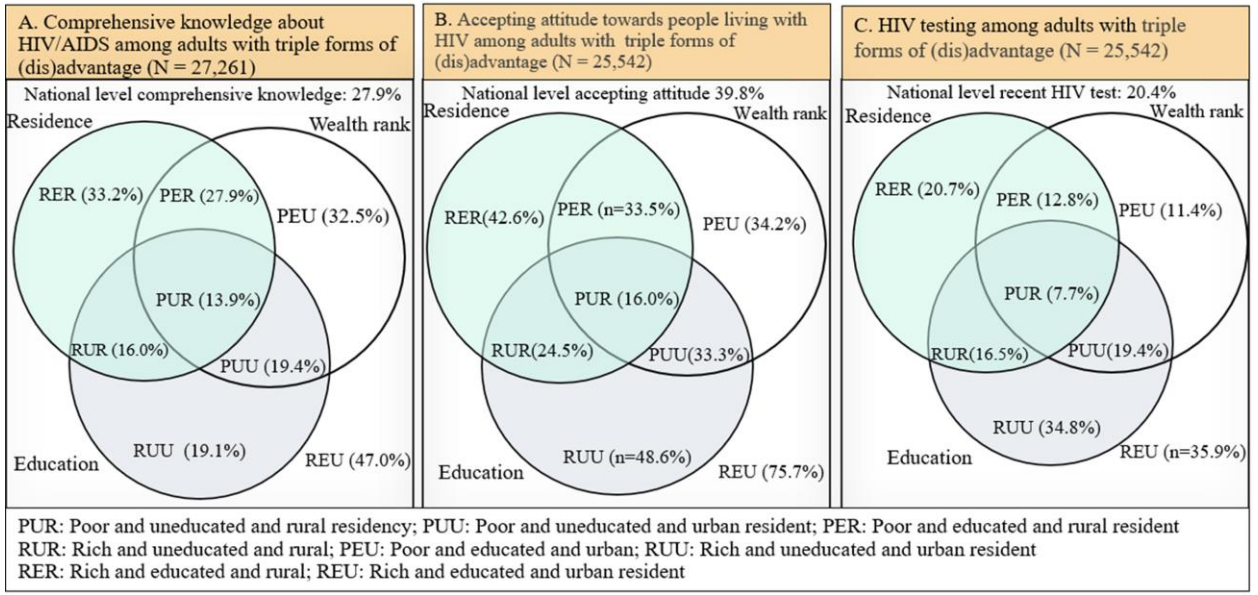

Figure 1: Knowledge, attitudes, and HIV testing with intersecting (dis)advantages

Narrowing the gap in knowledge, attitude, and services towards ending the HIV/AIDS epidemic: a systematic review

Aklilu Endalamaw[1,2*], Charles F Gilks[1], Fentie Ambaw[2], Wondimeneh Shiferaw Shibabaw[3], Yibeltal Assefa[1] ; [1]The University of Queensland, Australia; [2]Bahir Dar University, Ethiopia; [3]Debre Berhan University, Ethiopia

1. Background

•Global and national collaboration against the unequal uptake of HIV services requires evidence for policy, behavioural, and clinical implementation.

•Therefore, this systematic review assessed inequity in knowledge, attitude, and services related to HIV/AIDS.

2. Methods

- Data source: systematic review of original studies around the world
- Literature Search: PubMed, Web of Science, Scopus, and Google Scholar
- Quality assessment: Hoy et al.'s modified assessment tool for quantitative studies and Joanna Brigg's quality appraisal checklist for qualitative studies

3. Results

- More equity-oriented articles were available in developed countries where lower HIV burden was observed (Figure 1).
- Individuals from higher-income households had better knowledge about HIV/AIDS, according to most studies reports.
- Many studies reported that unfavourable attitude towards people living with HIV, and HIV/AIDS-associated stigma or discrimination were more common among women.

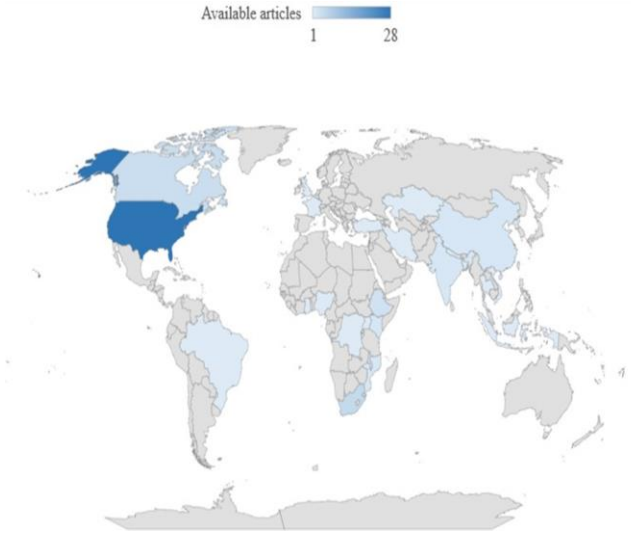

Figure 1: Distribution of equity-oriented studies on HIV/AIDS services around the world

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4–7 September 2023
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ADHERENCE TO RECOMMENDED GUIDELINES FOR LOW BACK PAIN PRESENTATIONS TO RBWH EMERGENCY AND TRAUMA CENTRE: BARRIERS AND ENABLERS

JANELLE HEINE[1,2], PETER WINDOW [2], SARAH HACKER[1,2], JORDAN YOUNG[1,4], GARY MITCHELL[1,3,4], SHEA ROFFEY[1], MICHELLE COTTRELL[2]

1. Emergency and Trauma Centre RBWH 2. Physiotherapy Department RBWH 3. Jamieson Trauma Institute 4. University of Queensland

AIM

To evaluate adherence to guidelines for management of mechanical Low Back Pain within RBWH Emergency and Trauma Centre.

Our objectives were:
1. To identify the proportion of patients presenting to with mechanical Low Back Pain who received management in line with the guidelines; and
2. To understand factors influencing (non-) adherence to the guidelines

METHODS

Two stage multi-methods study design.
Stage 1 involved a retrospective chart audit of patients presenting with a diagnosis of mechanical Low Back Pain to establish documented adherence to clinical guidelines.
Stage 2 explored clinicians perspectives towards factors influencing adherence to the guidelines via a study specific survey and follow up focus groups

RESULTS

The audit showed high adherence overall. There was low adherence to the following guidelines:

- Appropriate analgesia prescription (67%)
- Targeted education and advice provided (58%)
- Attempt to mobilise (48%)

Major themes identified as factors influencing adherence to the guidelines:

- Clinician driven influences
- Workflow processes
- Patient expectations and behaviours

CONCLUSION

There was low adherence to some published guidelines
Factors influencing adherence to the guidelines were multi-factorial.

Targeted strategies developed to improve Emergency Department management of mechanical Low Back Pain included:

- Site specific clinical guideline
- Patient information sheet
- Educational sessions for nursing and medical staff.

THE FUTURE

- Implementation project aimed at educating clinicians.
- Primary outcome is a reduction in the prescription of opioids for Low Back Pain patients presenting to RBWH Emergency and Trauma Centre.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
Education Centre, RBWH

HHPS23-Abstract035

Dexmedetomidine versus Midazolam for Conscious Sedation in procedural settings

Aniela Setiawan, RN, Department of Medical Imaging, RBWH; Nicole Marsh, Nursing Director Research, RBWH; Amanda Corley, Research Fellow, RBWH

BACKGROUND

Over 90% of interventional radiology procedures are performed under Local Anaesthesia and/or sedation by non-anaesthetist such as nurses[1]. The most commonly used IV sedation agents are Fentanyl and Midazolam[2]. Dexmedetomidine is a relatively new drugs, it is an α2-receptors agonist and has been Therapeutic Goods Administration approved to be used in ICU settings for intubated patients and for sedation of non-intubated patients prior to surgery and other procedures[3]. This drug has been known to have sedative, anxiolytic, analgesic and amnesic properties with minimal effect on airway [3].

OBJECTIVE

The objective of this review is to assess the effectiveness of Dexmedetomidine to be used as a conscious sedation agent compared to standard practice of using Midazolam.

SEARCH STRATEGY

Databases (Cochrane Central Register of Controlled Trials, Embase, PubMed) were searched on 2 February 2023.

Types of studies included: Seven Randomised controlled trials (RCTs) of 711 participants comparing the use of Dexmedetomidine versus Midazolam in the procedural settings.

Primary Outcome: Results from four studies[4,5,6,7] shows there are statistical significant favouring Dexmedetomidine at both 5 minutes (Mean Difference (MD) 1.87;95% Confidence intervals (CI) 1.61, 2.14; P<0.00001) and post-procedure (MD 0.92;96%CI 0.71, 1.13; P<0.00001). Results are not clinically significant with both groups maintaining SpO2 >95%.

Figure 1: SpO2 at 5 minutes

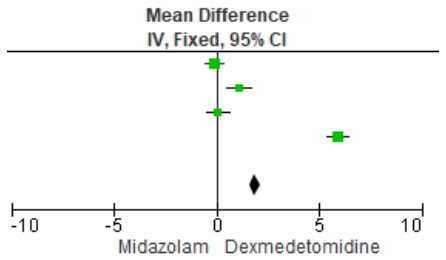
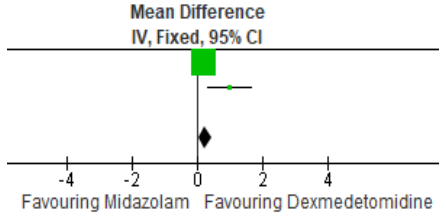


Figure 2: Level of sedation (Ramsay Sedation Score)



Secondary Outcomes

Other haemodynamic variables: Meta-analysis from four trials[4,5,6,7] shows statistical significance favoured Dexmedetomidine for Heart Rate at 5 minute (MD -4.01;95%CI -6.53, -1.49; P=0.002) and post-procedure (MD -3.58;95%CI -6.10, -1.06; P=0.005). No statistical difference at 5 minutes for systolic blood pressure, (MD -4.21;95%CI -9.23, 0.82; P=0.10) and mean arterial pressure, (MD 0.98;95%CI -1.39,3.34;P=0.10) in both groups, however there was statistical difference in systolic blood pressure favouring Dexmedetomidine post-procedure (MD -4.49;95%CI -8.28, -0.70; P=0.02). Results are not clinical significant for both Heart rate and Blood pressure, no incidence of bradycardia or hypotension. No included study reported Respiratory Rate except one study[4] which report no significant difference for both groups.

Level of sedation: Two trials[7,8] recorded Level of Sedation using Ramsay Sedation Score, significantly favoured Dexmedetomidine for optimal sedation (Odds Ratio (OR) 0.26;95%CI 0.07, 0.45; P=0.03).

Patient satisfaction: Results from three studies[7,8,9] demonstrated no statistical significance (OR 0.62;95%CI 0.31, 1.28; P=0.20) with both groups reported high patient satisfaction.

Need for airway support: Three trials[5,8,10] shows there was no statistical difference (OR 0.27;95%CI 0.13, 0.67; P=0.19). However, results showed patient are less likely to require airway support in Dexmedetomidine group

IMPLICATIONS FOR RESEARCH

Further RCTs of adequate size using standardised dosing or protocols for both drugs are needed to provide stronger, more definitive evidence on the effectiveness of the drugs for procedural sedation. There are also currently no RCTs available in the Interventional Radiology procedural settings. Nurse-administered procedural sedation needs to be fully explored so that it can be determined if it is safe and appropriate.

AUTHOR'S CONCLUSION

This review suggests that Dexmedetomidine is equally as safe to be used as an alternative sedation agent for conscious sedation in the procedural settings. Results shows Dexmedetomidine able to provide optimal sedation while maintained haemodynamic stability with no reports of oxygen desaturation, bradycardia and hypotension.

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A systematic review and meta-analysis: Can perineal massage in second stage of labour reduce the incidence of third- and fourth- degree perineal tears?

Jessica Morris[1] and Nicole Marsh[1] [1]Royal Brisbane and Women's Hospital

Purpose: Perineal tears during childbirth are a common occurrence with a small number of women experiencing severe tears that can have lifelong implications. The aim was to determine if perineal massage in labour can reduce the incidence of third- or fourth - degree perineal tears, episiotomy, length of second stage of labour, postnatal perineal pain and improve intact perineum rates.

Methods: Databases were searched on 30th June 2022 for publications in English (The Cochrane Library, Ovid MEDLINE, PubMed, Embase and CINAHL Complete).

Results: Five RCT's (n=1059) were included. There were no third- or fourth - degree perineal tears in the intervention group (n=135) and one out of 128 women in the control group; OR (95% CI) is 0.30 [0.01, 7.56 (p=0.47)]. There was a statistically significant reduction of episiotomy in the perineal massage group; OR (95% CI) is 0.41 [0.32, 0.53 (p=<0.00001)]. Pooled data showed no difference between groups for intact perineum; OR (95% CI) is 1.52 [0.89, 2.60 (p=0.12)]. The mean difference (95% CI) was significantly higher (p=<0.001) favouring perineal massage over standard care for reducing the length of second stage of labour and the intervention group reported less pain postpartum; OR (95% CI) is 0.83 [0.56, 1.21 (p=0.33)].

Conclusion: Perineal massage may reduce the incidence of episiotomy, postnatal perineal pain, and the length of second stage of labour. There is no evidence to suggest it improves the incidence of intact perineum's or reduces third- or fourth - degree perineal tears. Trials included in this review were small and of low to moderate quality. Further high-quality, adequately powered trials addressing perineal trauma during childbirth are needed.

Across the Healthcare Journey

HERSTON HEALTH PRECINCT SYMPOSIUM 2023

4–7 September 2023
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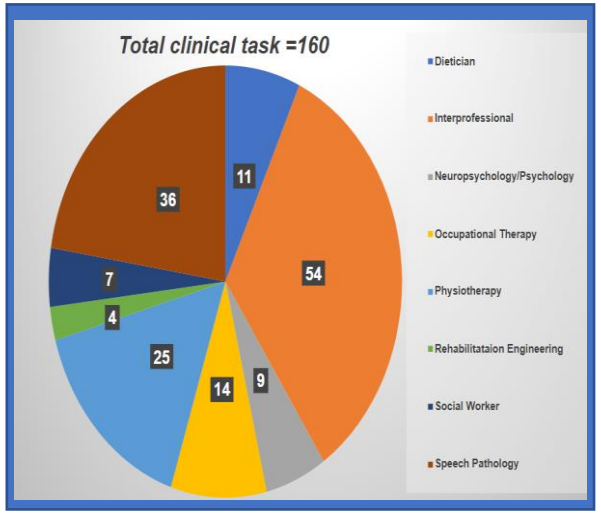
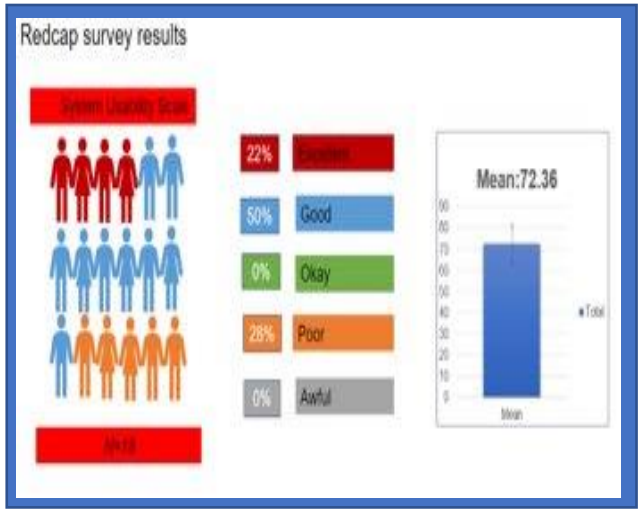
Interdisciplinary Stroke Telerehabilitation Decision Making Toolkit

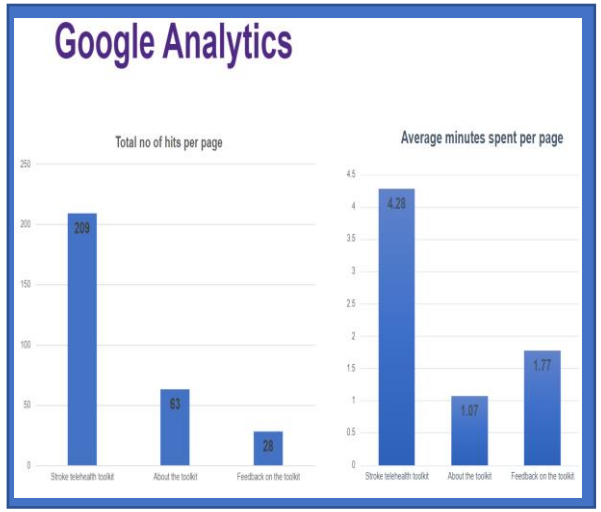
Aim
1.Develop an interdisciplinary stroke telerehabilitation decision toolkit
2.Test the implementation of the telerehabilitation toolkit

Method:
Phase I:Telerehabilitation decision making toolkit & training packages
Phase II: Pilot implementation at STARS and data collection
Phase III:Targeted dissemination strategy for toolkit available across QH

Results
Pre-pilot focus group







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'Goal setting is one of the main reasons why I love this place...' A patient

Authors.: Haylee Kajewski[1], Dr Emmah Doig[2], Karina OLeary[2], Andrea Rapolthy[1], Amanda Goodwin[1].

1. STARS Allied Health
2. STARS Education and Research Alliance

Purpose:

We wanted every patient in rehab to set person-centred goals with their rehab team.

QI Methods:

With statewide clinical recommendations as a starting point, we used a participatory-action approach to implement interprofessional, person-centred goal setting at STARS using knowledge to action framework.

Goal setting @ STARS

Select, Tailor, Implement Interventions
Finalised process, training workshops and implementation support (at MDT meetings)

Monitor Knowledge Use
Team feedback sessions, workshops, feedback register

Evaluate Outcomes
Repeated audits (pt interviews), case conference, number of goal board on display

Sustain Knowledge Use
Co-designing sustainability plan with teams

Identify Problem
Case conference and doc audit, pt / family surveys / interviews

Determine the Know/Do Gap
Compared to Statewide recommendations

Adapt Knowledge to Local Context
Working groups (audit, process review, training group) stakeholder engagement

Assess Barriers/ Facilitators to Knowledge Use
Content analysis of clinicians survey with Theoretical Domains Framework

Results and more...

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