Long-read sequencing of EV and CF DNA: A revolutionising tool for studying early detection, recurrence and chemoresistance in ovarian cancer

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INTRODUCTION

According to National Cancer Institute-USA, ovarian cancer (OC) are the abnormal growth of cells in the ovary. Most of the OC originates from the epithelial and germ cells [1]. A substantial proportion of ovarian cancer cases are diagnosed at an advanced stage, which presents considerable challenges for treatment. Thus, there is a need for an early detection of OC [2]. In recent years, there has been a growing interest in studying extracellular vesicles (EVs). Our study aims to use Oxford Nanopore sequencing technology (ONT), to identify the methylation patterns and mutation scores in OC patients. Using ONT we will study whether genomic alterations in ovarian cancer genome reflect the parental genome. In addition, we will analyse EV and cell-free DNA in women who responded well to chemotherapy and those who did not. Our research aims to identify diagnostic markers that can stratify women at risk of developing chemoresistance and enable personalised chemotherapy treatment strategies.

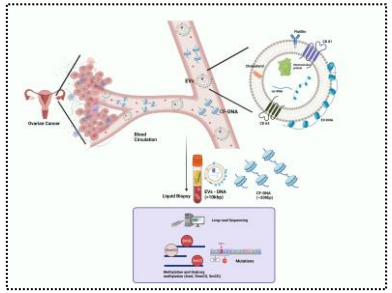


Figure 1. Graphical Abstract of the potential use of EVs and CF DNA as biomarkers. Nanopore long-read sequencing can identify distinct EV DNA signatures in the blood of ovarian cancer patients, allowing for effective stratification by recurrence risk and response to chemotherapy. We anticipate that developing a diagnostic assay targeting these signatures will accurately predict ovarian cancer and its chemoresistance. *The above figure is created using BioRender software.*

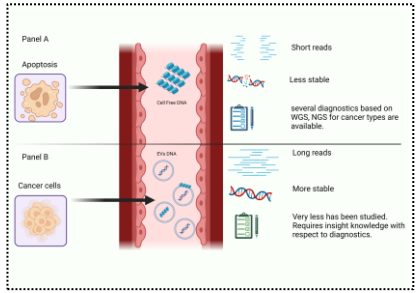


Figure 2. Panel A and Panel B distinguish how the EV DNA and CF DNA are being released in the blood circulation. Also, the CF DNA is fragmented whereas the EV DNA is long and intact making them more superior to be used as biomarkers in liquid biopsies[3]. *The above figure is created using BioRender software.*

METHODS

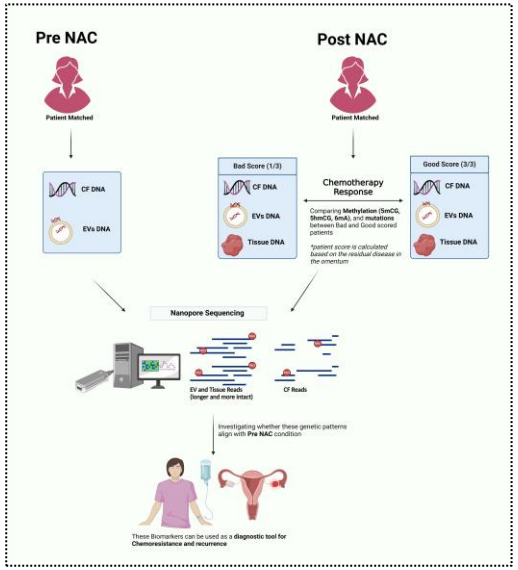
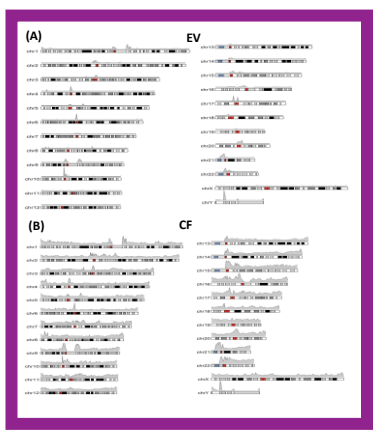
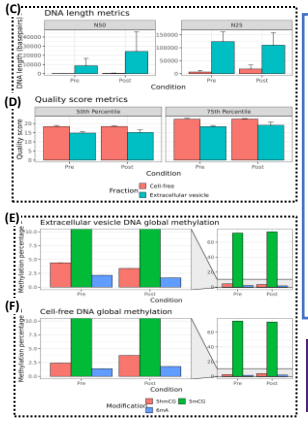


Figure 3. Plasma was obtained from women with ovarian cancer (n = 8) before chemotherapy (pre) and after chemotherapy (post). The extracellular and cell-free components from plasma were isolated using size-exclusion chromatography and characterised using Nanoparticle Tracking Analysis and Bicinchoninic acid assay. The DNA was extracted, and quantified and sizing of DNA fragments was performed using Qubit dsDNA and DNA ScreenTape assays. Long-read Oxford Nanopore sequencing was used to characterize and compare extracellular vesicle DNA with cell-free DNA comprehensively. Sequencing was performed over 96 hours, and the resulting raw data basecalled using Dorado software. *The above figure is created using BioRender software.*

RESULTS





Extracellular vesicles have longer DNA compared to cell-free DNA components in human ovarian cancer plasma (C). In addition, both cell-free DNA and extracellular vesicle DNA show consistent quality scores pre- and post-chemotherapy **(D)**. Increased yield from cell-free DNA enhances coverage of the human genome compared to extracellular vesicle DNA **(A, B)**. Analysis of global methylation patterns reveals elevated levels of 5mCG and decreased levels of 5hmCG and 6mA methylation, regardless of DNA component **(E, F)**.

CONCLUSION

In summary, our research highlights key differences between extracellular vesicle DNA and cell-free DNA in ovarian cancer plasma. While both exhibit consistent quality scores, extracellular vesicle DNA is longer than cell-free DNA, making it particularly advantageous for genomic analysis techniques reliant on long reads. Conversely, cell-free DNA boasts a higher sequencing data yield, thereby enhancing genome coverage. Moreover, global methylation remains unaltered regardless of DNA component. These findings underscore the potential of utilizing extracellular vesicle or cell-free DNA for comprehensive genomic and epigenomic analysis in ovarian cancer, offering valuable insights into disease progression and treatment response.

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Acknowledgements

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HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Risk factors for central line-associated bloodstream infections in home parenteral nutrition patients: an observational cohort study

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1 INTRODUCTION

A central line-associated bloodstream infection (CLABSI) is a common and potentially life-threatening complication of home parenteral nutrition (HPN), yet there is a paucity of literature on this subject in non-European populations[1]

The effects of tropical climates and potentially higher support requirements on incidence and outcomes of CLABSI in HPN have also not yet been studied

Aim was to retrospectively identify risk factors of CLABSI in a large Australian state with a highly dispersed population

To the best of our knowledge, **this is the first study to assess the effects of climate or rurality on the incidence and outcomes of CLABSI**

2 METHOD

Single-site retrospective observational cohort study conducted at Royal Brisbane and Women's Hospital (RBWH)

The Specialist Nutrition Support Team (SNST) at RBWH is the sole provider of HPN for patients with intestinal failure (IF) who are located North of the Brisbane River, with **a catchment population of 3 million persons over 1.3 million square kilometres**

> Inclusions: consecutive adult patients with IF who received HPN from our service between 1 Jan 2016 and 28 Feb 2023

> Exclusion criteria: received HPN via arteriovenous fistula, were solely prescribed IV fluids, aged <17 yrs

Kaplan-Meier analysis was employed to determine associations between characteristics and time to CLABSI in the first CVC, using Peto-Peto Prentice

3 RESULTS

Total of 34 patients

> 19 patients had ≥1 CLABSI episode (total of 39 episodes)

>> mean age at first CVC insertion 46.2yrs (SD=17.6)

>> used regular opioids more than those w/o CLABSI (p=0.016)

14 patients (41%) developed CLABSI in their first CVC

No patient or line characteristics were found to be predictive of CLABSI in their first CVC.

>> Notably, **tropical climate (p=0.94) and rurality (p=0.21) were not found to be risk factors of developing CLABSI**

Overall infection rate was 1.02 per 1000 catheter days

Species	Sub-classification	Total (%) N =55
Gram-positive (39%)	Methicillin-Sensitive Staphylococcus aureus	7 (13)
	Coagulase-negative Staphylococcus (S. epidermidis, capitis, caprae, warneri)	10 (18)
	Enterococcus sp.	2 (4)
	Other (S. infantarius, Corynebacterium)	2 (4)
Gram-negative (39%)	Enterobacterales (Citrobacter, Enterobacter, Klebsiella, Serratia, Proteus)	12 (22)
	Pseudomonas	3 (5)
	Non-fermenters (Acinetobacter, Stenotrophomonas, Achromobacter)	4 (7)
	Other (Roseomonas, Rhizobium, Bacteroides fragilis)	3 (5)
Fungi (22%)	Candida albicans	4 (7)
	Other (Candida glabrata, parapsilosis, tropicalis)	8 (15)

Table 1: Distribution of the causative pathogens

Most CLABSIs were caused by *Enterobacterales* (22%) and *Candida* sp. (22%), followed by coagulase-negative *Staphylococcus* (18%) (see Table 1)

Empiric antimicrobial therapy was found to be adequate in only 25%

Median time to effective antibiotic therapy was 22.7 hours (IQR 4.8-29.8)

3 CVC salvages (8%), all of which were successful

4 CONCLUSION

Only risk factor for CLABSI in our Australian cohort was regular opioid use, which is consistent with international studies[2]

Based on our findings, our proposed empiric antimicrobial regime for all PN-associated CLABSI at our centre would be:

1) Vancomycin – for Gram-positives, including adequate coagulase-negative *Staphylococcus*

2) Cefepime – for Gram-positive and negative organisms, including *Pseudomonas* and ESCPM organisms

3) Caspofungin – for *Candida species* cover

If this regime was provided to all CLABSI cases, it would be expected to be effective for 84.6%

Antimicrobial regimens should be based on local antimicrobial distribution and resistance patterns

5 REFERENCES

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Evaluating the impact of pharmaceutical care bundles on patient outcomes in 10 Queensland Public Hospitals

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Background

Clinical pharmacists perform patient-centred activities to optimise medicines use and prevent harm. Historically, clinical pharmacy quality indicators have measured individual activity process and are not linked to outcomes.

Aim

To determine the proportion of patients for which individual and bundled pharmaceutical care activities were performed and to investigate associations between patient outcomes and delivery of pharmaceutical care bundles.

Methods

Key clinical pharmacy activities were defined within relevant state-wide clinical information systems (Table 1). Routinely recorded data was extracted at participating sites for adult patients who had a non-same day separation. Associations between extent of pharmaceutical care bundle delivery and outcomes (Table 2) were investigated.

Table 1 – Pharmaceutical Care Bundle components and definitions

Medication-related activity	Data source	Definition
Medication history	ePADT (coded data)	Presence of procedure code "96027-00" within any episode of care which makes up the hospital stay
Medication review	ePADT (coded data)	Presence of procedure code "95550-00" within any episode of care which makes up the hospital stay
Medicine list provided	Enterprise Liaison Medication System (eLMS)	Medication list authorised by a pharmacist within 24 hours of discharge date
Medicines present on discharge summary	Enterprise Discharge Summary (EDS)	Any medicines information on a completed transfer of care (discharge) summary

Table 2 – Outcome measure definitions

Outcome	Data source	Definition
Length of stay	ePADT	Number of days between admission date and discharge date
Unplanned readmission within 30 days	ePADT	A subsequent hospital stay commenced at the same facility within 30 days of the discharge date and the admit status was recorded as 'emergency'
Average hospital standardised mortality ratio (HSMR)	Safety & Quality reporting	Ratio between expected deaths and actual deaths multiplied by 100

Results

Ten hospitals participated, comprising of **283,813 hospital stays**.

Table 3 outlines the extent of individual clinical pharmacy service delivery, as well as all activities delivered as a 'pharmaceutical care bundle' (PCB).

Table 4 outlines that older patients were more likely to receive a complete PCB, as were those who had a longer length of stay. Patients from hospitals with a paper-based prescribing system were also more likely to receive the complete PCB.

No statistically significant association between PCB and bed:FTE ratio (R=0.183,p=0.64) or HSMR (R=0.03,p=0.93) was observed, however a strong and statistically significant association between PCB delivery and unplanned readmission within 30 days was observed (R=-0.993, p<0.001). (See figure 1).

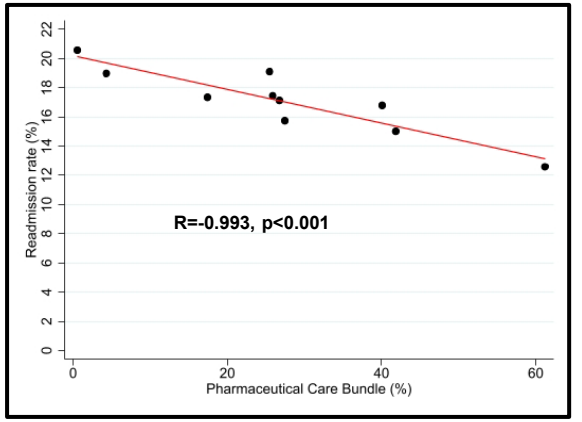
Table 3 - Extent of individual and bundled clinical pharmacy service delivery

	Number of Hospital Stays	Medication History	Medication Review	Discharge Medication List	Medications on Discharge Summary	Pharmaceutical Care Bundle (PCB)
Hospital A	19,002	45.31% (n=8,609)	43.81% (n=8,324)	41.38% (n=7,863)	47.95% (n=9,112)	25.88% (n=4,918)
Hospital B	28,861	25.49% (n=7,357)	16.14% (n=4,657)	33.09% (n=9,550)	41.88% (n=12,088)	4.32% (n=1,246)
Hospital C	27,669	65.37% (n=18,088)	66.10% (n=18,290)	30.20% (n=8,357)	37.10% (n=10,266)	25.47% (n=7,047)
Hospital D	28,635	75.14% (n=21,517)	77.16% (n=22,096)	75.03% (n=21,484)	73.38% (n=21,013)	61.18% (n=17,518)
Hospital E	38,202	71.15% (n=27,180)	70.56% (n=26,957)	45.34% (n=17,321)	56.42% (n=21,552)	40.08% (n=14,312)
Hospital F	21,099	65.89% (n=13,903)	66.73% (n=14,080)	55.96% (n=11,806)	64.37% (n=13,582)	41.83% (n=8,826)
Hospital G	12,939	53.79% (n=6,960)	45.44% (n=5,880)	42.38% (n=5,484)	43.43% (n=5,619)	27.47% (n=3,554)
Hospital H	44,519	55.63% (n=24,765)	57.84% (n=25,749)	36.53% (n=16,265)	45.98% (n=20,468)	26.74% (n=11,906)
Hospital I	33,643	41.77% (n=14,052)	47.17% (n=15,871)	23.06% (n=7,757)	44.48% (n=14,966)	17.42% (n=5,861)
Hospital J	29,244	17.45% (n=5,102)	9.9% (n=2,895)	17.10% (n=5,001)	38.04% (n=11,125)	0.55% (n=162)
All Hospitals	**283,813**	**51.98% (n=147,533)**	**51.02% (n=144,799)**	**39.07% (n=110,888)**	**49.25% (n=139,791)**	**26.90% (n=76,350)**

Table 4 – Characteristics associated with PCB delivery

		No PCB (n, %) N=207,463	PCB (n, %) N=76,350	p-value
Age group	18-24 yrs	18,008 (8.7%)	2,346 (3.1%)	<0.001
	25-54 yrs	92,627 (44.6%)	19,132 (25.1%)	
	55-64 yrs	27,320 (13.2%)	12,472 (16.3%)	
	65-84 yrs	55,575 (26.8%)	32,590 (42.7%)	
	>=85 yrs	13,933 (6.7%)	9,810 (12.8%)	
Prescribing system	Electronic	109,761 (52.9%)	31,936 (41.8%)	<0.001
	Paper	97,702 (47.1%)	44,414 (58.2%)	
Length of Stay (LOS)	LOS 1	94,521 (45.6%)	10,070 (13.2%)	<0.001
	LOS 2	35,972 (17.3%)	12,412 (16.3%)	
	LOS 3	20,864 (10.1%)	10,546 (13.8%)	
	LOS 4-6	26,772 (12.9%)	18,661 (24.4%)	
	LOS 7+	29,334 (14.1%)	24,661 (32.3%)	

Figure 1 – Association between PCB and unplanned readmission within 30 days



Conclusion

Hospital sites where a larger proportion of patients receive a pharmaceutical care bundle consisting of a medication history, medication review, provision of a medication list and medicines information on the discharge summary have lower unplanned readmission within 30 days.

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INDWELLING URINARY CATHETER USE AND ADHERENCE TO CLINICAL PRACTICE GUIDELINES: A POINT PREVALENCE STUDY IN ADULT INPATIENTS

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Background

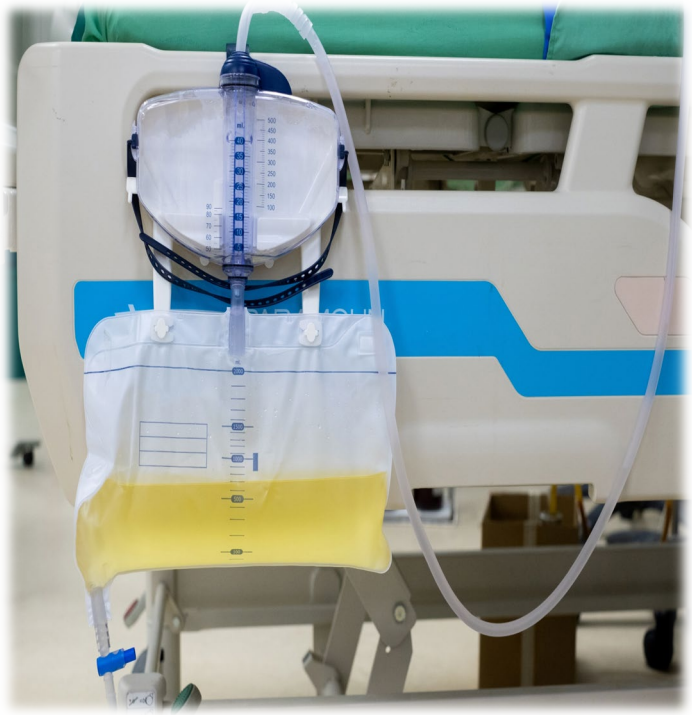
Approximately 25% of hospitalised adults required an indwelling urinary catheter (IDC) during their stay. IDCs expose patients to risks of infectious and non-infectious complications.

Aims

To identify IDC prevalence, assess adherence to clinical practice guidelines and patient reported involvement in IDC care for adult hospitalised inpatients.

Methods

This point prevalence study was conducted in 22-wards in a single quaternary hospital. Data was collected by clinical and research nurses working in pairs on a single day. Study outcomes were reported descriptively as frequencies and percentages.



Results

Of 502 patients included, 77 (15.3% had an IDC (median dwell time 99.6 hours). The median age of patients with an IDC was 64 years (interquartile range 22-88 years), 54 (70%) were male, and one quarter (n=19; 25%) of IDCs were inserted at another hospital. More than half (n=44; 57%) of the 77 IDCs had no documented removal plan. Three patients were unavailable for review for observed clinical practices, and it was found 43% (n=32/74) lacked a securement device. Of 77 people with IDCs, there were 44 patient responses, and 27 (61.4%) patients did not know the reason for their catheter.

Conclusion

Areas for improvement included securement device use, timely removal plans, and patient education for the reason for the device. Regular point prevalence studies to assess use and adherence to clinical practice guidelines can improve safety outcomes for patients requiring IDCs.

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Usability and Acceptability of a Co-Designed Novel Antimicrobial Dosing Software Interface

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Aim:

The aim of this study is to investigate perceived usability and acceptance of a co-designed dosing software interface procured for development in Metro North Health.

Methods:

This was a mixed methods study. Clinical specialist intensive care pharmacists were recruited (n=6) and presented with a case study to explore the dosing software.

- **Pre-designed run sheet guided data collection**
- **'Think Aloud Method' to explore usability**
- **Peer super-user to provide support**
- **Semi-structure interviews**
- **System Usability Scale (SUS)**
- **Technology Acceptance Model (TAM2)**

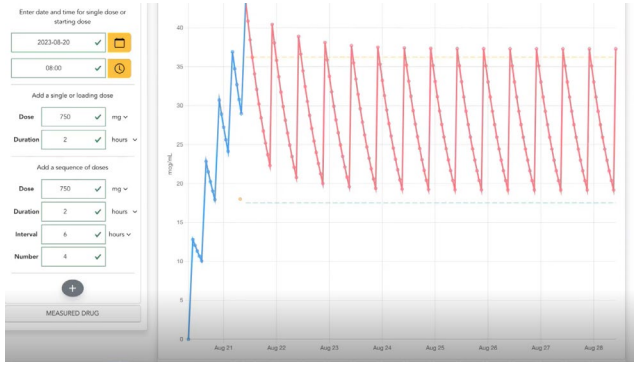
Results:

Participants who used dosing software often/frequently reported that the program was intuitive to navigate, with reported acceptance and low TAM2 scores.

Anomalous high SUS scores were associated with a potential for error and reported perceptions of mental fatigue that can come with dosing antimicrobials.

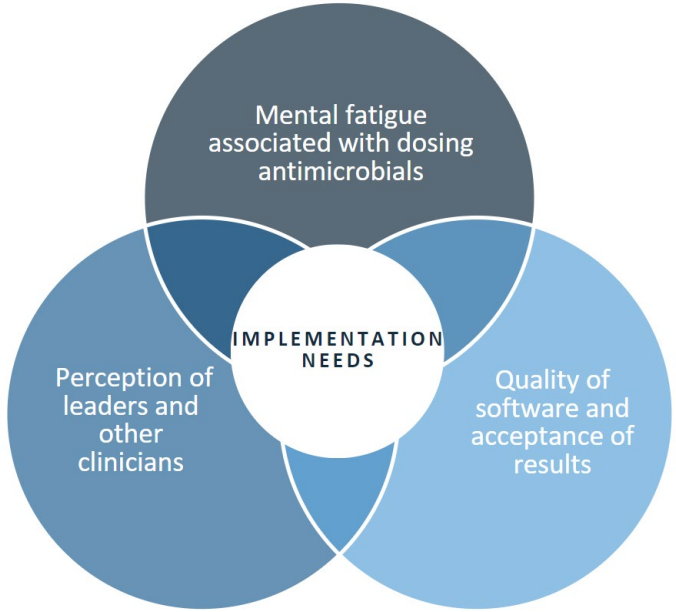
A participant that had never used dosing software before reported a lack of knowledge as a barrier to acceptance, supported by a diverging TAM2 score.

Participants that reported the software easy to use had low SUS scores.



Example of the dosing software interface during case study

Conclusions:



- The software was usable and acceptable.
- Further research is required to understand implementation needs for clinical pharmacists with consideration of prior exposure to dosing software programs.

Binational survey of vascular access device insertion and management workforce

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Introduction

First-time insertion success for vascular access devices (VADs) can be low and all-cause failure rates are high, exposing patients to unnecessary iatrogenic risk.

VAD-related bloodstream infections are not uncommon and are costly to patients and hospitals. Vascular access teams (VATs) comprise specialist inserters with advanced knowledge and skills, and may decrease infectious complications and improve patient experience.

We aim to describe workforce models and practices around VAD selection and insertion across Australia and New Zealand (ANZ).

Methods

Prospective, cross-sectional, internet-based survey.

Eligible participants: ANZ healthcare professionals, ≥18 years, with VAD experience. Descriptive statistics summarise results.

Results

232 healthcare professionals responded: 180 (78%) from Australia, and 52 (22%) from NZ. A third (33%) reported the presence of a VAT in their workplace (Figure 1), and the health professional make-up of their VATs is reported in Figure 2.

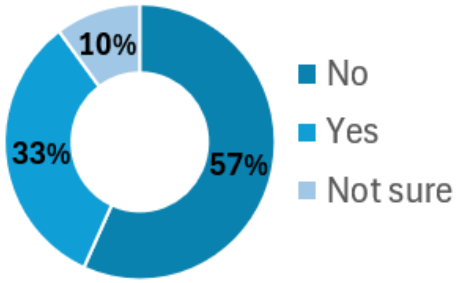


Figure 1. Presence of VATs across ANZ

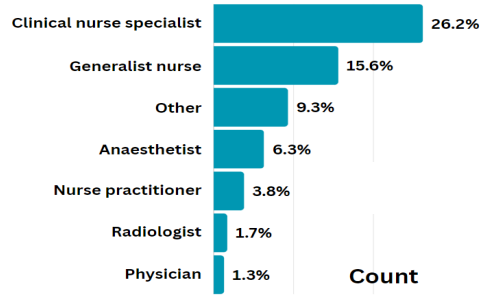
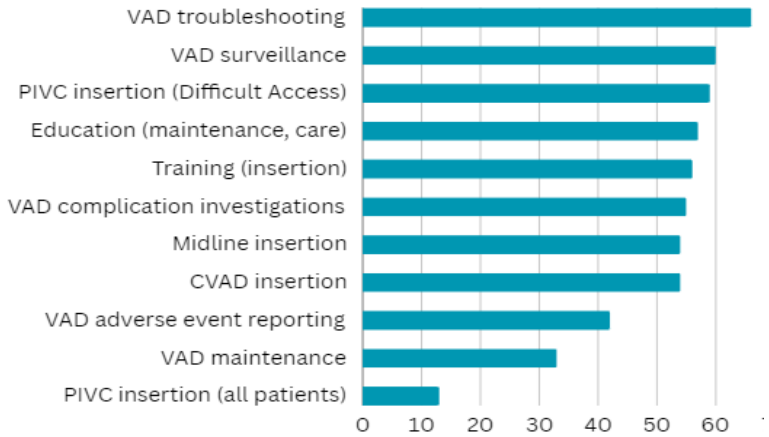


Figure 2. VAT members by profession

Figure 3. VAT scope



VAT scope (Figure 3) was similar across ANZ: in NZ, scope was mainly VAD insertion (25%), education and training (21%), and VAD surveillance/adverse event reporting (19%); and in Australia, 34%, 20%, and 20%, respectively.

Medical officers were identified as chiefly responsible for VAD selection (42%). Only half of respondents identified an escalation pathway for VAD placement (56%), with the most common escalation path being to a more experienced nurse inserter.

CONCLUSIONS

This study has identified that only 1 in 3 hospitals across ANZ has a VAT, most are made up by Registered Nurses, and largely focus on VAD insertion.

To reduce patient harm associated with VAD complications and failure, VATs should be prioritised to drive best practice standards of care in VAD selection, insertion and management in our region.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Community Opioid Dispensing after rib fracture Injuries: CODI Study

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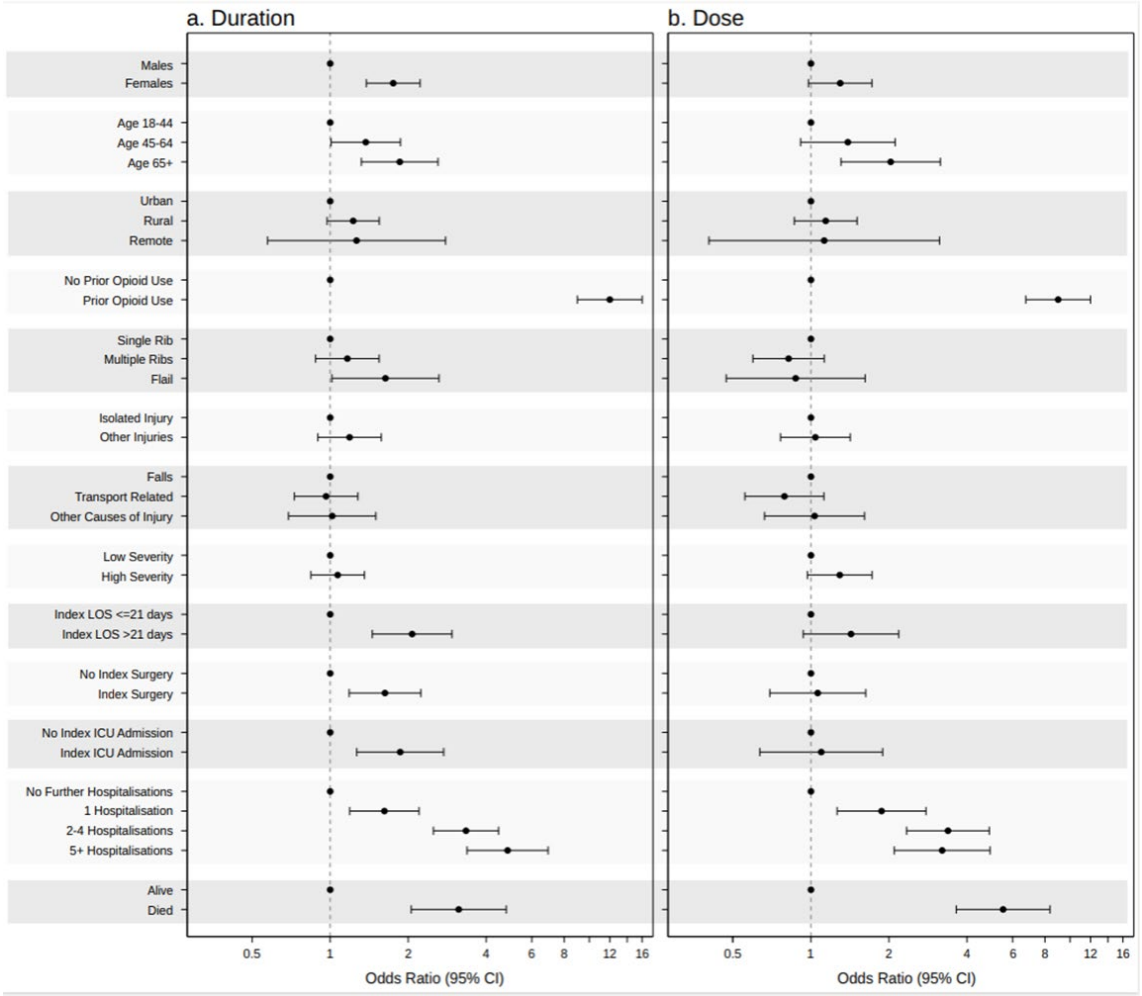
Background

Factors influencing which patients need opioid analgesia after hospital discharge with rib fractures are poorly understood.
Long term opioid use is harmful and so measures to reduce use are important.

Methods

Retrospective cohort study of all Queensland hospitalised rib fracture patients between 2014-2015 (n=4306).
Data extracted for 90 days prior and 720 days post admission.
Factors associated with long-duration and increase end-dose examined using multivariate logistic regression, odds ratios and 95%CI.



Conclusions

Opioid prescribing is prolonged in older, and female patients after hospitalisation for rib fractures.
Previous opioid use (without dependence) and repeated hospitalisations were also associated with longer and higher end-use dose.

Future

A collaborative approach to individualise opioid prescribing after rib fractures is needed to reduce long-term use in high-risk patients.

Factors associated with (a) long-duration opioid dispensing (>90 days cumulatively from the day of hospital discharge up to 720 days after), and (b) an increased OME end-dose, for the rib fracture cohort, using multivariable logistic regression showing Odds Ratios and 95% Confidence intervals.

Serological Surveillance of Neglected Tropical Diseases, Vaccine Preventable Disease, and Arboviruses in Samoa

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BACKGROUND

- Integrated serological surveillance of several diseases is a cost-effective means to monitor population level disease seroprevalence[1].
- Multiplex bead assays (MBA) can simultaneously detect antibodies to multiple pathogens using dried blood spots.
- Results can indicate a population's immune status from infection and/or vaccination.

AIM: TO ASSESS THE SEROPREVALENCE OF NEGLECTED TROPICAL DISEASES (NTDs), VACCINE-PREVENTABLE DISEASES (VPDs), AND ARBOVIRUSES

METHODS

DATA SOURCE
- Surveillance and Monitoring to Eliminate LF and Scabies from Samoa in 2018[2].
- Community serosurvey of participants ≥5 years old.

ANTIBODY POSITIVITY
- Determined using IgG antibody responses to antigens using MBA.
- Responses quantified as median fluorescence intensity and seropositivity determined by antigen-specific cut-off values.

STATISTICAL ANAYSIS
- Crude and adjusted seroprevalence.
- Correlation between seropositivity for VPDs.
- Risk factors/association with prevalence.

Fig. 1: Blood collection by Samoa Red Cross (LEFT) and dried blood spots for MBA (RIGHT) in Samoa, 2018.

RESULTS

- Dried blood samples from 3,851 participants (1,911 5-9-years-old and 1,940 ≥10-years-old) [2].
- Seroprevalence for: 1) NTDs were 57.8% for any LF-antibody, 38.0% trachoma (*Pgp3+Ct694*), 3.0% yaws; 2) VPDs were 91.0% for tetanus, 83.5% diphtheria, 79.0% rubella, 43.6% measles, and 3) arboviruses were 90.3% for dengue, 85.7% Zika, 57.0% Chikungunya. Significant differences were seen in seroprevalence between those 5-9 v ≥10-years-old (Fig 2).

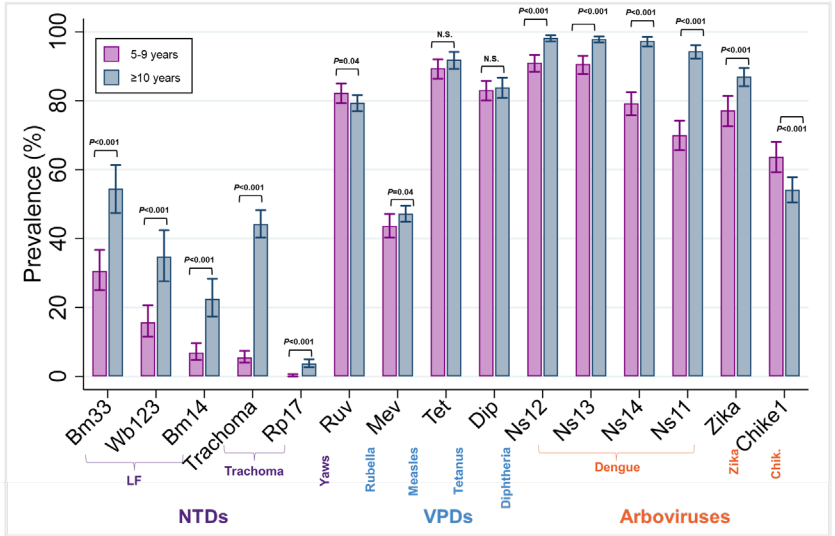

Fig. 2: Seroprevalence by ages 5-9 and ≥10-years-old, adjusted for sampling design and sex.

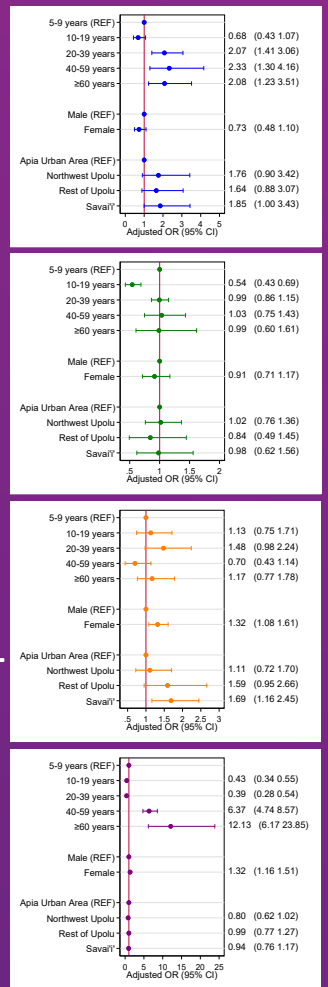

Fig. 3: Adjusted odds ratios for seropositivity to VPDs among participants ≥5 years of age in Samoa, 2018.

Risk factors for seroprevalence

Older participants had significantly higher adjusted odds-ratios (aOR) for seropositivity to tetanus and measles.

Females had significantly higher aORs for seropositivity to diphtheria and measles.

Participants in Savai'i' had significantly higher aORs for seropositivity to diphtheria and tetanus (Figure 3).

CONCLUSIONS

- MBA enable concurrent analysis of the seroprevalence and geographic distribution of multiple infectious diseases.
- Results can help develop evidence-based national or localised control interventions, elimination strategies, and targeted vaccination campaigns.
- Indications of waning immunity to epidemic-prone diseases, such as measles, could serve as an early warning system for national vaccination campaigns.

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HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Sequential Rescue Therapy with JAK-inhibitors in Corticosteroid and Infliximab-Refractory Acute Severe Ulcerative Colitis

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INTRODUCTION

- **Acute Severe Ulcerative Colitis (ASUC)** is a life-threatening medical emergency affecting 1 in 5 patients with Ulcerative Colitis (UC).[1]
- 1 in 3 patients with **ASUC** are refractory to 1st line intravenous corticosteroids (IV-CS) and require 2nd line **rescue medical therapy with infliximab (anti-TNF).**[2,3]
- If infliximab fails, then a **life saving colectomy operation is required** to remove the colon and create a stoma.
- **Janus kinase inhibitors (JAKi)**, upadacitinib (JAK-1) and tofacitinib (JAK-1, JAK-3), have proven efficacy for moderate-to-severe UC but not ASUC.[4,5]
- The safety and effectiveness of sequential (3rd line) JAKi following failure of IV-CS and infliximab within the same hospital admission is yet to be defined.
- We describe the **novel use of JAK-inhibitors** as **sequential rescue therapy following failure of dose-intensified infliximab in IVCS-refractory ASUC**.

METHODS

- Retrospective **case series** of adult (>16 years old) patients that received **sequential rescue therapy** with a **JAKi** (upadacitinib 30mg daily or tofacitinib 10mg BD) following **failure of IV-CS and dose-intensified infliximab** at a tertiary IBD center between October 2023 and April 2024.
- Data captured during admission and 90-days post discharge.
- Primary outcomes included **90-day colectomy-free survival** and **inpatient clinical response**.
- Secondary outcomes included: **90-day clinical** (PRO-2 score <1) and **biochemical** (faecal calprotectin [FCP] <150ug/g and C-reactive protein [CRP] <5mg/L) **corticosteroid-free clinical remission** and **adverse events**.
- Clinical response to JAKi assessed at 72 hours according to Oxford Criteria (<4 non-bloody stools per day and CRP <15mg/L).[6]

RESULTS

- 6 carefully selected patients received sequential 3rd line JAK-inhibitor rescue therapy (upadacitinib n=5, tofacitinib n=1) a median of 2 days (IQR 2 – 2.75) after failure of 2nd line infliximab.
- Admission clinical and biochemical indices confirm severe inflammation was present in all 6 cases, Table 1
- **90-day colectomy-free survival was 67%** (2 inpatient colectomies for refractory disease)
  - **1 adverse event** = post-operative sepsis requiring laparoscopic washout and IV antibiotics (Case #6).
- **67% (4/6) patients** met criteria for **clinical response** at 72 hours, Figure 1.
- Among JAKi-responders (n = 4), **100% and 75% achieved clinical and biochemical corticosteroid-free remission at 90-days,** Figure 1
- All patients successfully transitioned to maintenance JAKi dosing and did not require escalation of therapy.
- 2 patients underwent repeat endoscopy after >90 days of JAKi treatment and both achieved **complete bowel healing,** Figure 2
- No further adverse events including infection, venous thromboembolism, or cardiovascular events were identified over a median follow-up of 173 days (IQR 143 - 207).

Case	Age yrs	Disease duration months	Disease extent	Prior ASUC	Prior biologic treatment	Medications on admission	Risk of Rescue Score (RoR)[b] %	FCP µg/mL	CRP mg/L	Albumin g/L	Systemic toxicity[c]	MES (<48 hours of admission)	Colectomy at discharge
1	37	1	E3	No	No	-	75	6500	45	23	HR/Temp	3	Yes
2[a]	27	26	E2	Yes	No	Pred, 5ASA	70	3400	14	37	HR/Temp	3	No
3	16	1	E3	No	No	-	84	NP	105	41	HR/Temp	3	No
4	40	3	E2	No	No	-	59	590	145	24	HR/Temp	3	No
5	44	96	E2	Yes	IFX	Pred, 5ASA	83	4950	103	26	HR/Temp	3	No
6	21	1	E2	No	No	-	59	910	96	40	HR/Temp	3	Yes

Table 1: Clinical, biochemical, and endoscopic characteristics on admission with ASUC. [a]Received Tofacitinib; all other cases received Upadacitinib. [b]Risk of Rescue Score (ROR), Croft et al. 2024. [c]Defined as tachycardia (>90 beats per minute) or fever (>37.8°C) as per Truelove and Witts Severity Index for UC. [d]Mayo Endoscopic Score (MES).

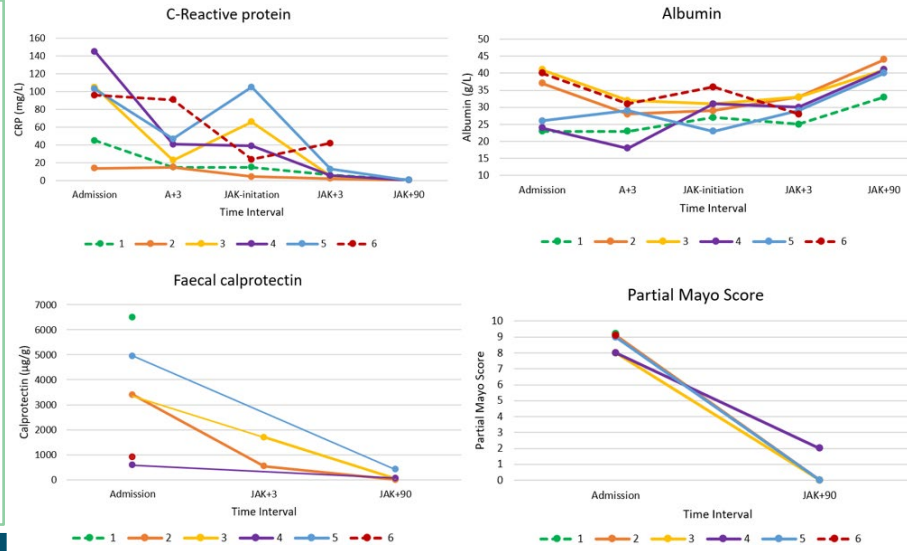

Figure 1: Clinical and Biochemical Parameters at Admission, Day 3 of Admission, commencement of JAK-inhibitor, Day 3 post JAK-inhibitor, Day 90 post-discharge. Patient #1 and #6 (dotted lines) = proceeded to colectomy. Patient #2 = received Tofacitinib.

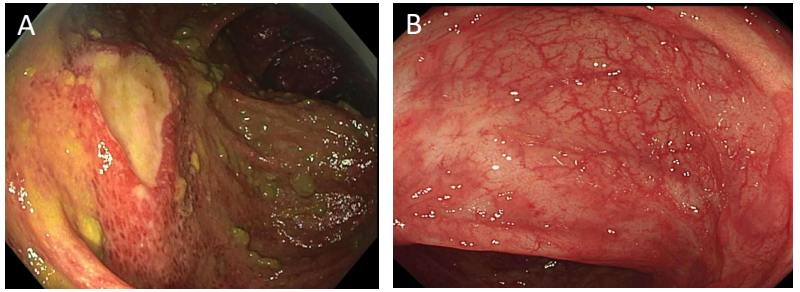

Figure 2: Representative endoscopic images of sigmoid colon taken on **A)** Admission (Median MES 3, UCEIS 6) and **B)** Follow-up endoscopy (Median MES 0, UCEIS 0).

CONCLUSION

There is a promising role for JAK-inhibitors as 3rd line therapy following failure of corticosteroids and infliximab in select patients with ASUC.

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Integrated serosurveillance of infectious diseases using multiplex bead assays: A systematic review

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Introduction:

- In low-resource settings, disease surveillance involves significant time and cost, and often are conducted in siloes. Multiplex bead assays (MBA) can detect antibodies to both symptomatic and asymptomatic cases of current and past infection to multiple pathogens using a single specimen (i.e. integrated serosurveillance).
- This review aimed to describe: i) pathogens studied using MBA; ii) distribution and varying applications of MBA for serosurveillance, and iii) operational implementation.

Method:

- In December 2023, we systematically searched four databases for studies utilising MBA for integrated surveillance of arboviruses, neglected tropical (NTDs), blood-borne, and vaccine preventable diseases (VPDs).

ODeSI Operational Research and Decision Support for Infectious Diseases

SCAN ME

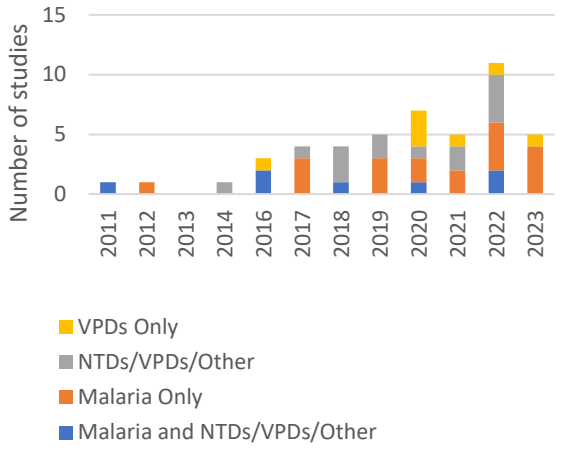

Figure 1: Number of studies published each year by category

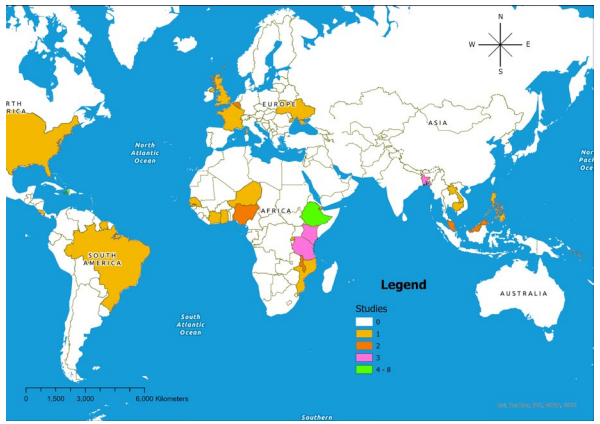

Figure 2: Map of countries of studies conducted

Results:

- The database searches identified 4,765 records and 47 studies fulfilled inclusion criteria. The earliest study was published in 2011, and five studies were published in 2023 (Figure 1). Most studies were from (Figure 2) Haiti (n=8), followed by Ethiopia (n=6), Bangladesh (n=3), Kenya (n=3), and Tanzania (n=3).
- Most of the studies (n=19) focused on malaria alone, followed by NTDs and VPDs (or other) (n=14) or malaria and NTDs or VPDs (or other) (n=7). Seven studies focused on VPDs alone.

Conclusion:

- This review has shown that MBA usage for integrated surveillance of pathogens is gaining traction.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Haemostatic discs demonstrate broad-spectrum inhibitory effects against microbes commonly associated with vascular access device-related infections.

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PURPOSE and DESIGN

To evaluate the *in vitro* **physical efficacy** of a **haemostatic disc** (comprised of a non-eluting polymer with potassium ferrate) against known opportunistic pathogens of **vascular access device-related infections**, including Gram-positive and Gram-negative bacteria, and the yeast *Candida albicans*.

Haemostatic disc efficacy was evaluated alongside the chemical control, chlorhexidine gluconate discs.

BACKGROUND

Vascular access devices are frequently linked to **healthcare-associated infections**, including post-insertion bleeding and infection-related sequelae [1, 2].

Skin and dressing integrity is compromised at the access site due to creation of a new portal of entry and haemo-serous fluid loss leading to risks for local and systemic infection, including central line-associated bloodstream infections [3, 4].

Endogenous infections originate from **migration of patient commensal skin microbiota** along the access device or represent exogenous pathogens from the healthcare environment [5] (Figure 1).

The risk management of each vascular access device requires ongoing assessment of bleeding and potential infection risks for the duration of device time *in situ* [6].

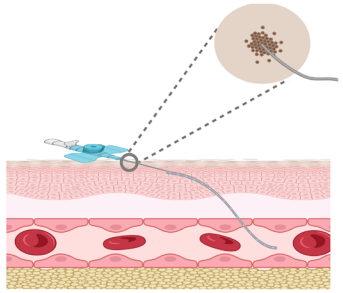

Figure 1. Endogenous microbiota at vascular the access site. The endogenous microbiota from the skin recolonizes around the vascular access site within a short timespan creating a potential reservoir for pathogens associated with extraluminal vascular access infection.

METHODS

The inhibitory effect of the haemostatic disc and the chlorhexidine gluconate impregnated disc was confirmed using ***in vitro* disc diffusion tests**. Disc diffusion tests were selected to represent a surrogate marker of antimicrobial toxicity, demonstrating a zone of clearance at the site of disc contact with a lawn inoculum of each microbial strain tested.

Disc diffusion tests were conducted using individual fresh overnight cultures of *Pseudomonas aeruginosa* (ATCC 47085), *Klebsiella pneumoniae* (ATCC 13883), *Staphylococcus aureus* (ATCC TCH1516) and *Candida albicans* (ATCC 1023), with a standardised 0.5 McFarland inoculum density (Figure 2).

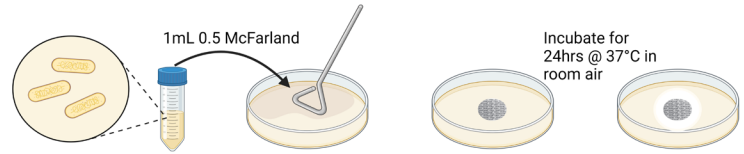

Figure 2. Preparation of disc diffusion tests.

Disc diffusion tests were performed for dry discs and in the presence of high and low levels of anticoagulated blood, to evaluate the **impact of organic material** on the potential antimicrobial effect.

The annular radius was used to determine the zone of inhibition for each test (Figure 3).

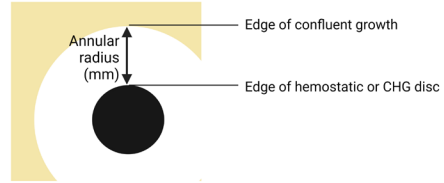

Figure 3. Measuring the zone of inhibition. Zones of inhibition were determined by measuring the annular radius in mm from the edge of the disc to the edge of the zone of clearance.

RESULTS

Zones of inhibition ranged from 0 mm - 5 mm at 24-hours post-inoculation. The **haemostatic disc components did not diffuse** through the bacteriological agar, therefore no zones of inhibition were visible and annular radii were recorded as 0 mm (Figure 4A-C). The area under the disc was absent of bacterial growth for *Staphylococcus aureus* and *Pseudomonas aeruginosa,* confirming a broad-spectrum inhibitory effect (Figure 4A outset).

The zones of inhibition were larger when the CHG disc was saturated with anticoagulated blood prior to incubation, due to solubilisation of the CHG in the foam disc (Figure 4H and I).The largest zones of inhibition were observed for CHG against *S. aureus* and *Candida albicans* (Figure 4F and I). The **CHG was ineffective against *P. aeruginosa*** when dry (Figure 4D outset).

CONCLUSIONS

An inhibitory effect on microbial growth was observed for the discs with both physical (haemostatic disc) and chemical (CHG) modes of action for microbial strains commonly associated with vascular access device-related infections.

Haemostatic discs (compressed hydrophilic polymer and potassium ferrate powder) **inhibit** the growth of Gram-positive and Gram-negative **bacteria**, and the **yeast** *Candida albicans*.

Haemostatic discs **inhibit physical growth** of Gram-positive and Gram-negative microbial strains **in the presence and absence of anticoagulated blood** and organic material.

Haemostatic discs **outperform CHG** discs **for Gram-negative bacteria** including *Pseudomonas aeruginosa*.

Compressed hydrophilic polymer and potassium ferrate powder discs show promise for inclusion in haemostatic bundles with antimicrobial benefits.

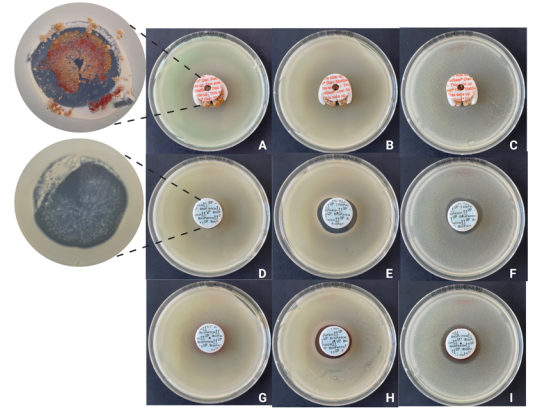

Figure 4. Zones of inhibition. Top row (4A-C:) Compressed hydrophilic polymer and potassium ferrate discs incubated with *Pseudomonas aeruginosa, Staphylococcus aureus,* or *Candida albicans* (all annular radii equal 0 mm). Haemostatic discs inhibited the growth of the organism directly beneath the disc (see outset 4A) confirming that the non-eluting product was inhibitory to bacterial growth, but not yeast (growth beneath the disc). *P. aeruginosa* growing closest to the disc did not produce characteristic pyocyanin (green pigment), further supporting an inhibitory effect. Middle row (4D-F): Dry CHG discs incubated with three organisms (PA, SA, CA; annular radii of 0 mm, 4 mm, and 3 mm respectively). Growth was noted under the disc for *P. aeruginosa* (see outset 4D). Bottom row: (4G-I): CHG disc pre-saturated with anticoagulated blood. Annular radii were increased compared to the dry disc (2 mm, 4 mm, and 5 mm respectively).

LIMITATIONS

The instability of potassium ferrate in aqueous solution and the non-eluting nature of the compressed powder potassium ferrate disc were limitations in testing the antimicrobial impact of the product using traditional microbiology tests including minimum inhibitory concentrations and disc diffusion tests.

DISCLOSURES

This project was funded by an Unrestricted Educational Grant awarded by Biolife, LLC.

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Risk perception, attitude, and prevention practices towards sexually transmissible infections among Australian travellers

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Introduction

- Travellers' sexual behaviours, influenced by opportunities during travel, contribute to higher risk of sexually transmissible infections (STIs) acquisition and transmission.
- Risk perception plays a vital role in shaping sexual behaviour.
- There is limited evidence on travellers' perceptions of risk and behaviour.

Aim: To assess risk perception, attitudes, and prevention practices towards STIs among Australian travellers.

Methods

- Analytical cross-sectional study focused on pre-travel sexual intentions or behaviours.
- Convenience sampling at Travel Medicine Alliance (TMA) clinics [Brisbane
- /Perth] and a sexual health clinic [Brisbane].
- Self-administered online survey including questions on demographics, travel itinerary, perception and preventive practices.

Results

- N=169; 52% females; mean age 42.8 ± 16 yr.
- Median travel duration 4 weeks; 49% of participants travelling to Asia.
- 25% of surveyed travellers intended to have sex with new partners [20% in TMA clinics; 50% in sexual health clinic] (**Figure 1**).
- 16% of surveyed travellers intend to have sex with sex workers (**Figure 2**).
- **Figure 3** displays the risk-taking behaviours of surveyed travellers.

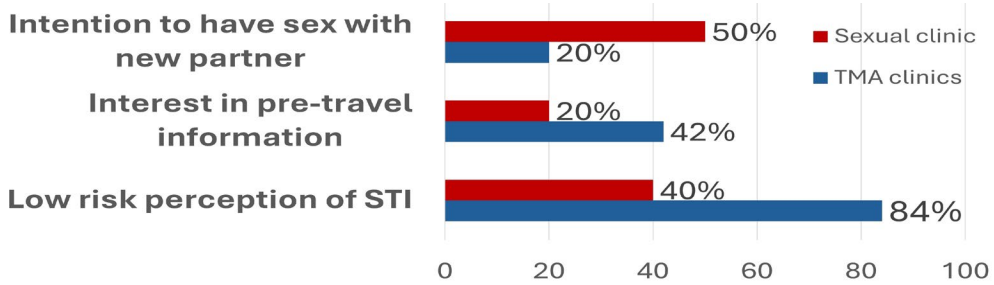

Figure 1. Intention to have sex with new partners while travelling overseas

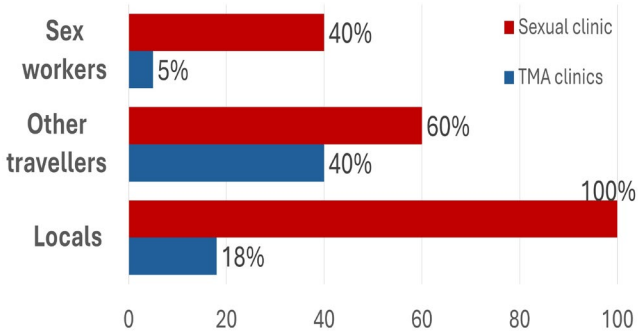

Figure 2. Expected new sexual partners while travelling

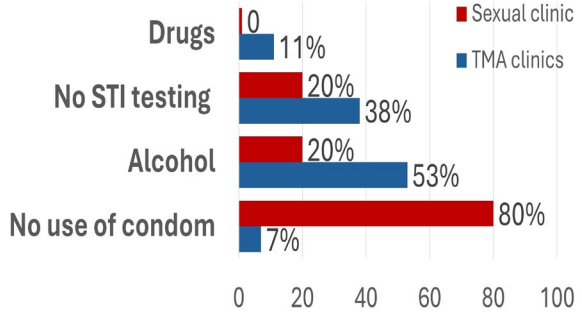

Figure 3. Risk-taking behaviour of surveyed travellers

Conclusions

- A quarter of surveyed travellers intended to have sex with new partners while overseas.
- Comprehensive sexual health education during pre-travel consultations is necessary to mitigate the risk of STI acquisition.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Lactobacillus rhamnosus dampens cytokine and chemokine secretion from primary human nasal epithelial cells infected with rhinovirus

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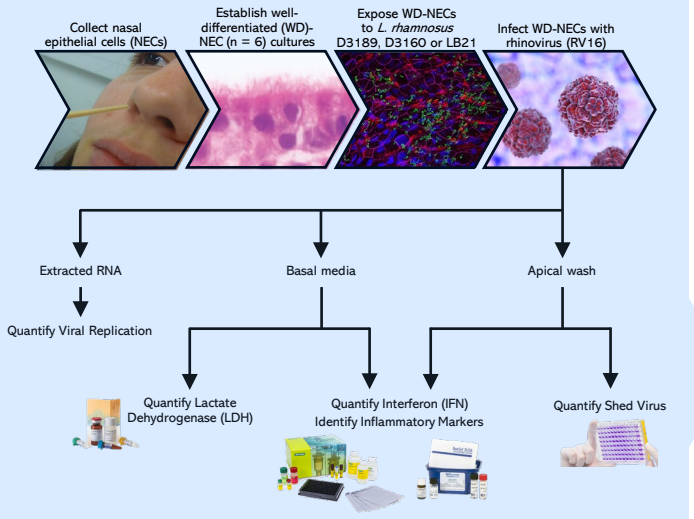
Introduction

Viral respiratory infections, particularly those caused by rhinoviruses, contribute to antibiotic misuse and the rise of resistant bacteria[1]. Although typically mild, these infections can lead to complications like otitis media, chronic rhinosinusitis and asthma exacerbations, resulting in significant socioeconomic costs[2]. Therefore, alternative treatments to reduce infection severity are essential.

The immune response, particularly the innate inflammatory response, plays a critical role in the pathogenesis of rhinovirus infections[3]. Recent studies suggest that probiotics, particularly *Lactobacillus rhamnosus*, can positively influence the immune response in the upper respiratory tract[4]. Evidence shows that nasal administration of *L. rhamnosus* can enhance resistance to viral infections and reduce inflammation[5].

This study explores whether *L. rhamnosus* can modulate cytokine and chemokine production by human nasal epithelial cells infected with rhinovirus. This is the first study to explore the potential of immunomodulatory probiotic lactobacilli against rhinovirus infection in primary human nasal epithelial cells, offering a promising avenue for new therapeutic approaches.

Methods



Results

L. rhamnosus colonises and adheres to nasal epithelium.

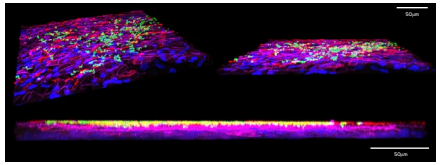


Figure 1: Apical colonisation of *L. rhamnosus* on WD-NEC from a healthy adult donor, 2-days post-exposure. 3D surface renderings of nasal epithelium exposed to CFSE-labelled D3189 (green). Nuclei were stained with Hoescht (blue). Immunostaining was used to detect ciliated cells, acetyl-α-tubulin (red) and tight junctions, ZO-1/TJP1 (magenta). Scale bars = 50 uM.

Pre-exposure with *L. rhamnosus* does not affect shed rhinovirus or viral replication.

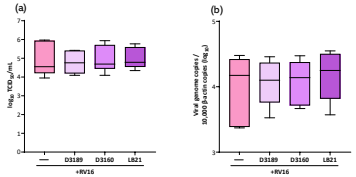


Figure 2: Assessment of viral growth kinetics. (a) Shed virus was quantified by TCID50. (b) Viral replication was quantified using qPCR. The minimum and maximum limits of the box represents the 25th and 75th percentiles, the bar represents the median and the whiskers represent the minimum and maximum values. Kruskal-Wallis H test was performed to make statistical comparisons. No statistical significance was observed.

Pre-exposure with *L. rhamnosus* does not modulate IFN-λ or LDH release in response to rhinovirus infection.

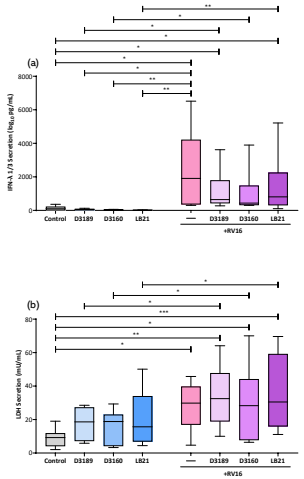


Figure 3: Assessment of interferon response. Secreted (a) IFN-λ and (b) LDH was quantified after exposure using the DuoSet ELISA kit and LDH-Glo Cytotoxicity Assay Kit, respectively. The minimum and maximum limits of the box represents the 25th and 75th percentiles, the bar represents the median and the whiskers represent the minimum and maximum values. Kruskal-Wallis H test was performed to make statistical comparisons. *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.005$

Pre-exposure with D3189 reduces rhinovirus-induced inflammatory cytokine and chemokine release.

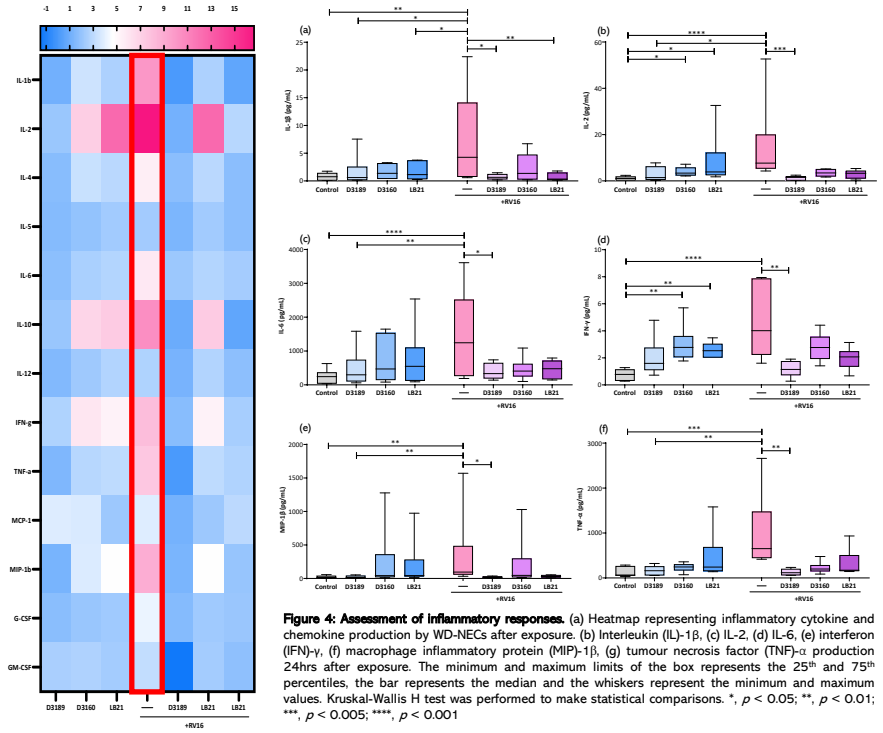


Figure 4: Assessment of inflammatory responses. (a) Heatmap representing inflammatory cytokine and chemokine production by WD-NECs after exposure. (b) Interleukin (IL)-1β, (c) IL-2, (d) IL-6, (e) interferon (IFN)-γ, (f) macrophage inflammatory protein (MIP)-1β, (g) tumour necrosis factor (TNF)-α production 24hrs after exposure. The minimum and maximum limits of the box represents the 25th and 75th percentiles, the bar represents the median and the whiskers represent the minimum and maximum values. Kruskal-Wallis H test was performed to make statistical comparisons. *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.005$; ****, $p < 0.001$

Conclusions

This study is the first to demonstrate that *L. rhamnosus* can dampen rhinovirus-induced inflammation in nasal epithelium. Although all tested strains reduced inflammatory cytokine and chemokine release without affecting viral replication or IFN-λ production, strain D3189 was the most effective. We observed strain-specific and donor-specific variability, suggesting that the anti-inflammatory effects of *L. rhamnosus* are influenced by both strain and individual immune profiles. These findings indicate that D3189 could be particularly beneficial for treating inflammation in conditions like otitis media and chronic rhinosinusitis, though further research is needed to confirm these effects.

References

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The impact of pre-injury anticoagulant or antiplatelet therapy in solid organ trauma: A scoping review

Gi Young Seo[1,2], Arpita Das[3,4], Silvia Manzanero[3,4], Keeyeon Kim[1], Carl Lisec[1,2,4,5], Michael Muller[1,2,4,5]

BACKGROUND

- The use of anticoagulant (AC) and antiplatelet (AP) therapy is increasing for the management of chronic health conditions.
- Modern advances have also led to increased complexity of such treatment.
- As such, trauma presentations will be increasingly complicated by prior AC/AP therapy.
- Injury of solid organs in abdominal trauma can have serious implications for haemorrhage.
- This review aims to compile the current evidence on the risk to patient outomes posed by pre-injury AC/AP agents in abdominal solid organ injury.

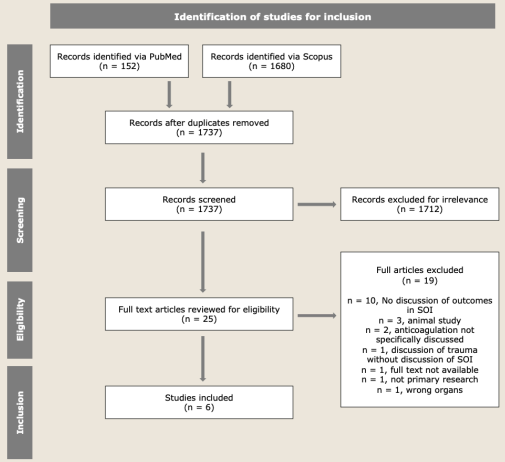
METHODS

- A scoping review was conducted according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).
- A systematic search strategy was employed across PubMed and Scopus, and results were assessed by two independent reviewers.
- Data on study characteristics, clinical outcomes, and details on management were extracted between AC/AP and no-AC/AP groups.

RESULTS

Search and included studies

A. PRISMA flow diagram representing search process



- A total of six studies encompassing 26,960 patients were included.
- Half of the studies utilised a propensity-matching method to control for confounders such as age.
- A mix of AC/AP agents were included, but no study identified inclusion of novel oral anticoagulants (NOACs).

Clinical outcomes

- Length of stay in the intensive care unit were notably longer in the group on AC/AP therapy.
- AC/AP patients are more likely to have increased mortality and hospital length of stay.

Management

- Prior AC/AP therapy leads to increased rates of failure of non-operative management (as defined by supportive therapy, medical management, and embolization).
- AC/AP patients were more likely to undergo non-operative management as the initial mode of management
- No conclusions could be drawn about the use of blood products and differences between groups.
- No studies commented on the use of reversal agents.

CONCLUSIONS

- Few studies have examined the effect of pre-injury anticoagulation on outcomes in trauma patients sustaining solid organ injuries.
- This study has highlighted important differences in outcome in AC/AP patients; these include generally worse clinical outcomes as well as an increased likelihood of failing non-operative therapy.
- There were substantial gaps in the literature regarding the use of NOACs in trauma, as well as the use of any specific reversal agents in the setting of solid organ injury. This is likely to be an important area of future study given the increasing popularity of such agents within the population.
- Age as a confounding factor was not controlled in half of the included studies; further studies that isolate a group of interest would strengthen support for the findings in the current study.

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What shape IS the forearm? Implications for surgical planning.

Presenters: Paige Treherne[1], Nicholas Green[2,3], Deniz Erbulut[2,3], Dr Kevin Tetsworth[2,3]. 1. UQ, 2. HBI, 3. RBWH

Purpose

Patients with ulna-sided wrist pain often present with variations in the radius bone that may be indicative of a pathological condition.

Aim

This study aims to identify the variations of healthy forearm bones and links between these variations and commonly used clinical metrics.

Methods

Thirty (15 male and 15 female) de-identified CT scans were sourced from the New Mexico Decedent Database to create a shape model of a healthy population. Statistical shape modelling quantifies how bones in the same population vary in shape through a principal components analysis. One model was created using the radius and ulna at their original size, and a secondary model with size removed, allowing for only shape variations to be captured. Correlations between these shape variations and clinical metrics were tested.

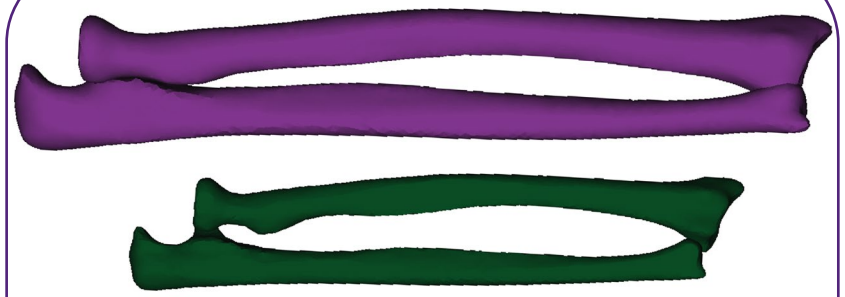
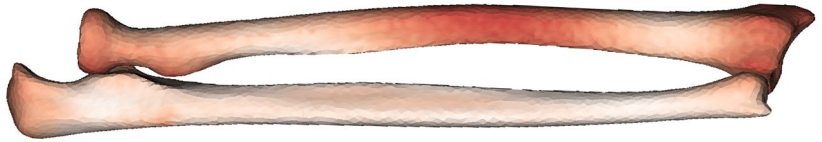


Fig 1. Size explains 84% of variation and is associated with volar tilt

Longer bone shape features



Shorter bone shape features

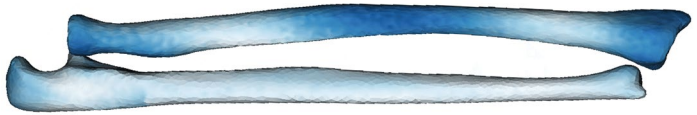


Fig 2. Rotation of proximal and distal radius is associated with bone length

Results

The largest variation in the radius-ulna forearm shape model was size, accounting for 84% of the variation. There were shape changes associated with the size of bones, with larger volar-tilt measurements linked to larger forearm bones. When size was removed, the largest variation (17%) described rotation of the proximal and distal ends of the radius bone, with direction significantly linked to bone length.

Conclusions

These results show significant variations in shape are present in healthy forearm bones. A healthy forearm shape model could be used to classify a bone as healthy or pathologically deformed, and used to compare a healthy and contralaterally deformed bone. Further, a shape model could be used to create a predictive surgical planning tool, using 'healthy' parts of a deformed bone (e.g. the proximal portion in a distally deformed bone) to predict what the distal portion would look like in a healthy population.

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QUT
Metro North Health
Queensland Government

The role of the pharmacist in monitoring insulin and glucose-lowering medications for participants in the Tertiary Obesity Multidisciplinary Service (TOMS)

Gemma Woodruff [1], Abby Yu [1,4], Helen Maclaughlin [2,3], Olivia Sanderson [3]

1. Royal Brisbane & Women's Hospital - Pharmacy Department. 2. Royal Brisbane & Women's Hospital - Dietetics and Food Services Department. 3. Queensland University of Technology 4. University of Queensland

Introduction

Tertiary Obesity Multidisciplinary Service (TOMS) is a 12-month outpatient service led by a multidisciplinary team, including a pharmacist. TOMS is for people with complex obesity where rapid and sustained weight loss may significantly improve health outcomes. Participants are placed on a very-low energy diet (VLED) which can impact some medications. Participants with diabetes require more frequent monitoring and dose adjustments. The pharmacist's role in a weight loss clinic is not well documented.

This study aimed to demonstrate the role of a pharmacist in monitoring and adjusting insulin and sulfonylureas for participants with diabetes undertaking a VLED, as part of TOMS.

Inclusions

All TOMS participants with diabetes were included in the study. Number of reviews, medication adjustments, glycated haemoglobin (HbA1c), weight and self-reported hypoglycaemia were collated from ieMR.
A total of 73 participants were relevant for the study.

Conclusion

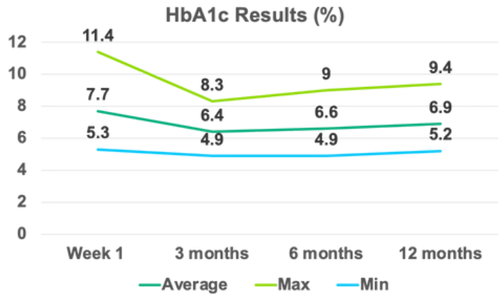
TOMS provided significant weight loss and improved HbA1c for participants with diabetes.

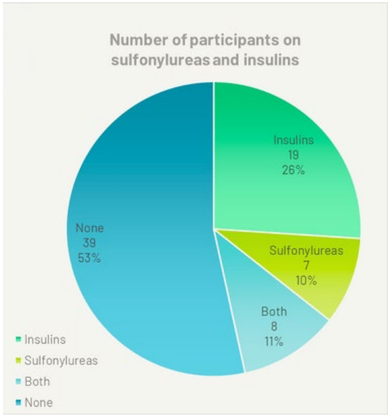
Participants using diabetes medications on VLEDs have an increased risk of hypoglycaemia and require frequent reviews to ensure appropriate medication adjustments.

Pharmacists may be well placed to assist in medication reviews for participants in weight loss programs.

Findings

A total of 73 participants were relevant for the study. 47% (n=34) were on either insulin or sulfonylurea. Mean HbA1c improved from 7.7% in week 1 to 6.9% at 12 months. Participants lost an average of 12.2% body weight from week 1 to 12 months.





12.2%
average body weight loss from initial to 12 months

The pharmacist completed an average of 6 reviews (205 total) per participant during the initial 12-week intensive phase. A total of 89 insulin adjustments were required, and 9 out of 14 sulphonylureas were ceased.

	Reviews	Average	Max	Min
Pharmacist Reviews	205	6	14	2
Endocrinologist Review	70	2	6	0

32%
of participants had at least one pharmacist-led diabetes medication adjustment during the initial phase

There were 26 self-reported hypoglycaemic events experienced by participants on sulfonylureas and/or insulins during the intensive phase. All of these events were managed by the participants without admission to hospital. Dosage adjustments were made by the endocrinologist or pharmacist to correct hypoglycaemia.

Neonatal capillary blood sampling procedure: a scoping review

Janene Douglas[1,2], Jacqueline Cunninghame[1,3], Deanne August[1,3] , Natasha Roberts,[3] Suzanne Parker[3]

1.Neonatal Unit, Royal Brisbane and Women's Hospital, **2.** Metro North pre-RHD Scholar, **3.**University of Queensland

Background: Neonatal capillary blood sampling (Image 1) is common and painful, contributing to the distress of neonates and parents/caregivers (Goto et al., 2020).

Evidence for procedural quality measures (e.g. lance direction, limb position, warming heels) remains unclear impacting quality blood collection, compounding negative neonatal outcomes (Evans et al., 2022).

Image 1: Capillary blood sampling procedure

Aim: identify procedural choices, quality sampling characteristics and evidence justification in peer reviewed literature.

Methods: Cochrane Library, PubMed and CINAHL were searched (2005-2024) in accordance with the published protocol (Open Science Network). Full text screening was completed in Covidence (Fig 1) by two independent authors (third for conflicts), followed by data extraction in Air Table.

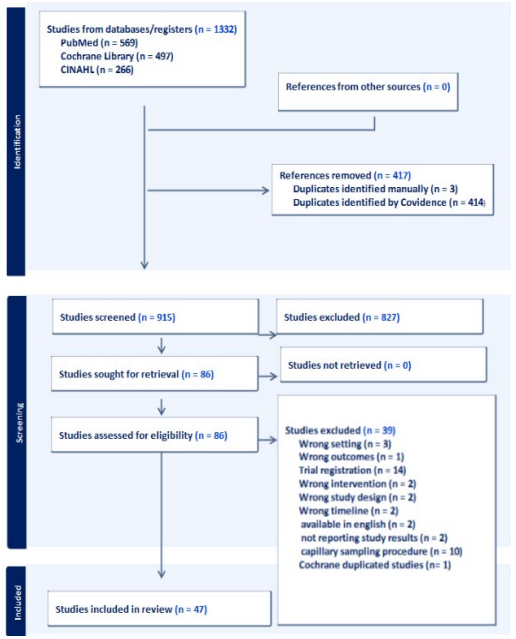


Figure 1: PRISMA

Results: From 1332 titles and abstracts screened, 47 were included. Publications originated from eight global regions (Fig 2) and were predominantly randomized control trials (n=29) or expert opinions (n= 6). Pain response (e.g., crying time) or pain assessment (n=26) were the focus of most publications, followed by procedural quality (n=16) (e.g. sampling attempts).

Quality measures reported (Fig 3) included positioning/holding (n=26), warming (n=22), decontamination (n=20), limb squeezing (n=9), or acupressure (n=3) with **little consistency across studies**.

Intervention of warming had multiple devices reported (Fig 4); water bottle (n=4), gel pack (n=3), warm bed linen (n=2), chemical pack (n=2), thermal bag (n=2), hands (n=1), water (n=1), applying more than one device (n=1) and device not reported (n=6).

Frequency of Studies per Global Region

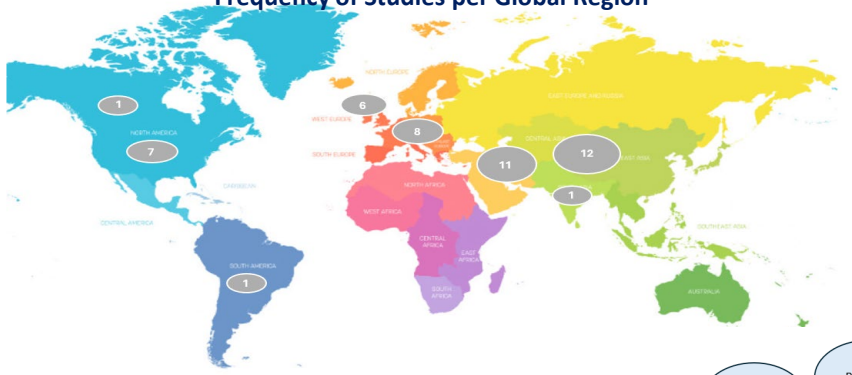


Figure 2: Global Region Map

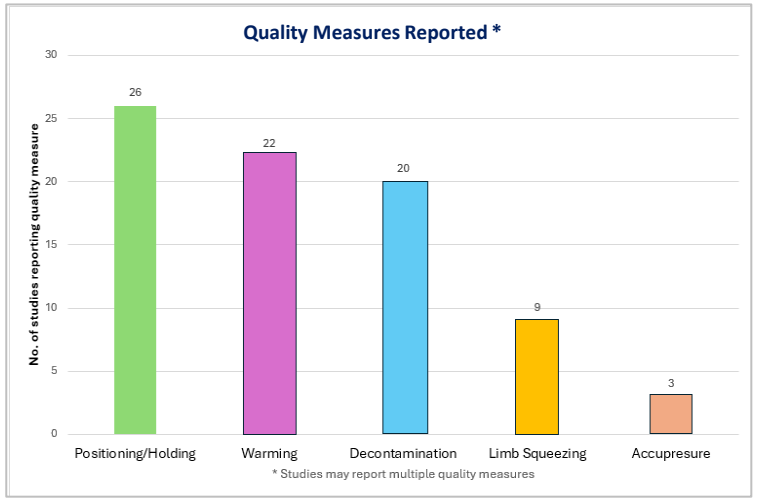


Figure 3: Quality Measures Reported

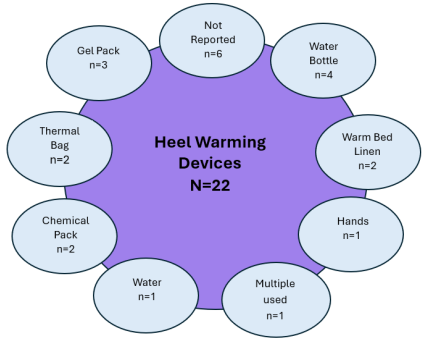


Figure 4: Warming Intervention

Conclusion: There is a paucity of quality neonatal capillary sampling evidence. Future research is needed, focused on quality measures, consistent procedural reporting and partnered with established pain strategies.

Acknowledgements: RBWH Neonatal team, and Natalie Barker for their contributions to this Scoping Review.

Dedicated Liver Nutrition Clinic improves malnutrition in patients with cirrhosis

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Introduction

Decompensated cirrhosis is the leading cause of liver-related death and rates are higher in patients with malnutrition and sarcopenia[1]. Targeted interventions to treat these complications can improve patient outcomes[2]. The Liver Nutrition Clinic (LiNC) was developed to address nutrition requirements of patients with cirrhosis complications attending hepatology services at RBWH. Patients are provided with a tailored nutrition plan and are seen on a 1-3 monthly basis for review as clinically indicated.

Aims

Assess the clinical outcomes of patients with decompensated cirrhosis, clinically significant weight loss, or being considered for liver transplantation. Primary aim - assess change in severity of malnutrition using Subjective Global Assessment (SGA) at 3- and 6-month. Secondary aims – dietary intake, Liver Frailty Index (LFI), liver severity scores (MELD, Child Pugh grade), clinical parameters and biochemistry.

Methods

All adult patients who attended a new patient appointment in LiNC between April 2021 and December 2023 were included in this prospective study. Clinical assessments were conducted at baseline, 3 months and 6 months.

Statistical analysis

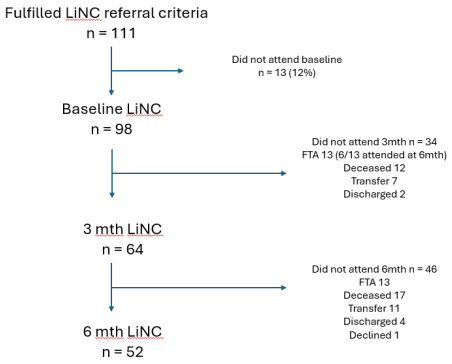
Clinical characteristic summaries at each time-point (baseline, 3 months and 6 months) were presented as number and percentage for categorical outcomes, and as the median and interquartile range (IQR) for continuous non-normally distributed outcomes or mean standard deviation (SD) for continuous normally distributed outcomes.

Whether there was a significant change in clinical outcomes from baseline to the 3- and 6-month time-points was assessed using generalized estimating equations (GEEs) to account for the correlation between repeated measures within subjects, with time-point included as a factor.

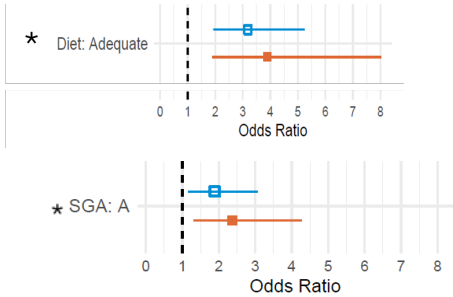
Results

Characteristic	Participant n = 98
Gender	
Male	67 (68%)
Female	31 (32%)
Age (yrs)	59.5 (50.3, 65.8)
Body mass index (kg/m^2)	25.5 (22.2, 28.5)
Aetiology of liver disease	
MASLD	27 (28%)
Alcohol	67 (68%)
Viral hepatitis	20 (20%)
Autoimmune hepatitis	3 (3%)
Other	9 (9%)
Indication for referral	
Ascites	61 (62%)
Wt loss	42 (42%)
Peripheral oedema	26 (26%)
Liver tplt assessment	20 (20%)
Hepatic encephalopathy	15 (14%)

Clinic attendance



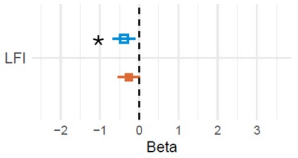
Nutrition



Compared with baseline, the odds of the same patient having an adequate diet compared to inadequate or negligible diet was
3.19 times higher (95% CI: 1.94 – 5.24, p<0.001) at 3 mths
3.89 times higher (95% CI: 1.89 – 8.01, p<0.001) at 6 mths

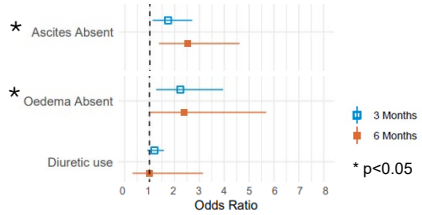
Compared with baseline, the odds of the same patient being classified as SGA level A (well nourished) compared to B (moderately malnourished) or C (severely malnourished) was:
1.89 times higher (95% CI: 1.17 – 3.07, p=0.010) at 3 mths
2.38 times higher (95% CI: 1.32 – 4.27, p=0.004) at 6 mths

Sarcopenia



There was a **reduction in the LFI by 0.39** (95% CI: 0.09 – 0.68, p=0.010) at 3 months compared to baseline
There was **insufficient evidence to support a reduction in LFI at 6months** compared to baseline (-0.27, 95% CI: -0.54 – 0.01, p=0.061)

Fluid status



Compared with baseline, the odds of the same patient not having ascites was
1.74 times higher (95% CI: 1.11 – 2.71, p=0.015) at 3 mths
2.51 times higher (95% CI: 1.37 – 4.61, p=0.003) at 6 mths

Compared with baseline, the odds of the same patient not having peripheral oedema was
2.0 times higher (OR 2.24, 95% CI 1.27 – 3.96, p=0.005) at 3 mths
2.0 times higher (OR 2.39 95% CI 1.01 – 5.69 p=0.048) at 6 mths

	3 mths Change from baseline 95% CI (p=)	6 mths Change from baseline 95% CI (p=)
Mean Alb (SD)	-0.40, 1.91 (p = 0.2)	0.59, 3.57 (p = 0.006)
Median Log Bili (IQR)	-.025, -0.03 (p = 0.01)	-0.35, -0.04 (p = 0.016)
Median Log INR (IQR)	-0.04, 0.05 (p = 0.81)	-0.07, 0.03 (p = 0.49)
MELD	-0.96, 0.94 (p = 0.98)	-2.41, -0.11 (p = 0.032)

	3 mths Odds of improvement OR (95% CI), p	6 mths Odds of improvement OR (95% CI), p
CP AB vs C	1.06 (0.54, 2.05) p = 0.87	1.64 (0.77, 3.49) p = 0.2

Conclusion

LiNC was well attended with a low lost to follow up rate. This real-world study demonstrated significant improvement in malnutrition, nutrition intake, fluid status and sarcopenia with a tailored nutrition service. A prospective study with a control group will be valuable to confirm these findings and assess for subgroups who may derive the greatest benefit.

1. Tanai et al, Journal of Hepatology, 2022, 76:588
2. Meena et al, Journal of Gastroenterology and Hepatology, 2023, 38:210

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Seroprevalence of Antibodies to Neglected Tropical Diseases in the Western Pacific Region: A Systematic Review

Harriet Lawford[1], Liuyi Chen[1], Kyle Willams[1] & Colleen Lau[1]

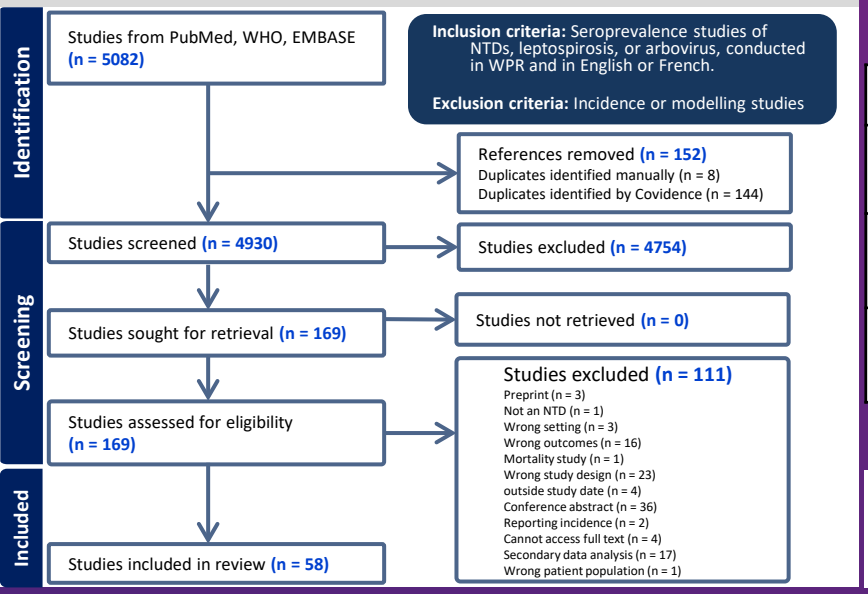
1. UQ Centre for Clinical Research, The University of Queensland, Brisbane, QLD 4006, Australia

BACKGROUND

- The World Health Organization (WHO) global targets aim for ≥100 countries to eliminate ≥ neglected tropical disease (NTD) by 2030[1].
- NTD burden varies widely in the Western Pacific Region (WPR) and data scarcity challenges accurate estimates of their prevalence[2].
- Serosurveys measuring prevalence of antibody biomarkers can provide population-level pathogen exposure and immunity estimates that can inform disease control and prevention programs[3].
- PROSPERO Registration: CRD42023469104.

AIM: To estimate the geographic distribution and seroprevalence of NTDs, leptospirosis, and arboviruses in the WPR.

METHODS



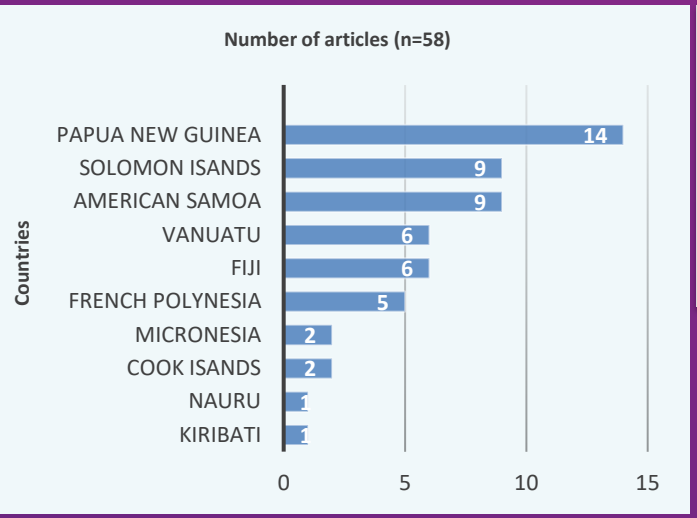


Fig 1. Distribution of articles included in the systematic review across different countries.

RESULTS

- Most studies were from Papua New Guinea (n=14), followed by American Samoa and Solomon Islands (n=9). Only 1 study was from Kiribati, Nauru and Samoa, respectively.
- 25% of studies focused on lymphatic filariasis (LF) and 23% on dengue.
- The total sample size of all studies was 109,364. Age range of participants was from 1-90 years and the majority (78%) were male.
- The mean seroprevalence was 43.9% for LF and 78.0 % for dengue.

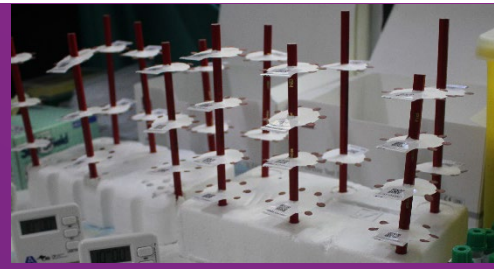


Image. 1: Blood collection by Samoa Red Cross (LEFT) and dried blood spots for MBA (RIGHT) in Samoa, 2018.

Disease	Sampling location	Seroprevalence (%)	
		Mean	Range
Lymphatic filariasis	Community (n=6)	51.42	22.50 - 89.00
	School (n=4)	37.00	1.00 - 55.00
	Clinic (n=1)	43.40	43.40
Dengue	Community (n=7)	55.68	3.10 - 95.60
	School (n=1)	96.00	96.00
	Clinic (n=5)	82.23	48.90 – 83.40
Yaws	Community (n=7)	6.54	0 – 29.60
	Rural (n=1)	20.90	20.90
	Clinic (n=0)	NA	NA

Table 1. Summary of seroprevalence of NTDs reported in the systematic review across different sampling locations.

CONCLUSION

- Preliminary findings indicate substantial endemicity and varied transmission dynamics of NTDs, leptospirosis, and arboviruses in the WPR.
- An unequal spread in the country and disease of focus, suggests further research is needed for an accurate estimate of NTD burden and distribution in WPR.
- The observed heterogeneity in seroprevalence emphasizes the need for tailored, contextually specific epidemiological assessments and intervention strategies.

REFERENCE: 1. World Health Organization. Ending the neglect to attain the Sustainable Development Goals: a road map for neglected tropical diseases 2021–2030. 2020. 2. Kline K, McCarthy JS, Pearson M, Loukas A, Hotez PJ. Neglected tropical diseases of Oceania: review of their prevalence, distribution, and opportunities for control. PLoS Negl Trop Dis. 2013;7(1):e1755.3. Arnold BF, Scobie HM, Priest JW, Lammie PJ. Integrated Serologic Surveillance of Population Immunity and Disease Transmission. Emerg Infect Dis. 2018;24(7):1188-94.

PERSISTENT PAIN MANAGEMENT CLOSER, CHEAPER & SOONER:
A partnership between the Tess Cramond Pain and Research Centre (TCPRC) and Brisbane North Primary Health Network (PHN)

Caroline Zanussi[1], Rebecca Flynn[1], Ian Purcell[2], Joyce McSwan[4], Jane Harpham[1], Suet Yam[1], Alana Paviour[3], Andrew Claus[1], Kiarah Cuthbert[2], Paul Gray[1]
1. Tess Cramond Pain and Research Centre, 2. Brisbane North Primary Health Network, 3. Healthcare Excellence and Innovation, 4. PainWISE

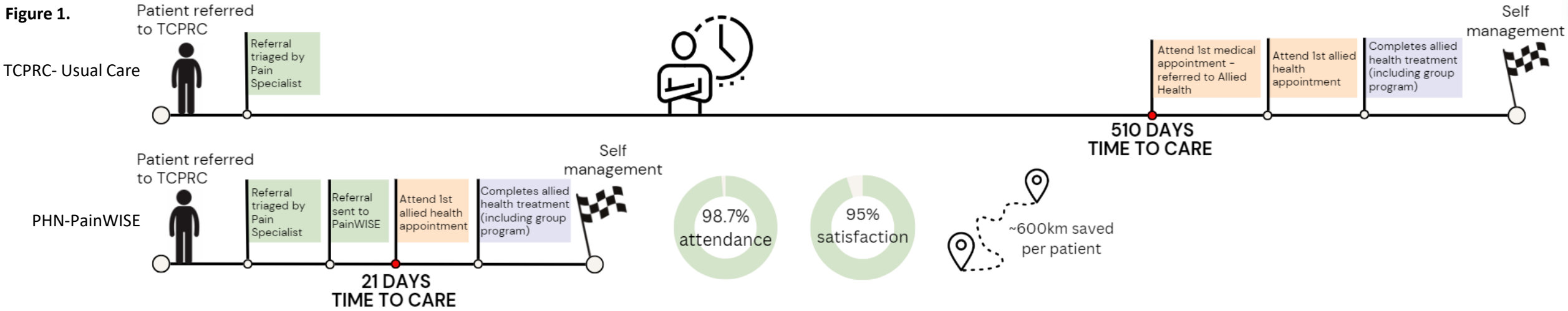
Introduction: Persistent pain affects 20% of Australians, with limited access to pain management services. Accessing these services is challenging due to a gap between primary care and tertiary-based pain management services.

Method: A novel service collaboration was implemented to bridge the gap between primary and tertiary pain management services. The RBWH TCPRC worked in collaboration with Brisbane North PHN to deliver community-based persistent pain management care for lower acuity patients. A community-based persistent pain management service (PainWISE) was commissioned to deliver the Turning Pain into Gain program. This six-month program:

- Emphasises self-management, education, personalised case navigation, goal setting, and optimised utilisation of allied healthcare services;
- Incorporates physiotherapy, exercise physiology, psychology, occupational therapy, dietetics, pharmacy, social work, and counselling; and
- Involves regular case conferencing with the multidisciplinary team and pain specialist at TCPRC.

Service evaluation compared distance, cost to patient, wait time, attendance rates and patient experience between the tertiary service at RBWH and the Brisbane North PHN-PainWISE service.

Figure 1.



Results: Compared to TCPRC usual care, the Brisbane North PHN-PainWise service achieved:

- A reduction in distance travelled by an average of 600km and eliminated parking cost;
- A reduction in wait time to care from 510 days to 21 days; and
- An improved attendance rate from 93.3% to 98.7%, with 95% patient satisfaction,

as shown in Figure 1.

Conclusions: This project successfully identifies an alternative care pathway for low acuity category 3 patients with persistent pain, to deliver care closer, cheaper, and sooner than by attending usual care at the RBWH-TCPRC. Alternative care pathways have positive impacts on patient satisfaction and can decrease demand placed on hospitals. Please contact us if you would like to discuss how this project was developed, and how our learnings could be applied in your service.

Caroline.Zanussi@health.qld.gov.au

RESISTANCE OPTIMISED ANTIBIOTIC DOSING (THE ROAD STUDY): IS BETA-LACTAM DOSING OPTIMISED TO PREVENT THE EMERGENCE OF ANTIBIOTIC RESISTANCE SAFE AND FEASIBLE IN THE ICU? A PILOT STUDY

Roberts JA[1,2], **Heffernan AJ**[1], Lipman J[1,2], Chai MG[1], Abdul-Aziz H[1], Legg A[2], Schuler K[2], Laupland K[2], Dhanani J[2], Harris P[2], Fourie C[2], Ungerer J[3], McWhinney B[3], Wallis SC[1], Cotta MO[1]

[1] University of Queensland Centre for Clinical Research, The University of Queensland; [2] Royal Brisbane and Women's Hospital; [3] Pathology Queensland

BACKGROUND: Dynamic *in vitro* studies have shown that achieving a minimum β-lactam antibiotic concentration fourfold the minimum inhibitory concentration (Cmin/MIC ≥ 4) can reduce antibiotic resistance emergence. Clinically, to achieve these PK/PD targets, higher than licensed doses are required.

This study assessed the safety and feasibility of β-lactam antibiotic dosing regimens that were optimised to prevent the emergence of antibiotic resistance among critically ill patients.

METHODS: Prospective, open-labelled study conducted in an Australian tertiary ICU.

- ✓ Adults receiving either piperacillin (PIP)/tazobactam or meropenem (MER) not requiring extracorporeal organ support were eligible.
- ✓ Therapeutic drug monitoring (TDM) was conducted during the first 24 h after enrolment and daily following any dose changes.
- ✓ Doses were adjusted using Bayesian dosing software to achieve unbound β-lactam Cmin/MIC ≥ 4. Where no MIC was measured, EUCAST clinical breakpoints for *P. aeruginosa* was applid (64 mg/L for PIP and 8 mg/L for MER).

Primary endpoint: any potential β-lactam exposure-related adverse events (neurotoxicity, nephrotoxicity and hepatotoxicity). Feasibility was described as the proportion of patients achieving target β-lactam exposures.

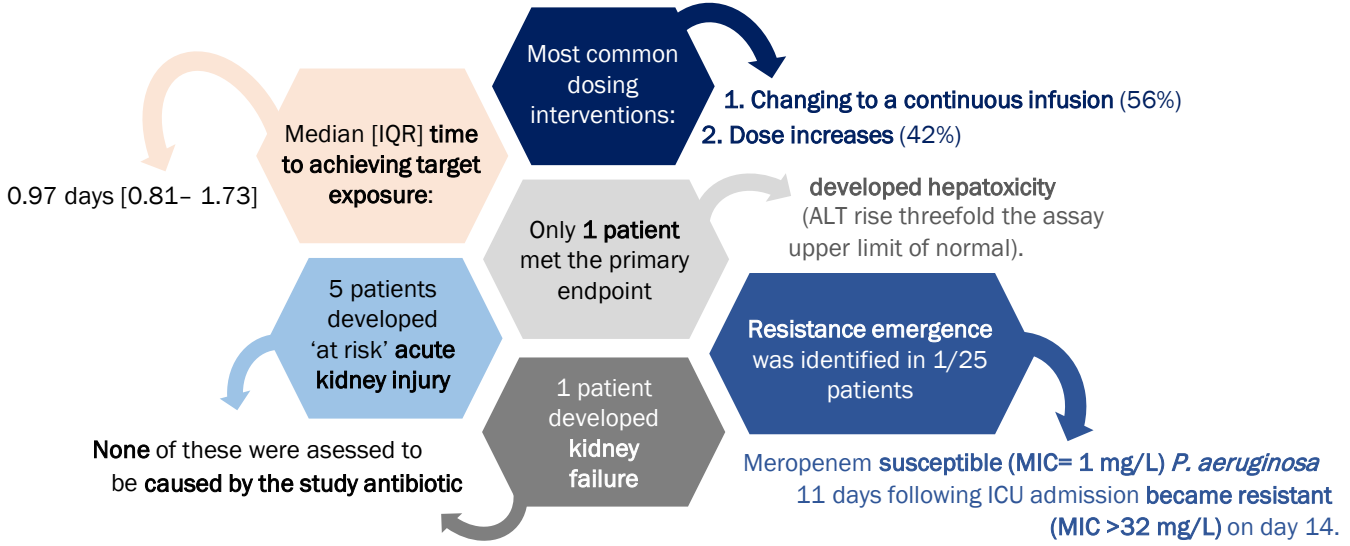
RESULTS: 25 patients were enrolled (14 PIP/tazobactam and 11 MER):

Table 1. Demographic, clinical and dosing data

	Mean (SD) or Median [IQR]
Male, n (%)	13 (52)
Age (years)	56.6 (17.3)
Weight (kg)	85 [76–100]
GRF (mL/min/1.73m^2)	88 [65–90]
APACHE III	17.12 (5.38)
SOFA score	5 [3–6]
Bacterial MIC (mg/L)	PIP: 4 [3.5–4]; MER: 0.19 [0.08–1.56]
Daily starting dose (g)	PIP: 16 [16–16]; MER: 6 [3.5–6]
Adjusted dose (g)	PIP: increased to 18 [16.5–23.6]; MER: remained at 6 [4–7]

GRF, glomerular filtration rate; APACHE, Acute Physiology And Chronic Health Evaluation; SOFA, Sequential Organ Failure Assessment; MIC, minimum inhibitory concentration.

23/25 (92%) patients achieved the target β-lactam exposure (feasible).
2/25 patients did not require any dosing adjustment.
19 patients did not achieve the target at the time of first TDM.
17/19 patients eventually achieved the target exposure; the other 2 patients had therapy ceased within 72 h.
4 patients (16%) failed their antibiotic therapy course.



CONCLUSION: DOSES OPTIMISED TO SUPPRESS RESISTANCE EMERGENCE ARE FEASIBLE AND LIKELY TO BE SAFE. LARGER RANDOMISED CONTROLLED TRIALS ARE REQUIRED TO CONFIRM FINDINGS AND QUANTIFY THE IMPACT, IF ANY, ON CLINICAL OUTCOMES.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Use of Tissue Adhesive for Neonatal Vascular Access Devices: A Scoping Review

Sabrina de Souza[1,2,3*], Mari Takashima[1,2], Thiago Lopes Silva[3], Linda Nguyen[1,2] Luke Jardine[1,4,5]; Patricia Kuerten Rocha[3], Amanda Ullman[1,2,5], Deanne August[1,2,5]
[1]UQ, [2]Children's Health Queensland Hospital and Health Service; [3]Universidade Federal de Santa Catarina, [4]Mater, [5]RBWH, *Scholarship from CNPq/Brazil

INTRODUCTION

Neonates require vascular access devices for medications and therapy, but many fail before completion with complications. **Tissue adhesive (TA)** at insertion site, has demonstrated improved dwell time and reduced complications for adults and children; evidence for neonatal population is lacking.

AIM: Investigate TA use for neonatal vascular access devices

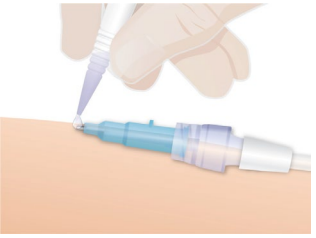


Figure 1 – Tissue Adhesive at insertion site.

METHOD

This scoping review utilised the **Arksey and O'Malley (2005) framework**. Searches across **six databases**; studies in English, Portuguese, and Spanish would be included. Studies published between **2007-2024** were assessed by two independent reviewers (third for conflicts).

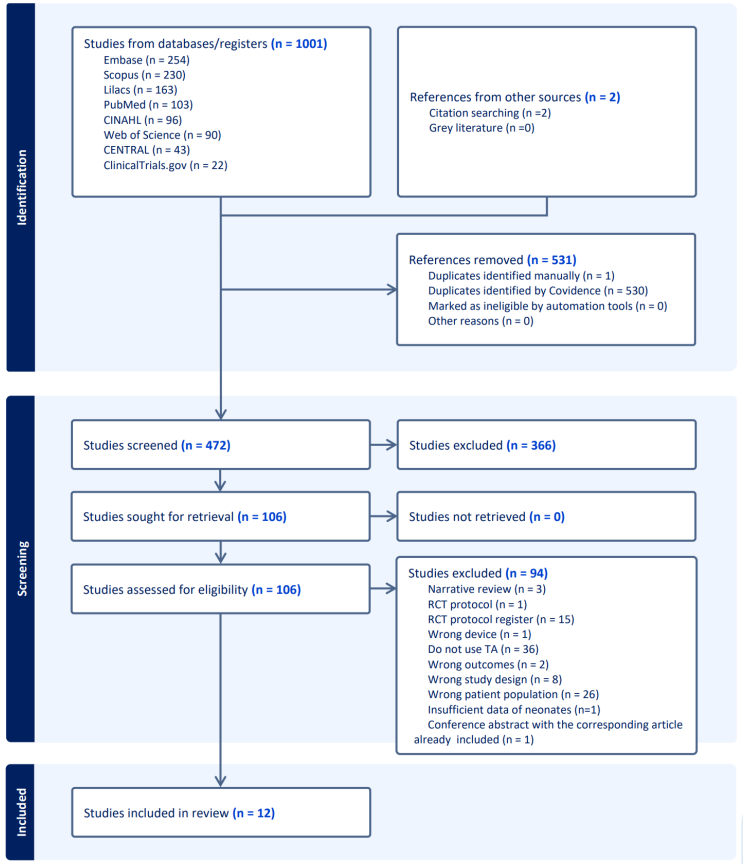


Figure 2 - PRISMA-ScR flow diagram extracted from Covidence.

RESULTS

From 1003 screened, **12 studies were included**. Most included less than 500 neonates and vascular access devices (n=5, 41.7%). Studies originated from four global regions and were predominantly observational studies (n=4, 33.3%), with one randomized controlled trial (RCT) (8.3%) focusing on umbilical venous catheter. In 7 studies (58.3%), TA was assessed as part of a bundle.

Most studies applied TA to central venous catheter devices (CVADs) (n=10, 83.3%), compared to peripheral intravenous catheters (PIVCs) (n=2, 16.7%). Studies showed an overall reduction in complications, such as dislodgment, central line-associated bloodstream infections in CVADs; and phlebitis for PIVCs, along with increased dwell time. None reported complications related to TA application. Skin complications, life of first dressing and follow-up of catheters and patients were not reported in most studies. Additionally, there was variation in the composition and amount of TA applied.

CONCLUSION

The use of TA in vascular access devices has shown a reduction in complications; however, **robust evidence supporting its use in neonates is lacking**. Future studies should focus on RCTs to assess the effectiveness of TA in preventing vascular access device failure and complications, and its safety in neonates.

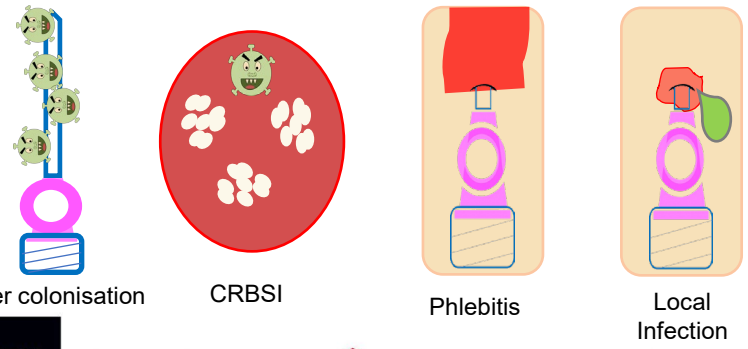
An international randomized controlled trial of a novel antimicrobial dressing for peripheral intravenous catheters

Bertrand Drugeon MD, PhD (Cand.)[1-3], Claire Rickard PhD[2-6], Amanda Ullman PhD[2-4,6,7], Nicole Marsh PhD[2-4,6], Amanda Corley PhD[2-4,6], Daner Ball[2,3,5], Catherine O'Brien[3,4,6], Tricia Kleidon PhD (Cand.)[2-4,6,7], Jérémy Guenezan MD, PhD[1], Kate McCarthy PhD[4,6], Sabrina Seguin[1], Guillaume Batiot[1], Josh Byrnes PhD[4,5], Jessica Schults PhD[2,3,5,7], Syeda Zahir PhD[2], Olivier Mimoz MD, PhD[1,3]

1. Poitiers University Hospital; 2. University of QLD; 3. AVATAR; 4. Griffith University; 5. Metro North Health; 6. Royal Brisbane & Women's Hospital; 7. QLD Children's Hospital

BACKGROUND Peripheral intravenous catheters (PIVCs) are prevalent in hospitalised patients and may be complicated by infectious complications with morbidity, mortality and increased costs. Our aim was to evaluate chlorhexidine-impregnated dressings for prevention of PIVC related infectious complications.

METHOD Multicentre, randomised controlled cost-effectiveness trial with internal pilot, across three centres in Australia and France. Adults and children aged ≥6 years requiring one PIVC for ≥48 hours were eligible. Patients were centrally randomised (concealed allocation) to antimicrobial dressings or standard polyurethane dressings. Laboratory outcomes were blinded. The primary outcome was a composite of catheter-related infectious complications which included phlebitis as possible early infection. Phase 1 was a feasibility study. Phase 2 would have continued if pre-established feasibility criteria were met and funding available. This was not the case and the study was stopped after phase 1. This investigator-initiated trial was funded by 3M. The QR code links to the published protocol. ClinicalTrials.gov ID: NCT05741866



RESULTS 300 patients (100 at Poitiers University Hospital, France; 150 at Royal Brisbane and Women's Hospital and 50 at Queensland Children's Hospital, Brisbane, Australia) were recruited between May 3rd, 2023 and March 27th, 2024 for Phase 1. The French results are still under embargo. In Australia, 73% of patients screened were eligible, 95% eligible were recruited. Retention was at 0.5% (1 patient withdrew), protocol fidelity was 98%, missing data was 0% and staff satisfaction at 99.5%. The feasibility criteria for eligibility (80%) and funding were not met. Adverse events were minor and none required removal of the dressing. Clinical outcomes are presented in Table 1.

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Table 1. Catheter-related Infectious complications

	Standard dressing N=100	Antimicrobial dressing N=99
PIVC colonisation	1/69 (1)	1/67 (1)
Local infection	-	-
CRBSI	-	-
Phlebitis	12/100 (13)	14/99 (14)
Total infectious complications	**13/100 (13)**	**15/99 (15)**

Data are n/N(%). CRBSI: Catheter Related Bloodstream Infection

CONCLUSION Antimicrobial PIVC dressings are promising product and require testing in larger definitive trials. Our protocol and processes can inform future work.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

QUT Centre for Immunology and Infection Control | QIMR Berghofer Medical Research Institute THE FUTURE OF HEALTH | CSIRO Australian e-Health Research Centre | The University Of Queensland AUSTRALIA CREATE CHANGE | HERSTON HEALTH PRECINCT | RBWH Foundation Advancing patient care and life-saving research | QUT | Metro North Health | Queensland Government

Outcomes of fluoroless cavotricuspid isthmus dependant atrial flutter ablation with electroanatomical mapping system

Jacob Spatuzzo, Sonya Naumann, Erin Davison, Dr. Jason Davis
The Royal Brisbane and Women's Hospital – Cardiology – Electrophysiology

LIVE 3D MAP

Background

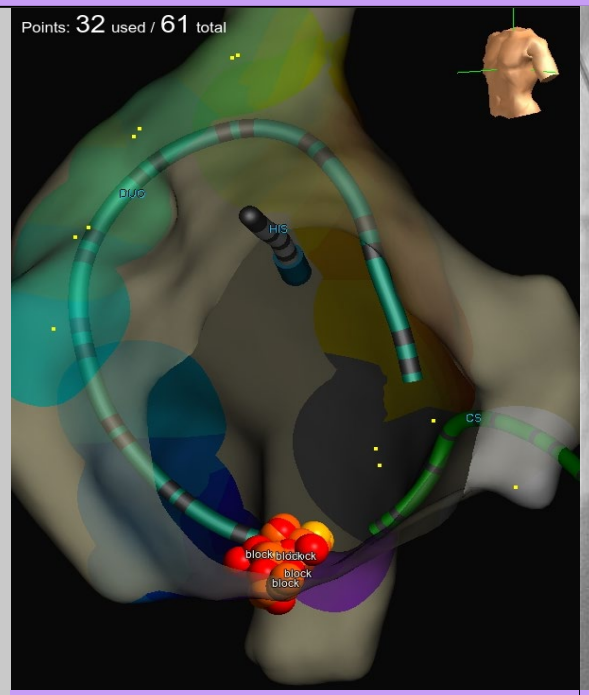
Fluoroscopy is the primary imaging modality for electrophysiology procedures including atrial flutter ablations. Advances in electroanatomical mapping has allowed for the development of fluoroless workflows for electrophysiology procedures. We sought to determine procedural outcomes of a transition to fluoroless workflows for CTI dependant atrial flutter ablation at the RBWH.

Methods

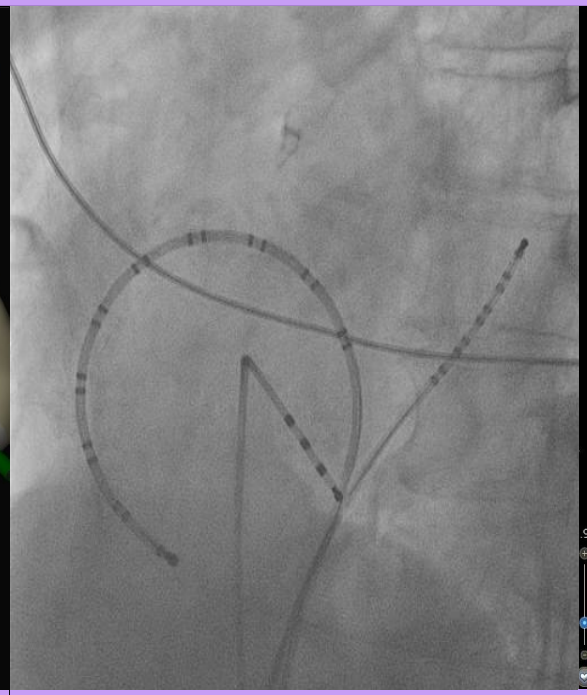
We retrospectively identified cases in the RBWH procedural database from 2015 to 2024 who underwent CTI ablation for atrial flutter.

Procedures utilising **fluoroscopy alone** were compared with cases utilising **fluoroscopy plus 3D mapping** (hybrid), or **3D mapping alone**.

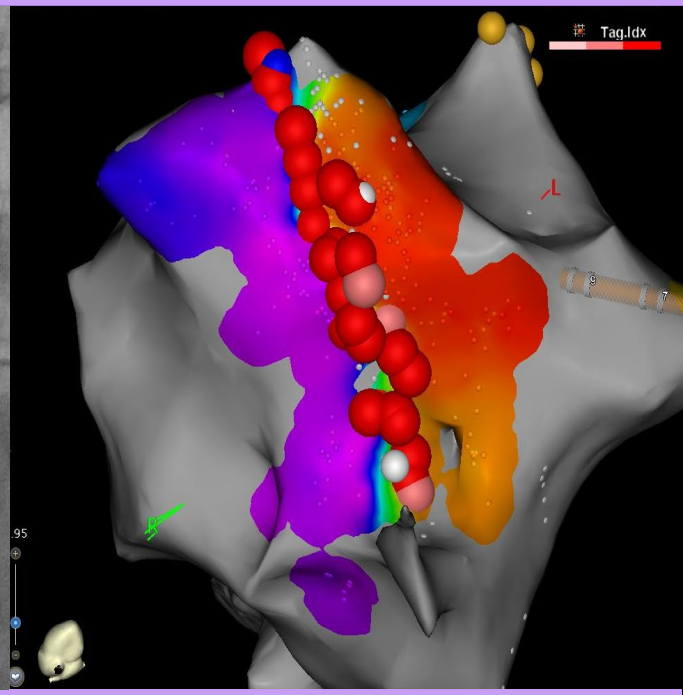
We evaluated procedural time, and fluoroscopy time and radiation dose of patients who went atrial flutter ablation with and without 3D mapping (Ensite 3D NAVX; Abbott and Carto; J&J).



3D mapping with Ensite NAVX



Multipolar catheters under Fluoroscopy



CTI ablation lesion with 3D mapping (Carto)

Results

Procedural time was shorter with fluoroless procedures compared to hybrid or fluoroscopy only procedures (70min v 117 min); p<0.01). Fluoroscopy time and dose was reduced with the addition of electroanatomical mapping (time hybrid versus fluoroscopy 11.3min v 36.13min p<0.01; DAP 537 versus 1040 p<0.01). There were no increase procedural complications with fluoroless procedures.

Data

Number of cases analysed: **248**
Mean age: **64 (18-96)**
Sex: **81% male**
Fluroscopy cases: **40 (16%)**
Hybrid cases: **144 (58%)**
3D mapping only: **64 (25%)**

Conclusion

The use of electroanatomical mapping to perform fluoroless ablation of cavotricuspid atrial flutter resulted in a reduction in procedural times, reduction in fluoroscopy time and radiation dose without compromising safety to patients.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Evaluation of a Vestibular Physiotherapy Rapid Access Service in a Tertiary Metropolitan Hospital

Investigators: Kelly Costa[1], Michelle Cottrell[2], Isabella Prowse[1]
[1]Physiotherapy Department, The Prince Charles Hospital, Brisbane
[2]Allied Health Department, The Prince Charles Hospital, Brisbane

INTRODUCTION

Background: Australian Emergency Departments (EDs) are experiencing increased demand, with dizziness and vertigo accounting for up to 4% of presentations annually (1, 2). Vestibular Physiotherapists have been shown to reduce wait times, improve diagnostic accuracy, and enhance patient satisfaction in the ED (1, 2, 3).

QR code for article on Vestibular Rapid Access Clinic

Need: Vertigo is commonly associated with peripheral vestibular disorders such as benign paroxysmal positional vertigo and vestibular neuritis. Effective management often requires timely assessment and intervention (3), which the Vestibular Physiotherapy Rapid Access Service aims to provide.

METHOD

Design: Mixed-methods approach within the RE-AIM framework.
Participants: All patients requiring urgent vestibular physiotherapy at TPCH from February 2023 to December 2023.
Exclusions: Hospital-admitted patients, who received standard care.

Intervention: Advanced Vestibular Physiotherapist provided urgent assessments and follow-ups, aiming to reduce ED presentations and streamline care.

SERVICE MODEL OVERVIEW

Access Points: ED, Virtual ED, GPs, self-referral from known patients to the service, and community healthcare providers.
Operational Hours: Monday – Friday, 8.00 am – 4.00 pm.
Pathways: Patients seen directly in ED or same or next-day appointments for urgent cases, and follow-ups as needed.

KEY COMPONENTS

Reach:

- Total Referrals: 673
- Accepted: 621 (92.3%)
- ED Referrals: 76.5% (n=656)
- FTA rate of 0.7%

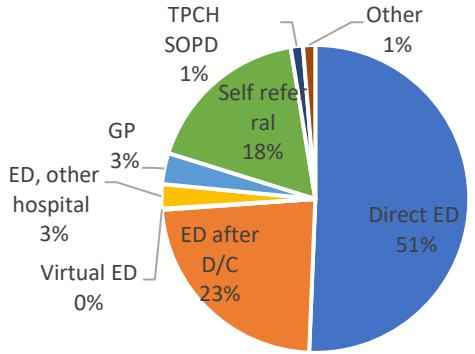
Effectiveness:

- ED Length of Stay: Reduced by 36.2 minutes (280.6 vs. 316.8 mins p<0.001)
- Time to vestibular assessment: once referred in ED, time to vestibular assessment reduced by 36.38 minutes (43.94 vs. 7.56 mins, p<0.001)
- Quality of Life (EQ-5D-5L): Improved by 0.135 (0.84 to 0.975, p<0.001)
- Global Rating of Change: 66.2% rated +5
- Patient Satisfaction: 100% 'very likely' to recommend

Implementation:

- Discharge Rate: 98.3% of patients were discharged within ≤3 outpatient appointments.
- Re-presentation: Two patients re-presented to ED within 48 hours; one required immediate medical escalation

Referral Sources:



DISCUSSION

Impact: The Vestibular RAS has significantly reduced ED length of stay, improved quality of life, and achieved high patient satisfaction.
Sustainability: The service is sustainable with consistent referral rates (more than 55 per month) and minimal follow-up issues.

CONCLUSION

The Vestibular RAS at TPCH is a **safe and effective** alternative to traditional ED pathways for managing acute dizziness.

1. Stewart V, Rosbergen I, Tsang B, Hoffman A, Kwan S, Grimley R. Do vestibular physiotherapy and a clinical pathway in the ED improve management of vertigo? OTO Open. 2022; 6: 1-
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3. Edlow JA, Carpenter C, Akhter M, et al. Guidelines for reasonable and appropriate care in the emergency department 3 (GRACE-3): Acute dizziness and vertigo in the emergency department. Acad Emerg Med. 2023; 30: 442-486. doi:10.1111/acem.14728

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Promoting the secondary use of clinical research data in Australia

Sara GOTTLIEBSEN[1], Kathy DALLEST[3], Hugo LEROUX[2], Kristan KANG[4], Dominique GORSE[3], Diego GUILLEN[3] and David HANSEN[2]

[1] Health Translation Queensland, [2] Australian e-Health Research Centre, [3] Queensland Cyber Infrastructure Foundation, [4] Australian Research Data Commons

Clinical research addresses important gaps in knowledge and is integral to healthcare delivery. While Australia invests over $1.5 billion annually in clinical research, most of the findings are not shared publicly.

The HeSANDA network and Health Data Australia

- The Health Studies Australian National Data Asset (HeSANDA) program was established by the Australian Research Data Commons (ARDC).
- There are 9 nodes in the HeSANDA network, including the HeSANDA Queensland node, who enable the metadate describing health and medical research datasets to appear in Health Data Australia.
- Health Data Australia is the national catalogue that facilitates data discovery and requests for access to datasets.

The HeSANDA Queensland node

- HeSANDA Queensland node is a consortium of research partners from HTQ, QCIF and the AEHRC.
- Aim is to foster closer relationship with clinical researchers within QLD, and Herston Health Precinct.
- Implemented a Dataverse system to facilitate the onboarding of clinical trial metadata.
- Launched in November 2023.
- HeSANDA Queensland node work with researchers to help curate their metadata to make them findable, fostering collaborative relationships with researchers.

Results and conclusion

- Broadly supported by community after one year of operation.
- Health Data Australia currently holds 179 records, with 11 from Queensland.
- Next phase is enabling research data sharing as BAU.

Figure 1: A health dataset within Health Data Australia

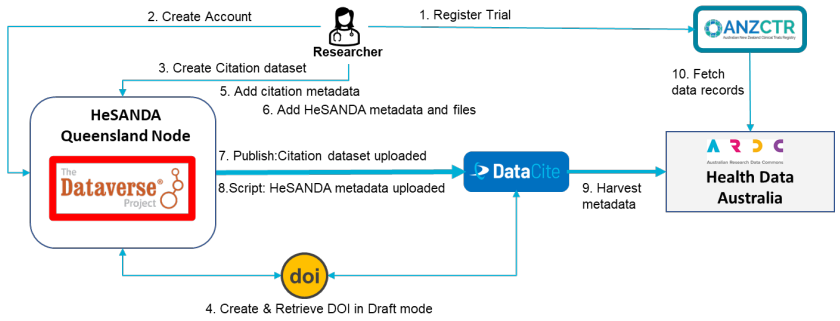


Figure 1: The HeSANDA Queensland node data pipeline

Queensland node webpage

A review of Hypoglycaemia Hospital Acquired Complications (HACS) at RBWH

Authors: Josica Agarwal, Mridula Mantravadi, Libby McCourt, Emily Robinson, Abby Yu, Anjela Pham-Nguyen, Jade Eccles-Smith, Peter Donovan

Purpose

As treatment-related hypoglycaemia in hospitals can lead to adverse outcomes, financial penalty associated with the hypoglycaemia Hospital Acquired Complication (HAC) urge the institution to implement risk mitigation strategies to reduce of the risk of it occurring. However, the designation of the HAC largely relies on clinical coding without consideration of the clinical context. The purpose of this project is to assess the clinical relevance of hypoglycaemia HACs to evaluate the validity of the financial penalty and identify areas for process improvement.

The primary aim of the audit was to review hypoglycaemia HACs at RBWH and determine:

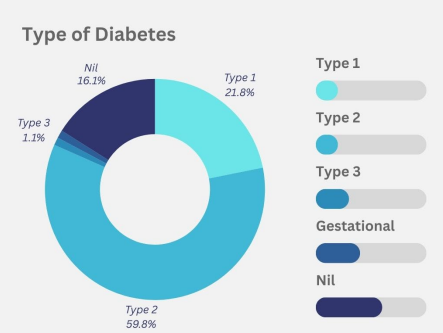
- if patients experienced true hypoglycaemia, and
- if patients were treated with glucose-lowering medication

Methods

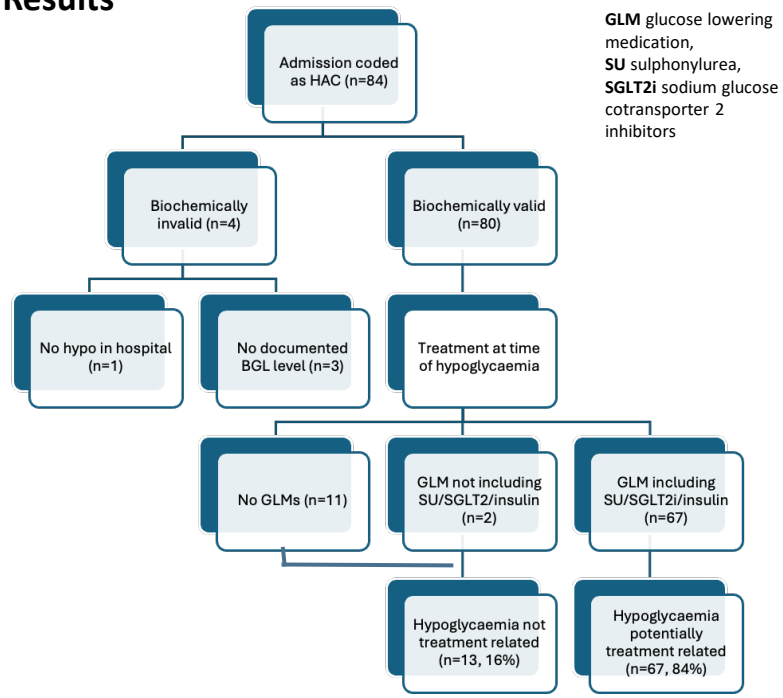
We performed a retrospective audit of patients coded as having a hypoglycaemia HAC at the Royal Brisbane and Women's Hospital between January and April 2023. Cases were assessed and factors relating to their demographics and clinical status were recorded, including demographics, type of diabetes and therapies for treating diabetes.

Patient demographics

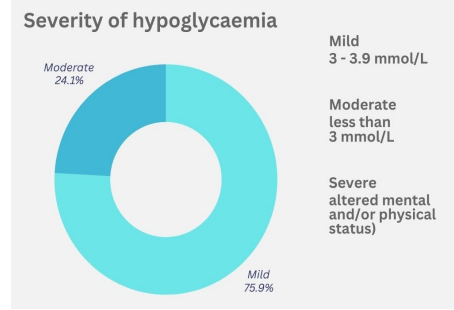
Age (years), median (IQR)	62 (54-75)
Gender (female), n (%)	33/84 (39%)
HbAIc (mmol/mol), median (IQR)	61 (53-77)
Length of stay (days), median (IQR)	9 (5-16)



Results



GLM glucose lowering medication,
SU sulphonylurea,
SGLT2i sodium glucose cotransporter 2 inhibitors



Admission team	N= 87 (%)
Medical	35 (40%)
Surgical	43 (50%)
Emergency	3 (3%)
ICU	2 (2%)
Radiation oncology	2 (2%)
Alcohol and drug service	1 (1%)
Gynaecology	1 (1%)

Conclusion

Interestingly, a significant number (19%) of coded hypoglycaemic HACs were either not biochemically valid, occurred in patients without diabetes, were on no glucose-lowering medications or on medications that do not cause hypoglycaemia. As such, given the financial penalty associated with a hypoglycaemia HAC, its designation should incorporate both the clinical context as well as a biochemical threshold. A review of the definition of a hypoglycaemia HAC at a national level and further education of coders could avoid unnecessary penalties and promote safe practice.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Fighting the resistance: a restricted antimicrobial usage audit

AUTHORS: Lara McKay & Isabella Bautista

Royal Brisbane and Women's Hospital (RBWH)

WITH THANKS TO: Aislinn Kennedy, William Franks, Sarah Risdale, Dr Alexandra Stewart

BACKGROUND

With an observed increase in some multi-resistant organisms across the hospital, antimicrobial resistance continues to threaten our ability to treat and prevent infections effectively at a local level. Data collected in 2023 RBWH AMS audits has indicated increased use of restricted antimicrobials, in particular PipTaz and Ciprofloxacin, compared to other hospitals.

OBJECTIVES

- Determine guideline compliance and clinical appropriateness for PipTaz and Ciprofloxacin orders
- Determine average duration of specified restricted antimicrobials
- Calculate proportion of patients that were referred to ID or AMS

METHOD

Cross-sectional prospective review of RBWH inpatients prescribed PipTaz and Ciprofloxacin identified through weekly 'ward sweeps'. Medical and surgical wards were rotated each week over a three-month period to ensure hospital-wide data was collected.

Inclusion criteria: patients at least 18 years-old prescribed PipTaz or Ciprofloxacin at 8am on days the ward sweeps were conducted.

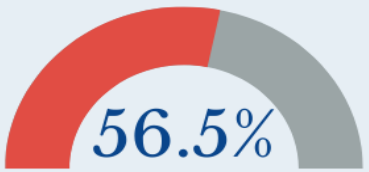
Antimicrobial orders were assigned 'guidelines compliance' and 'appropriateness' ratings using the NAPS tool.

RESULTS

39 + 7 = 46

PIPTAZ CIPRO TOTAL

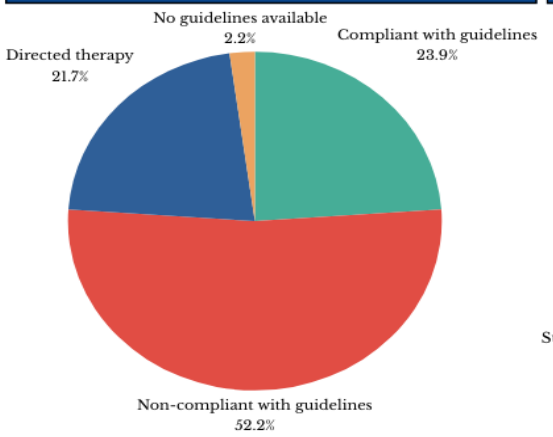
76% SURGICAL PATIENTS



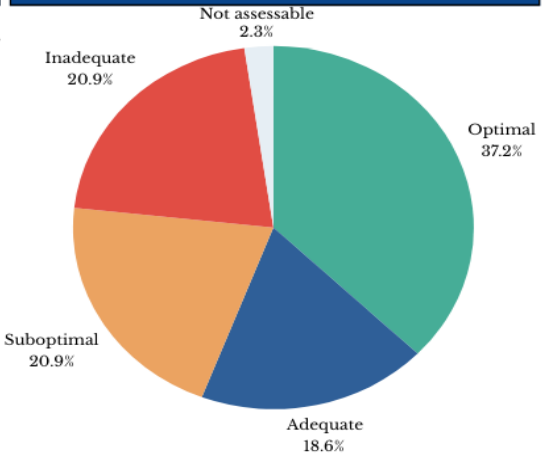
56.5%

OF ORDERS DID NOT HAVE A STOP/REVIEW DATE DOCUMENTED

GUIDELINE COMPLIANCE



APPROPRIATENESS



AVERAGE DURATION OF THERAPY

PIPTAZ: 5 DAYS

CIPRO: 2.5 DAYS

AMS/ID REFERRAL

63% OF ORDERS WERE NOT REVIEWED BY ID/AMS

CONCLUSIONS

While most antimicrobial orders were clinically appropriate, the majority were not prescribed in accordance with guidelines. To prevent excessive and prolonged use of broad-spectrum antibiotics, which increases the risk of antimicrobial resistance, these results suggest opportunities for improving referral processes to AMS/ID teams for review and integrating pharmaceutical interventions.

AMS	Antimicrobial Stewardship
PipTaz	Piperacillin-tazobactam
ID	Infectious Diseases
NAPS	National Antimicrobial Prescribing Survey

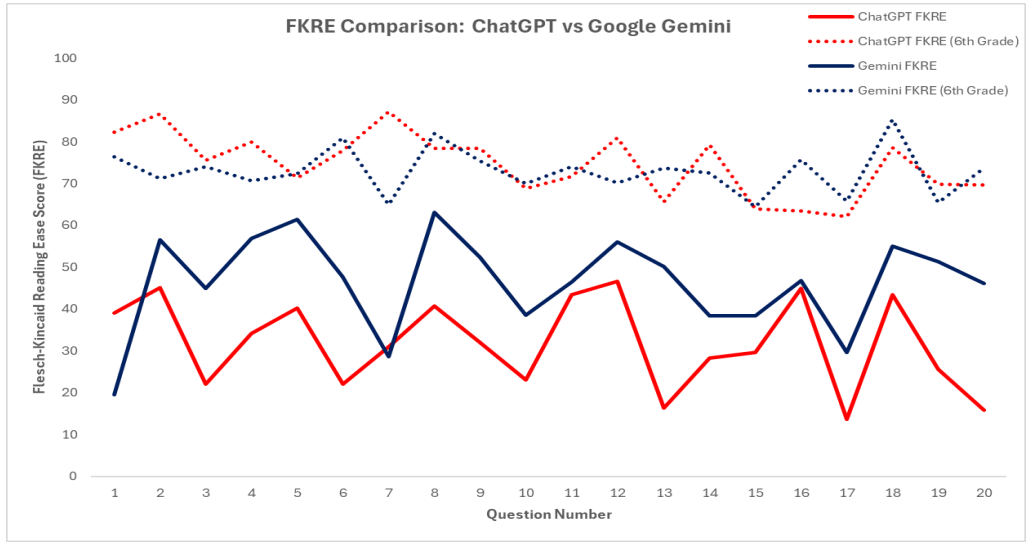
Large Language Models Improve Readability in Primary Responses to Coronary Artery Bypass Graft Questions for Patient Education

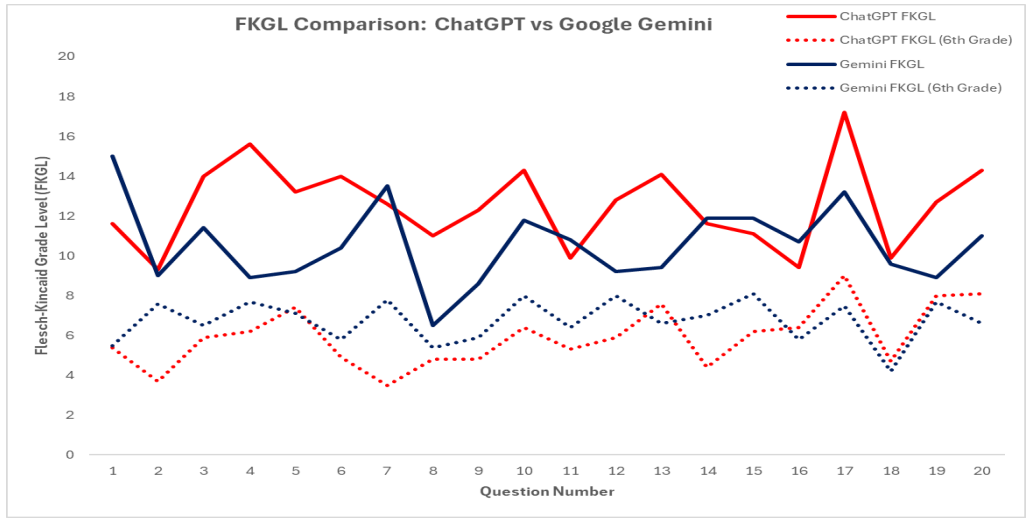
Authors: Venkata Paruchuri[1], Dhaval Patel[1], Alexander Fang[1], Ethan Levitch[1], Conor Kiely[1], Karmveer Kaur[1], and Amit Sikder[2]
Affiliations: 1. University of Queensland – Ochsner Clinical School, New Orleans, LA 2. University of Queensland Mayne Medical School, Brisbane, QLD

Introduction:
The advent of Large Language Models (LLMs) such as ChatGPT and Google Gemini yields a new paradigm for patient education. Coronary artery bypass grafts (CABGs) are open-heart surgeries that naturally gives to many questions in potential patients. Prior research suggested that patient education material should be written at a 6th grade reading level maximally to be comprehended by the majority of the US adult population. However, most education material is written at a much higher literacy level. Now with the increasing use of LLMs, the potential for informing patients at an appropriate readability level exists.

Research Question:
Can ChatGPT and Google Gemini improve the readability of their primary responses to patient education questions about Coronary Artery Bypass Grafts to a 6th grade reading level?

Methods:
We obtained 80 questions from 4 independent participants regarding information they would want to know prior to undergoing a CABG procedure. Questions that could not be answered using public information, required clinician input, and repeats were filtered out leaving 20 questions. These questions were asked to ChatGPT 3.5 and Google Gemini. Then both LLMs were asked to answer the question at a 6th grade level within the same conversation. A new conversation was created each of the 20 questions. All responses were then evaluated using a Flesch-Kincaid calculator where the Flesch-Kincaid reading ease score (FKRE) and the Flesch-Kincaid grade level (FKGL) were obtained. Data analysis was performed using Microsoft Excel and GraphPad Prism.





Patient Education Questions
1. Why do people need to undergo CABGs?
2. What symptoms does a CABG procedure help reduce?
3. What can happen if a patient does not undergo a CABG?
4. Do CABGs prevent future heart attacks?
5. Will a CABG fix coronary artery disease?
6. Are there any less invasive alternative treatment options from a CABG?
7. How do people who have CABG procedures prevent the need for future bypasses?
8. Can you summarize how a CABG is done?
9. What does the recovery process from a CABG procedure look like?
10. Are there other alternatives to the CABG, and what are they?
11. What are the intraoperative risks to undergoing a CABG?
12. What do they mean by graft in CABG?
13. Is there a difference between where you take the graft artery or vein used for the CABG from?
14. Post-CABG, what limitations would a patient generally have?
15. Do patients take new medications following a CABG?
16. What is cardio-pulmonary bypass?
17. What is cardioplegia, and do all CABG procedures use it?
18. What red flags do I need to look out for during the CABG recovery period?
19. Are there risks associated with anesthesia during a CABG procedure?
20. How is post-operative pain from CABGs usually managed?

Results:
For the ChatGPT responses, the average FKRE was 31.865 and FKGL was 12.545. Following the 6th grade level request for ChatGPT, the average FKRE was 74.57 ($p < 0.0001$) and FKGL was 5.93 ($p < 0.0001$). For the Google Gemini responses, the average FKRE was 46.395 and FKGL was 10.545. Following the 6th grade level request for Google Gemini, the average FKRE was 72.945 ($p < 0.0001$) and FKGL was 6.76 ($p < 0.0001$).

Conclusion:
Both LLMs significantly increased the readability of their responses and did so to a 6th grade level. However, ChatGPT was closer than Google Gemini in reaching the desired FKGL. Nonetheless, our work showed that both LLMs could successfully work with CABG information and yield responses at a readability level befitting the US population. Future studies need to assess the accuracy of this information for LLMs to have practical use in cardiac surgery patient education.

Integrating Palliative Care with CAR T-Cell Therapy Clinics: A Catalyst for Advanced Care Planning Discussions

CNC Jennifer Walker, CN Peter Jones, Dr Alison Kearney, CNC Angela McLean, Dr Cameron Curley
Palliative and Supportive Care Service, Haematology CAR T Cell
Royal Brisbane and Women's' Hospital

Introduction

The integration of palliative care in CAR T-cell therapy clinics marks a significant advancement in oncological care, supporting comprehensive patient-centred support and facilitating discussions on advanced care planning (ACP). This abstract reviews the role palliative care can provide withing these clinics to enhance the model of care.

Objectives

To explore synergistic benefits of combining palliative care with CAR T-cell therapy.

Identification if the integration promotes completion of ACP documents.

Methodology

Retrospective review of patient records (IeMR) to evaluate the frequency of ACP discussions and completion of documentation such as Advanced Health Directives, Enduring Powers of Attorney, or Statement of Choices among patients who underwent CAR T-cell therapy in 2023.

Patients who had received CAR T cell therapy prior to January 2023 were excluded from this review.

Results

This study included 35 patients who received CAR T-cell therapy in 2023. Of these, 51% (18) were introduced to Palliative Care while 49% (17) were not. The completion of ACP documentation (EPOA, AHD, SoC, ARP) were assessed across these groups.

Data showed patients seen by Palliative Care had a 66% (12) completion rate of ACP documentation compared to 18% (3) for those not seen. ARP completion was noted in 20% (7) of all CAR T-cell patients; 85% (6) of Palliative Care-referred patients had ARP completed versus 15% (1) without.

Integrating palliative care in CAR T-cell therapy clinics initiates ACP discussions, which is crucial given the unpredictable nature of advanced cancer and treatment complications. Palliative care specialists and Advance Care Planning Nurses facilitate these conversations, empowering patients to express treatment preferences and care goals.

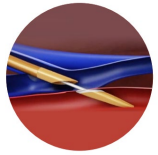
Conclusion

Integrating palliative care into CAR T-cell therapy significantly enhances ACP discussions. Patients who received palliative care had markedly higher rates of ACP completion, underscoring its role in proactive planning and decision-making. Furthermore, 85% of Palliative Care-referred patients completed ARP, illustrating proactive patient-centred care. Early integration of palliative care is crucial in optimizing patient outcomes and quality of life during CAR T-cell therapy,

emphasizing the need for broader implementation of these services.

Reference:
OpenAI. (2024). *ChatGPT* (Dec 24 version) [Large language model]. https://chat.openai.com/

HERSTON HEALTH PRECINCT SYMPOSIUM 2024



Protocol for the selection and pre-operative planning of patients for endovascular Arteriovenous fistula (eAVF) creation

Samantha Hill & Teal Derboghossian

Purpose: To develop an ultrasound protocol to assess suitability for endovascular arteriovenous fistula (eAVF) creation; a novel procedure currently being introduced at the Royal Brisbane and Women's Hospital (RBWH). Clinical trials suggest that eAVF provides superior long-term benefits over open surgical AVF creation including a dual outflow system and reducing individual outflow shear stress, which may reduce aneurysm formation, as well as procedural advantages described below.[1,2]

Methods: Venous mapping ultrasound in preparation for open surgical creation of AVF is well established and will remain as a framework to this more extensive protocol for eAVF suitability assessment. The eAVF device being introduced is Ellipsys, a Medtronic designed system with procedural advantages over open surgical creation such as a single venous puncture site, suture free anastomosis, and ultrasound only guided puncture; eliminating the need for fluoroscopy in an already vulnerable to nephrotoxic contrast group.[3-5] The Ellipsys system utilises endovascular techniques to create a fistula between the antecubital perforating vein and the proximal radial artery. This is achieved by a retrograde puncture into the antecubital perforating vein passing the catheter through the vein wall where it intersects the radial artery.

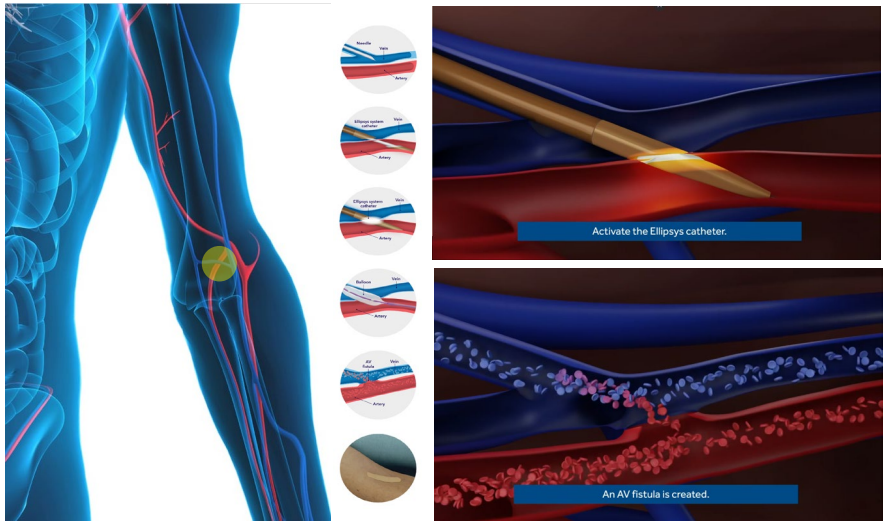


Figure 1: Antecubital fossa anatomical location (left), streamlined steps of the procedure (middle), Ellipsys device activation after placement (top right), and resulting endovascular arteriovenous fistula (bottom right).
Images from Ellipsys Vascular Access System - Arteriovenous Fistula (AVF) Creation | Medtronic

EndoAVF Ultrasound Protocol

Arterial
Brachial artery, radial artery and ulnar artery
- Lumen diameter
- Doppler peak systolic velocity
- Volume flow
- Brachial bifurcation location
- Patency & exclude pathology

Palmar arch
- Patency: complete/incomplete (retrograde flow with manual compression)

Venous – With tourniquet
Cephalic vein & basilic vein
- Lumen diameters brachium and forearm (prox, mid & distal)
- Patency

Cubital fossa perforating vein
- Lumen diameter
- Anatomical path (tortuosity and angulation)
- Proximity to the proximal radial artery (mm)
- Angle of intersection point (radial artery in transverse)
- Communicates to basilic and cephalic veins

The axillary and subclavian veins should also be examined to ensure there is no outflow obstruction.

Endovascular Criteria
Vein diameters (including perforating vein) of > 2.0 mm
Dual outflow in basilic and cephalic
Perforator proximity to proximal radial artery < 1.5 mm
Perforator intersection point in the upper 180 degrees segment
Radial artery proximal diameter > 2.0 mm
No high bifurcation
Complete palmer arch

Traditional Vein Mapping Criteria
Vein diameters of > 2.5 mm are considered suitable for AVF creation.

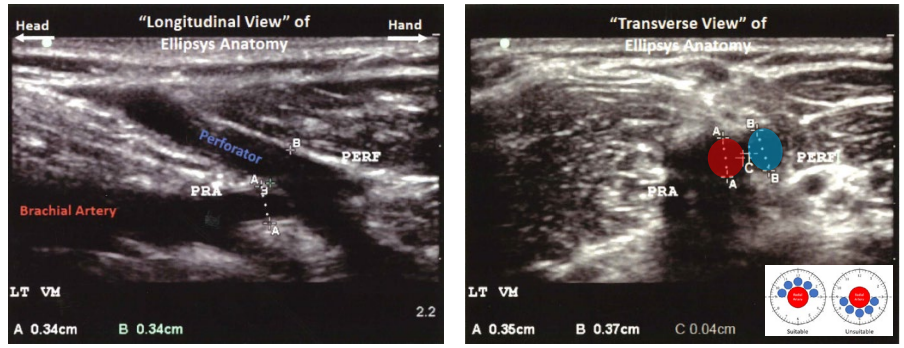


Figure 2: Example target images for Ellipsys endovascular arteriovenous fistula mapping with ultrasound.
Images from Ellipsys Vascular Access System - Arteriovenous Fistula (AVF) Creation | Medtronic

Results: The eAVF vein mapping duplex ultrasound protocol includes standard arterial and venous patency and diameter assessment. Suitability for the Ellipsys eAVF procedure relies primarily on accurate anatomical mapping of the antecubital venous perforator and the proximal radial artery which need to satisfy specific proximity requirements. The cubital fossa perforator must exhibit little angulation or tortuosity. The position of the proposed anastomotic site is also relevant. With the radial artery in transverse view and referenced as a clockface, the antecubital perforator must cross the radial artery between nine and three o'clock (figure 2). Positions outside of this are unlikely to result in successful crossing into the radial artery. Ellipsys is only recommended in cases where the target vessel is the proximal radial artery below the cubital fossa. Patients with a high brachial artery bifurcation are not suitable. High brachial artery bifurcation variations have an incidence of up to 20%.[6] Other important additions to the standard protocol is examining the proposed radial artery puncture site for abnormalities such as wall calcification or stenosis and ensuring adequate inflow using Doppler flow assessments. Examining the patient for dual venous outflow above the perforator is essential as one of the benefits of Ellipsys is the reduced shear stress which is directly related to the dual outflow. Venous variations are common and as an example approximately 10% of patients have no median cubital vein rendering this group unsuitable for Ellipsys.[7] The palmar arch arteries should be assessed to determine the susceptibility of the patient to steal syndrome. This is standard practice for open and eAVF, however currently an incomplete palmar arch is a contraindication to the Ellipsys eAVF procedure.

Conclusion: An ultrasound protocol specific to assessing suitability for the Ellipsys eAVF device has been established. It is unclear how many patients will be suitable for the procedure. The protocol will undergo serial review and refinement as experience with the novel procedure develops.

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5.Mallios A, Bourquelot P, Franco G, et al. Midterm results of percutaneous arteriovenous fistula creation with the Ellipsys vascular access system, technical recommendations, and an algorithm for maintenance. *J Vasc Surg.* December 2020;72(6):2097-2106.
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7.Melaku T, Wondmagegn H, Gebremickael A, Tadesse [illegible] patterns of superficial veins in the cubital fossa and its clinical implications among southern Ethiopian population. Anatomy & Cell Biology. 2022 Jun 1;55(2):148-52.

Is an allied health-led, obesity service effective for improving functional capacity?

Elizabeth Ryan[1], Ashlee Snoswell[1], Andrea Cawte[1], Robin Hay[1], Scott Ruddell[1], Gemma Woodruff[1], Dr Matthew Seymour[1], Keren Singh[1], Dr Helen MacLaughlin[1,2] 1. Tertiary Obesity Multidisciplinary Service, Royal Brisbane and Women's Hospital, QLD; 2. Queensland University of Technology, Exercise & Nutrition Science, QLD

Background

Two thirds of Australian adults are living with overweight or obesity. Obesity requires comprehensive multidisciplinary management including exercise interventions. In the 16 public hospital-based obesity services only half involve physiotherapy or exercise physiology, and none have reported on functional capacity outcomes. The Tertiary Obesity Multidisciplinary Service (TOMS) established at the Royal Brisbane and Women's Hospital (RBWH) is an allied health-led model of care delivered across all medical and surgical specialties to improve health outcomes and access to healthcare services. It is an innovative 12-month program incorporating physiotherapy, pharmacy, psychology, endocrinology and dietetics in a single service for management of complex obesity.

Methods

This study included 119 participants who commenced TOMS between January 2021 and July 2023, all with at least one co-morbidity. TOMS is structured into three phases:

Phase 1 (intensive): Weekly group support and exercise session in addition to undertaking a Very Low Energy Diet (VLED) with medical monitoring.

Phase 2 (step-down): Fortnightly group support, prescription of home exercise program and transitioning from VLED to normal eating.

Phase 3 (maintenance): Monthly group support with home exercise program and support for weight maintenance.

The physiotherapy intervention specifically used blood pressure and the six-minute-walk (6MWT) test as fitness measures and the 30 second sit-to-stand (30s STS) as a muscular measure. Grip strength has now been included as an upper body muscular measure but is not included in these results. These test were performed in the initial, end of phase 1 and final assessments.

What is a VLED?

A very low energy diet (VLED) replaces three meals with a nutritionally complete product plus two cups of non-starchy vegetables, one teaspoon of oil and at least two litres of fluid daily – approx. 3200kJ/day, to facilitate rapid weight loss.

Outcomes

- Systolic blood pressure was observed to significantly reduce at the end of phase 1 resulting in mean systolic blood pressure falling within the normal range. The reduction was still clinically significant and in normal range at 12-months
- Six MWT results significantly improved from baseline to end of phase 1 (supported exercise in gym) and from baseline to end of program (moving from supported exercise to home exercise)
- Significant differences were observed in the 30 second sit-to-stand exercise at the end of phases 1 and 3 with an overall increase >3reps which was maintained at 12 months

	From initial assessment to end of phase 1 (12 weeks)	From initial assessment to end of program (12 months)
6MWT	+54.3m [45.5] (<0.0001)	+61.1m [52.5] (<0.0001)
30s STS	+3.9 reps [3.9] (<0.0001)	+3.9 reps [3.9] (<0.0001)
Systolic blood pressure	-6.8mmHg [18.9] (<0.0016)	-3.5mmHg [21.6] (0.29)
Diastolic blood pressure	-3.3mmHg [11.0] (0.0081)	-3.5mmHg [12.0] (0.079)

Conclusion

TOMS is the first publicly funded, obesity management service in Queensland that embeds an allied health-led model of care involving physiotherapy, pharmacy, psychology, endocrinology and dietetics. TOMs delivers sustained improvements in health outcomes including gains in functional capacity during and after VLED.

To give or not to give: A retrospective audit of activated charcoal in paracetamol poisoning

Alessandra Rose[1], Elizabeth Doran[1,2]
1. Royal Brisbane and Women's Hospital 2. Royal Flying Doctor Service Queensland

Background

Paracetamol is the most common medicine taken in deliberate self-poisoning leading to hospital presentation and admissions. As per the Australian Guidelines for Management of Paracetamol Poisoning (2019), decontamination with activated charcoal (AC) should be offered to those patients who present within 2 hours of acute paracetamol ingestion >10g, and within 4 hours of massive (>30g) paracetamol or >10g modified – release paracetamol[1].

Aim

To measure adherence with the Australian guidelines regarding appropriate decontamination of patients who present following paracetamol poisoning at a quaternary metropolitan hospital.

Method

A retrospective evaluation was conducted on adult patients presenting with paracetamol poisoning between Jan 2022 and 2023. Patients were excluded if they were <18 years old or presented with poisoning from other substances. Data collected included patient demographics, ingestion type, quantity, time, charcoal indication and administration, and other relative treatment received.

Figure 1: Charcoal prescribing adherence and documentation

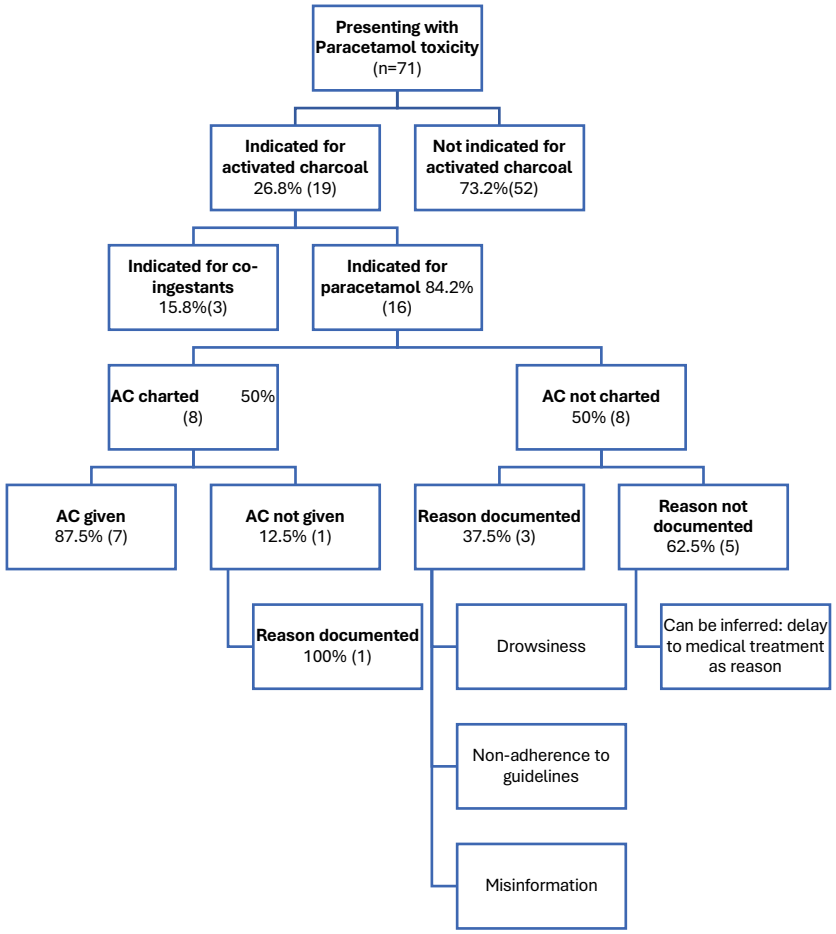
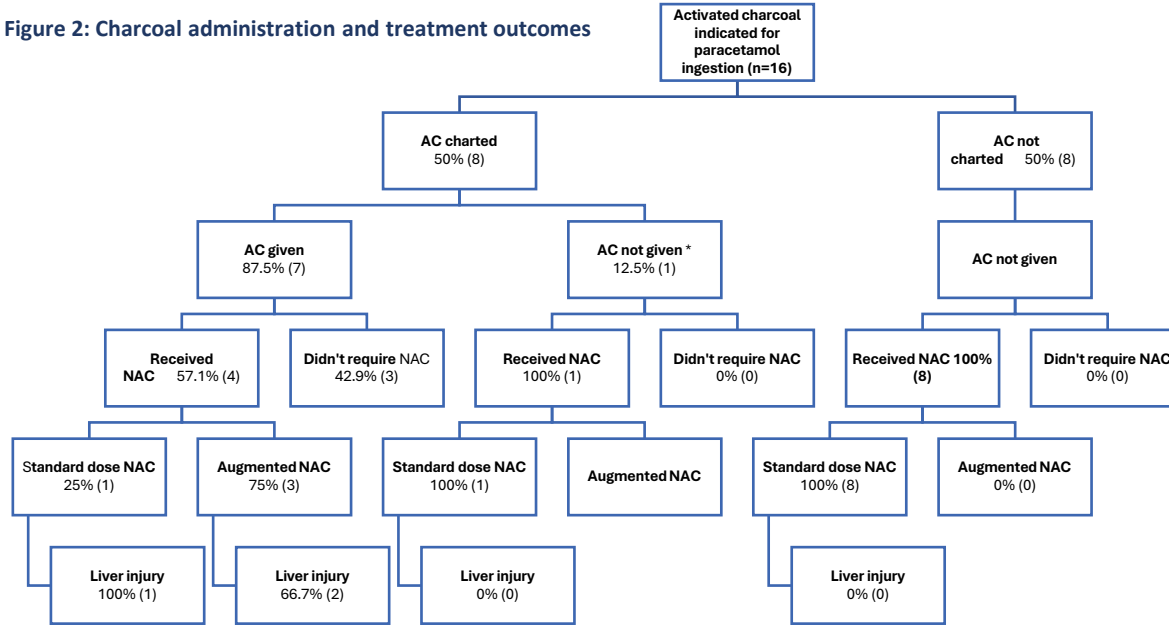


Figure 2: Charcoal administration and treatment outcomes



Results

Of the total 71 patients included, 16 met criteria for AC for paracetamol ingestion with the following indications: 11 (69%): within 2 hours of ingestion >10g IR paracetamol and 5 (31%) within 4 hours of ingestio >30g IR paracetamol. Of the patients indicated for AC, 8 (50%) were not charted or given AC, of these 3 (38% had documented reasons for not administering [drowsiness (n=1), incorrect interpretation of ingestion timeframes (n=2)]. Of the 8 patients charted for AC, 7 were administered and 1 refused administration due t nausea. All 9 (100%) of patients not given AC when indicated required n-acetylcysteine treatment.

Discussion

The results show that adherence to the Australian guidelines for activated charcoal use is variable, this may b due to the complexity of timing of administration. Further education on indications and time frames for AC use is required to improve timely recognition of eligible patients.

References
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Review of Psychotropic Clinical Care Standard in Patients with Delirium at RBWH

Kristina van Schie[1], Elizabeth McCourt[1], Kirsten Yeo[1]
1: Royal Brisbane and Women's Hospital

AIM

Assess baseline **adherence** to **psychotropic medicine quality indicators** in **delirium** patients.

METHODS

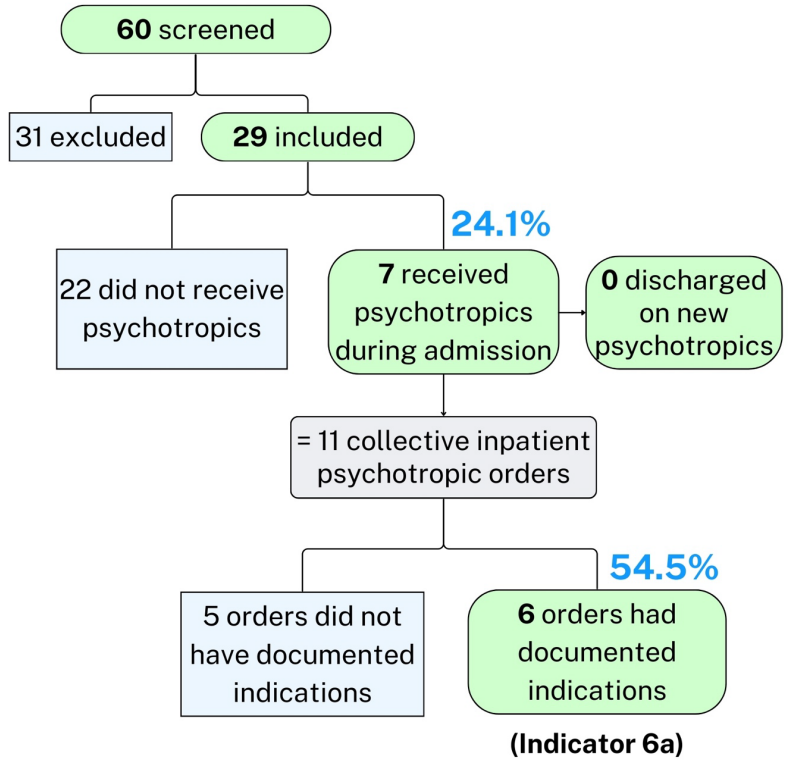
Retrospective audit of inpatients with delirium between Jan-Mar 2024

Excluded: ICU and palliative care patients.

Data were collected on **documentation of inpatient & discharge psychotropic medicine use** including:

- medicine indication
- effectiveness on target symptoms
- adverse effects

RESULTS



3.4% had a behaviour chart completed during admission

Re discharge communication:

96.6% of summaries sent to GPs **(Indicator 8c)**

51.7% mentioned delirium

31.0% described patient behaviours

0% documented inpatient psychotropic use, effectiveness, or adverse effects **(Indicator 7b)**

CONCLUSIONS

Strength: Low rate of prescribing psychotropic medicines to manage delirium (aligns with Quality Statement 6)

Opportunities for improvement:

- Documenting indication for inpatient psychotropic medicine orders
- Utilising behaviour charts for patients with delirium
- Communication at discharge regarding delirium episode including behaviours and management details

HERSTON HEALTH PRECINCT SYMPOSIUM 2024

Cefepime Levels in the Intensive Care Unit

Negin Nasseh[1,2,3] Sinead Carmichael [1,2] Jayesh Dhanani [1,2,3] Amy Legg [1,2,3,4]

1. RBWH Pharmacy Department; 2. RBWH Department of Intensive Care; 3. University of Queensland Centre of Clinical Research; 4. Herston Infectious Diseases Institute

Purpose

- Cefepime is a widely used antibiotic in the ICU
- Critically ill patients display varied drug metabolism, necessitating individualised dosing in many cases
- Cefepime has a narrow therapeutic window (8-20mg/L)
- Adverse effects such as neurotoxicity are common at supratherapeutic levels, and can occur within therapeutic range
- Subtherapeutic dosing can lead to the emergence of resistance
- This audit was undertaken to determine the accuracy of TDM timing according to relevant guidelines, and to evaluate the proportion of patients with subtherapeutic, optimal, and supratherapeutic cefepime levels

Methods

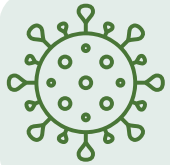
Data Sources
- Data were collected retrospectively, for the time period of January 2020 – December 2023
- Metavision and Auslab were utilised

Data Collected
- Demographic data such as age, sex and weight were collected
- Clinical data such as TDM records, indication, creatinine clearance were collected

Analysis
- Timing of TDM was cross-referenced with dosing schedules to evaluate accuracy
- Dose adjustments for renal impairment were examined in relation to the Therapeutic Guidelines recommendations

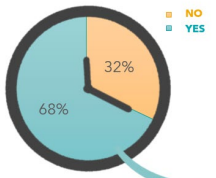
Results

50 instances of TDM were recorded over the 4 year period → This involved a total of 43 patients → 49% of patients were male and 51% were female

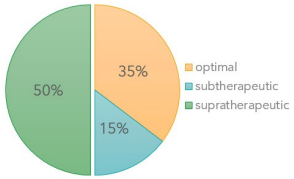


CNS infections and pneumonias were the most common indications

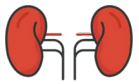
TDM timing appropriate



Proportions of levels



Supratherapeutic Patients with Reduced Renal Function



58%

Appropriate Dose Reduction

73%

Conclusion

This audit underscores the vital role of TDM in the ICU population, particularly for cefepime. Enhanced focus on TDM practices and adherence to guidelines are essential to prevent toxicity, ensure effective dosing, and optimize patient outcomes. TDM should be considered for all ICU patients with renal impairment or concerns of neurotoxicity.

HERSTON HEALTH PRECINCT SYMPOSIUM 2024