RESEARCH WEEK
20-24 OCTOBER 2025
INSPIRED RESEARCHERS
Northern Health






OCTOBER 2025 ABSTRACT BOOK

Northern Health

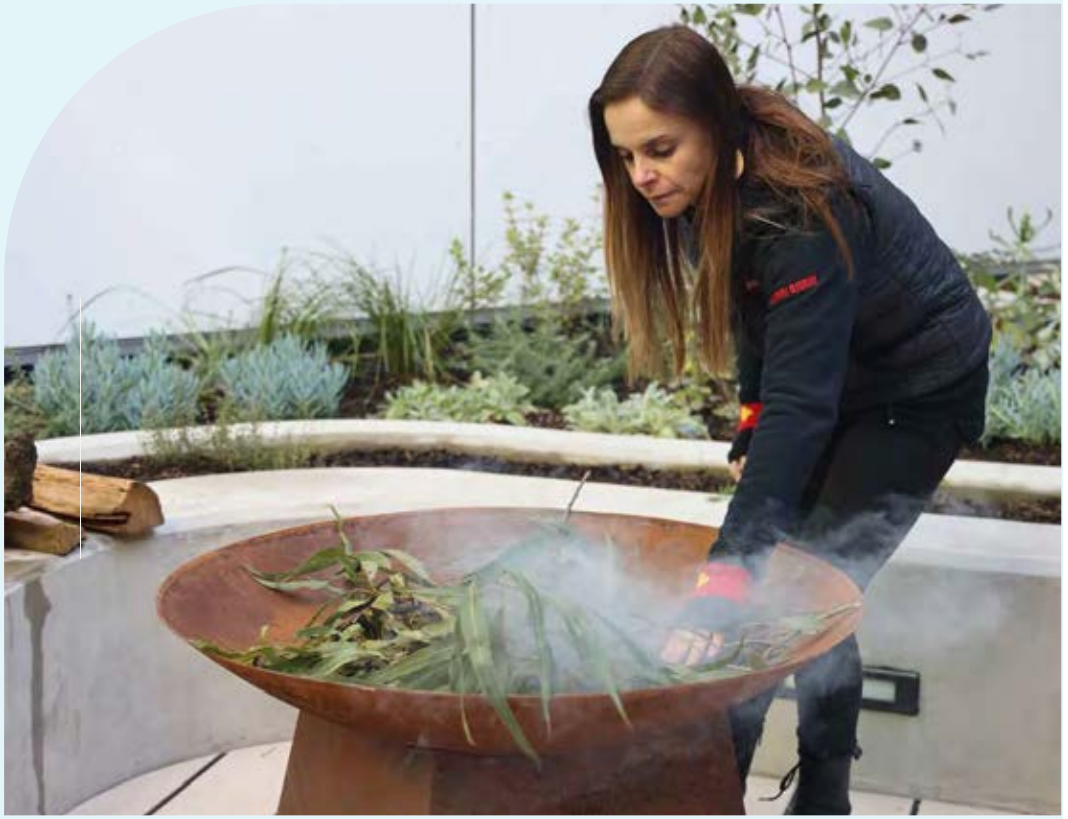
Northern Health

ACKNOWLEDGEMENT

Northern Health acknowledges the rich Aboriginal heritage of this country and acknowledges the Traditional Custodians of the lands on which our health services are built, the Wurundjeri Willum Clan and Taungurung People.

We acknowledge the waterways, the land, the sky and all who inhabit this place we call – Country.

We pay respect and acknowledge their ancestors and Elders, past, present and future, we recognise those who continue to protect and promote Aboriginal and Torres Strait Islander cultures.



Mandy Nicholson | Traditional Owner of the Wurundjeri, Dja Dja Wurrung and Ngurai Illam Wurrung, performed the smoking ceremony at the opening of the new Inpatient Psychiatric Unit at Northern Hospital.

Northern Health

Our Vision

Creating a healthier future by working together, innovating and delivering great care.

Our vision conveys our aspiration to lead health care and innovation for our community, drawing on the commitment and contributions of all our staff.

Our Values

Our values are integral to the culture of care, team work and collaboration at Northern Health.
Northern Health re-commits to the values of **Safe**, **Kind** and **Together** in our approach to patient care, and to each other.

Safe

We provide safe, trusted care for our patients. We are inclusive and culturally safe, celebrating the diversity of our staff and community.

Kind

We treat everyone with kindness, respect and empathy. We provide patient-centred and compassionate care.

Together

We work together with our staff, patients, consumers and health system partners.

Our Strategic Directions

These six directions have been developed in response to strategic issues identified in consultations with key stakeholders.

The directions are focused on addressing priorities for safety, sustainability, growth and innovation. They reflect our best assessment of opportunities and challenges in our current and future environment.

These directions will guide Executive and Board decisions and priorities over coming years, provide clarity of purpose for teams across Northern Health and enable progress to be measured and assessed.

1. Collaborate to deliver safe, efficient, effective and sustainable care in all our services
2. Demonstrate our commitment to the wellbeing of our valued workforce
3. Renew and strengthen our infrastructure, systems, tools and processes for financial sustainability and growth
4. Innovate to shape the future of health care in Victoria
5. Partner to keep people well and deliver the best possible care locally
6. Drive research and education to deliver excellent care and develop the next generation of clinicians and health care leaders

FOREWORD

Professor Prahlad Ho
Chief Medical Officer
Chair, Research Executive Committee

Associate Professor Justine Ellis
Research Operations Manager,
Research Development and
Governance Unit

Associate Professor Mayur Garg
Acting Director of Research

Welcome to Northern Health Research Week 2025!

The theme for this year is 'Healthcare 2050' as we envisage the future and the important role that Northern Health research will play in advancing clinical care for the people of Melbourne's North and beyond.

Research Week provides a whole-of-organisation opportunity to not only look forward, but to also reflect on the breadth and depth of research already being undertaken by our talented staff and students. We acknowledge, and celebrate with, our university partners - La Trobe University, RMIT University, and The University of Melbourne, and thank them for their ongoing support of this key Northern Health event.

2025 has been another year of strong growth and transformation for research at Northern Health, marked by an impressive 21% increase in abstract submissions for Research Week 2025, compared to 2024.

Highlights of the year include the launch of the Equity Diversity and Inclusion Research Partnership with La Trobe University in March 2025. The partnership will establish a collaborative research hub dedicated to enhancing health equity and diversity research, specifically addressing the needs of one of Victoria's most diverse and rapidly growing regions. The collaboration will also provide new career development opportunities for staff and students from both La Trobe University and Northern Health, helping to cultivate a stronger and more skilled workforce for the future.

There has also been remarkable progress of the Clinical Translational Research Partnership with RMIT University, established in May 2024. Already the partnership has delivered impressive outcomes including significant external funding, and has seen the appointment of a joint Professor of Translational Research, appointment of a joint postdoctoral fellow and research assistant, and commencement of the first of several PhD candidates.

Research Week 2025 will celebrate these achievements and more, bringing together national leaders and our own expert researchers to share knowledge, spark ideas, and inspire future discoveries.

Highlights for Research Week include:

- An opening session including our Chief Executive, Ms Debra Bourne, highlighting research at Northern Health.
- Keynote addresses from internationally recognised researchers including:
  - Professor Vassilis Kostakos (University of Melbourne) - A human-centred approach to digital health.
  - Professor James Boyd (Latrobe University) - Health Research in the Digital Age.
  - Distinguished Professor Vasso Apostolopoulos AM (RMIT University) - Bench to Bedside: Translating Cancer Vaccine Research into the Clinic.
  - Associate Professor Sam Forster (Hudson Institute of Medical Research) - Making Microbiome-Based Medicines a Reality.
- Showcasing Northern Health researchers through oral presentations of the top-ranked abstract submissions, and a series of poster sessions throughout the week in the Northern Hospital Epping entrance foyer.

The week will conclude with a celebration of research excellence, including presentations from recent recipients of competitive grants, a lively Great Debate on the topic "Robots will replace clinicians by 2050" and an awards ceremony for best poster, people's choice poster, and best abstract oral presentations including the 2025 Peter Brooks Research Award.

Research Week 2025 promises to be an inspiring and insightful event, offering opportunities for researchers at all stages of their career to connect, share, and celebrate the remarkable work being undertaken at Northern Health.

We look forward to your participation as we showcase the impact of research in shaping better care for our community and more broadly outcomes in healthcare.

RESEARCH WEEK PROGRAM

Monday, 20th October 2025

LECTURE SESSION 1: GRAND OPENING AND KEYNOTE

NCHER Lecture Theatre 1 (and via Teams)

12.30pm – 1.40pm

Chair: Associate Professor Mayur Garg

Official Opening: Debra Bourne
Chief Executive, Northern Health

Welcome to Research Week 2025: Associate Professor Mayur Garg
Acting Director of Research, Northern Health

RESEARCH WEEK PROGRAM

Monday, 20th October 2025 cont'd

LECTURE SESSION 1: GRAND OPENING AND KEYNOTE

NCHER Lecture Theatre 1 (and via Teams)

Keynote: Professor Vassilis Kostakos

A human-centred approach to digital health

Synopsis:

In this talk I will present some of the work that we carried out with Northern Health since 2017, and then talk about some of the more recent developments. The talk is an exploration of how various technologies can help us understand people and their behaviour. I believe this is an important way to look at technology: not just as a solution to a problem, but as a set of breadcrumbs that can help us understand who we are and what we do. In the work we have done at Northern Health we show ways to understand and improve the operations of a hospital. In more recent work, I will describe how we can begin to gain deeper insights on our behaviour through the use of sensing combined with Large Language Models. What if you had a digital version of a hospital and you could ask it questions?

Bio:

Vassilis Kostakos is a Computer Scientist who works in the fields of human-computer interaction and ubiquitous computing. His research focuses on how to use sensor data to understand people's behaviour, and how to develop everyday technologies that better understand and better respond to humans. He has previously worked at the University of Oulu (Finland), Carnegie Mellon University (USA), the University of Madeira (Portugal), and the University of Bath (UK). He is a Marie Curie Fellow, a fellow of the Academy of Finland Distinguished Professor Programs, and a SIGCHI Academy member.

RESEARCH WEEK PROGRAM

Monday, 20th October 2025 cont'd

REFRESHMENTS AND NETWORKING

NCHER Level 1 Atrium

1.40pm

POSTER SESSION 1

Foyer - Northern Hospital, Epping.

3.00pm – 4.00pm (displayed all day)

Authors of posters will be in attendance to answer any questions regarding their research

Abstract #7: A local review of the use of fresh frozen plasma and extended life plasma

Abstract #21: Colorectal Cancer Outcomes at the Northern Hospital: A Retrospective Review 2016 – 2021

Abstract #38: What is the correct duration of antimicrobials in infected, obstructed nephrolithiasis?

Abstract #41: When not to test JAK2: real-world JAK2 mutation testing for the investigation of erythrocytosis

Abstract #44: Malnutrition Point Prevalence Study 2025

Abstract #55: Pre-operative Diagnosis of Idiopathic Myointimal Hyperplasia of Mesenteric Veins via TAMIS Biopsy

Abstract #57: Palliative care and quality of end-of-life: evidence from a Victorian public hospital

Abstract #61: Can Weekly Telephone Support Prolong Breastfeeding Duration in Mothers at High Risk of Early Cessation?

Abstract #94: Co-design an Acupuncture Protocol for Acute Pain in Emergency Departments

Note: *Posters on display may be subject to change*

RESEARCH WEEK PROGRAM

Tuesday, 21st October 2025

LECTURE SESSION 2: HEALTH RESEARCH IN THE DIGITAL AGE

NCHER Lecture Theatre 1 (and via Teams)

10.30am – 12.00pm

Chairs: Professor Adam Semciw & Associate Professor Rebecca Jessup

Keynote: Professor James Boyd

Health Research in the Digital Age

Synopsis:

The presentation explains the transformation of healthcare driven by digital technology. The presentation highlights the move from a traditional, hospital-based care model to a more consumer-led, digitally connected one, outlining drivers such as technological advancements and demographic changes. The presentation also identifies a range of digital health solutions, discusses the opportunities and challenges of this shift, with a significant focus on health equity and the potential for a digital divide, and highlights the importance of digital data for population-level health research. It concludes by showcasing various research examples and educational programs in the field of digital health.

Bio:

Professor James Boyd is the inaugural Chair of Digital Health at La Trobe University. With over 25 years of experience using large, linked population-based health datasets, he has led research that informs health service monitoring, evaluation, and innovation. A pioneer in developing Privacy-preserving Record Linkage (PPRL) methodology, Professor Boyd's work has advanced public health insights, improved healthcare delivery, and supported the development of digital health solutions. Over the past decade, he has focused on building digital technology platforms to enable virtual care and remote monitoring, including supporting the establishment of a virtual emergency department model during the COVID-19 pandemic that has since been scaled to a state-wide service.

The keynote presentation will be followed by a panel discussion featuring **Professor Adam Semciw, Associate Professor Rebecca Jessup, Dr Loren Sher, Dr Jennie Hutton** *and* **Mr Tom Collins** *- who will share insights on equity lessons from the Victorian Virtual Emergency Department.*

RESEARCH WEEK PROGRAM

Tuesday, 21st October 2025 cont'd

LIGHT LUNCH AND NETWORKING

NCHER Level 1 Atrium

12.00pm – 12.30pm

LECTURE SESSION 3: ALLIED HEALTH – STEPPING INTO RESEARCH

NCHER Lecture Theatre 1 (and via Teams)

1.00pm - 2.00pm

Chairs: Emily Farrugia and Professor Adam Semciw

This session will showcase Northern Health allied health clinicians who participated in the **Stepping into Research Program** *and successfully completed systematic reviews.*

Simone LeBel

Topic: *The Effect of Early Outpatient Physiotherapy on Outcomes Following Lower Limb Arthroplasty: A Systematic Review and Meta-Analysis.*

Bio:

Simône LeBel is a senior physiotherapist working across outpatients and the elective orthopaedic screening clinic. With a focus on research, Simone completed the Stepping Into Research program in 2024, resulting in a publication in Wiley journal alongside her mentors and co-authors Dr David Snowdon, Dr Matthew King and Professor Adam Semciw.

Monika Sekulov

Topic: *Allied health training and education for parents of high-risk infants; impact on*

Bio:

Monika is a paediatric speech pathologist with strong interests in research and qu
program in 2024 and is currently preparing her systematic review for publication.

RESEARCH WEEK PROGRAM

Tuesday, 21st October 2025 cont'd

LECTURE SESSION 3: ALLIED HEALTH – STEPPING INTO RESEARCH

NCHER Lecture Theatre 1 (and via Teams)

This session will showcase Northern Health allied health clinicians who participated in the **Stepping into Research Program** *and successfully completed systematic reviews.*

Rebecca Turnbull

Topic: *Implementation of home-based HIIT in adults with cardiac disease: a systematic review using the RE-AIM framework.*

Bio:

Rebecca is a Senior Exercise Physiologist working in the Community Therapy Service at Bundoora Centre. She completed the Stepping Into Research program in 2023 and since then, has been working on her publication with her research team – Dylan Perera, Dr Hazel Heng and Dr Adam Semciw. Rebecca's systematic review has just been accepted for publication in the European Journal of Physiotherapy. She holds particular interests in cardiovascular disease and how exercise programs are delivered to achieve optimal outcomes for patients.

Jonathon Citroen

Topic: *The effect of physiotherapy contact in the Emergency Department on hospital re-presentations: A systematic review and meta-regression.*

Bio:

Jonathon is a secondary contact physiotherapist who has worked in the ED at the Northern Hospital for just over four years. With the growing interest in physiotherapy and advanced practice physiotherapy in the ED, Jonathon joined the Stepping into Research Program last year to contribute to the expanding body of evidence demonstrating the benefits of physiotherapists in this setting. Jonathon's research focuses on highlighting not only the value of advanced practice physiotherapy but also the role of secondary contact physiotherapy in improving patient outcomes when presenting to the ED.

RESEARCH WEEK PROGRAM

Tuesday, 21st October 2025 cont'd

POSTER SESSION 2

Foyer - Northern Hospital, Epping.

2.30pm – 3.30pm (displayed all day)

Authors of posters will be in attendance to answer any questions regarding their research

Abstract #1: Mental Health Nurses burnout and implications upon recovery-orientated care within the inpatient mental health services

Abstract #5: The effect of early post-operative outpatient physiotherapy on outcomes following lower limb arthroplasty: a systematic review and meta-analysis

Abstract #11: Historical analysis of initial post-caesarean analgesia: Intravenous vs per rectal

Abstract #19: Plasmin generation assay in predicting arterial thrombotic outcome in patients with chronic kidney disease

Abstract #52: Bidirectional Associations Between Patient Activation and Engagement in Digital Care Pathways

Abstract #69: A hepatology home-based care program improves readmissions and mortality in recently hospitalised patients with cirrhosis

Abstract #77: Barriers and enablers to evidence-based care for laparotomy wounds: A scoping review

Abstract #91: Swabs to Withhold Irrigation and Promote Surgical Efficiency: A prospective pilot study protocol

Note: *Posters on display may be subject to change*

RESEARCH WEEK PROGRAM

Wednesday, 22nd October 2025

POSTER SESSION 3

Foyer - Northern Hospital, Epping.

10.00am – 11.00am (displayed all day)

Authors of posters will be in attendance to answer any questions regarding their research

Abstract #4: Perioperative Outcomes in Smokers Undergoing Major Surgery: A Retrospective Audit at Northern Health

Abstract #12: Improving sexual and reproductive health of those with serious mental illness: scoping review

Abstract #33: A Cross Comparison of Jaundice Measurement Techniques in the Neonatal Unit

Abstract #42: Utility of Repeat B-type Natriuretic Peptides in Inpatients

Abstract #66: Trends in pleural disease admitted to Victorian public hospitals: An accumulating challenge

Abstract #75: User experience of a person-centred, ambulatory model of care for the management of malignant pleural effusion

Abstract #74: High rates of oral 5-aminosalicylic acid co-prescription with advanced therapy in patients with ulcerative colitis

Abstract #76: Healthcare expense in patients with acute severe ulcerative colitis (ASUC) is driven by initial length of stay and need for rescue therapy

Abstract #96: Timely administration of Enoxaparin following caesarean section for VTE prevention: A retrospective audit

Note: Posters on display may be subject to change

RESEARCH WEEK PROGRAM

Wednesday, 22nd October 2025 cont'd

LECTURE SESSION 4: RESEARCH GRAND ROUND – TRANSLATIONAL RESEARCH

NCHER Lecture Theatre 1 (and via Teams)

12.00pm – 1.00pm

Chair: Professor Shekhar Kumta

Keynote: Distinguished Professor Vasso Apostolopoulos AM

From Bench to Bedside: Translating Cancer Vaccine Research into the Clinic

Synopsis:

The field of vaccinology has undergone a remarkable transformation, evolving from traditional live-attenuated and inactivated vaccines to protein- and peptide-based formulations, whole-tumour vaccines, and, most recently, mRNA-based platforms. These innovations have not only revolutionised infectious disease prevention but are now driving a new era in cancer. Cancer vaccines represent one of the most promising frontiers, aiming to stimulate the immune system against markers expressed on cancer cells. This presentation will highlight the latest breakthroughs in cancer vaccines, personalised cancer vaccines and combination approaches to include immune checkpoint inhibitors and other immunomodulators. Finally, my personal expertise in cancer vaccine development in the last 30 years, from biomarker discovery to vaccine development to human clinical trials and what have been our learnings will be presented. Collectively, all these perspectives will illustrate how cancer vaccines are redefining immunotherapy and moving us closer to precision, durable, and widely applicable cancer treatments.

Bio:

Distinguished Professor Vasso Apostolopoulos AM

Vasso is Head of the Healthy Lifespan and Chronic Diseases Program at RMIT University. Her expertise spans immunology, x-ray crystallography, medicinal chemistry, cellular biology, biomarker discovery, and translational research. She focuses on improving health and longevity through vaccine and drug development, discovery of bioactive compounds for chronic diseases, and AI-driven healthcare solutions. Her work addresses cancer, autoimmunity, infectious diseases, pandemic preparedness, metabolic disorders, and drug addiction, while promoting lifestyle interventions. With over 520 publications, 20 patents, and supervision of 70+ students, Vasso ranks among the top 0.13% of researchers globally and is a sought-after speaker.

RESEARCH WEEK PROGRAM

Wednesday, 22nd October 2025 cont'd

LIGHT LUNCH AND NETWORKING

NCHER Level 1 Atrium

1.00pm

LECTURE SESSION 5: BEST ABSTRACT ORAL PRESENTATIONS SESSION A

NCHER Lecture Theatre 1 (and via Teams)

2.00pm – 3.15pm

Chair: **Associate Professor Justine Ellis**

Abstract #78: Partnering with the community to co-design abortion care in Melbourne's north
Presenter: **Eleanor Johnson**

Abstract #43: Early Infliximab therapy is associated with reduced length of stay in acute severe ulcerative colitis
Presenter: **Dr Calvin Xu**

Abstract #46: Real-world outcomes in early stage resected pancreatic cancer. Can we do better?
Presenter: **Tao Ouyang**

Abstract #62: Impact of limited English proficiency on cognitive enhancer prescription rates
Presenter: **Dr Eva Stachnik**

Abstract #73: Association of Acute Kidney Injury with Non-Home Discharge in Critically Ill Elderly Patients: A retrospective study
Presenter: **Junzhe Zhu**

Abstract #92: Delirium risk prediction from routinely collected electronic health records: model development and internal validation
Presenter: **Dr Swapna Gokhale PhD**

RESEARCH WEEK PROGRAM

Thursday, 23rd October 2025

LECTURE SESSION 6: MEDICAL GRAND ROUNDS

Northern Hospital, Ground Floor, Main Hospital Lecture Theatre (and via Teams)

8.00am – 9.00am

Chair: Associate Professor Craig Aboltins

Keynote: Dr Katharine See

Outcomes for Impact: Redesigning Healthcare Around What Matters Most

Synopsis:

Healthcare is at a tipping point. Traditional models built around activity and volume are no longer enough to deliver meaningful results for people or health systems. This presentation explores how Northern Health's "Outcomes for Impact" strategy is transforming care by focusing on what matters most - measuring outcomes that reflect real lives, using data to guide decisions, and redesigning services to deliver person-centred value. Through case studies in asthma care, virtual cardiac rehabilitation, and paediatric tonsillectomy, it will show how outcomes-driven innovation can improve equity, experience, and effectiveness, while shaping the future of healthcare across Victoria and beyond.

Bio:

Dr Katharine See is the Chief Health Outcomes Officer and Director of Respiratory Medicine at Northern Health where she leads the Clinical Leadership, Effectiveness and Outcomes team. She is responsible for implementing outcomes collection via digital care pathways, redesigning clinical models of care by enhancing multidisciplinary collaboration, and implementing new technologies all aimed at achieving better outcomes for individuals and better health for populations. Katharine is passionate about driving change towards value-based health care and healthcare reform. She believes digital health will help to deliver the outcomes that matter most of patients and communities.

RESEARCH WEEK PROGRAM

Thursday, 23rd October 2025 cont'd

LECTURE SESSION 7: BEST ABSTRACT ORAL PRESENTATIONS SESSION B

NCHER Lecture Theatre 1 (and via Teams)

10.00am – 11.15am

Chair: Dr Tilini Gunatillake

Abstract #24: The Impact of Socio-economic Status on Outcomes following ICU admission in Australia: A Linked-Database Study
Presenter: **Dr Sing Tan**

Abstract #3: Pre-operative fasting times and the incidence of regurgitation and aspiration – a single-network retrospective data analysis
Presenter: **Ella Francis**

Abstract #15: Large Bore Mechanical Thrombectomy for Intermediate-High Risk Pulmonary Embolism: Northern Health Experience
Presenter: **Dr Roy Kingsley Wong**

Abstract #64: Fibrinogen Spectral Analysis via FTIR and Multivariate Analyses for Enhanced Risk Stratification in Venous Thromboembolism
Presenter: **Dr Sanjana Prasad**

Abstract #67: Tracking a growing burden: trends in admissions for malignant pleural disease in Victoria
Presenter: **Dr Victor Duong**

Abstract #85: Evaluating the Appropriateness of Proton Pump Inhibitor Prescribing in General Medical Inpatients
Presenter: **Hirusha Liyanage Kananke**

RESEARCH WEEK PROGRAM

Thursday, 23rd October 2025 cont'd

POSTER SESSION 4

Foyer - Northern Hospital, Epping.

1.00pm – 2.00pm (displayed all day)

Authors of posters will be in attendance to answer any questions regarding their research

Abstract #13: Balancing safety and efficiency: Outcomes of a low-risk pulmonary embolism discharge pathway

Abstract #16: Cirrhosis severity correlates with reduced fibrin generation and enhanced fibrinolysis

Abstract #17: Impact of ABO blood group on global coagulation assays

Abstract #27: Neurodevelopmental Outcomes and Associated Risk Factors in Moderate to Late Preterm Infants: A Retrospective Study

Abstract #45: A Retrospective Review of Neonatal Bilious Vomiting in a Non-Tertiary Neonatal Unit

Abstract #56: Comparing Neuraxial Opioid Techniques for Caesarean Section Analgesia: A Northern Health Study

Abstract #68: Does ERAS affect opiate use and outcomes in arthroplasty?

Abstract #93: From Lipid Extraction to Analysis: Clinical Potential of Vibrational Spectroscopy for Lipid Profiling in Plasma

Abstract #95: Patient experiences of Medical Obstetrics at Home (MOAH) care at Northern Health: A qualitative study

Note: *Posters on display may be subject to change*

LECTURE SESSION 8: SURGICAL RESEARCH FORUM

Northern Hospital, Ground Floor, Main Hospital Lecture Theatre (and via Teams)

5.30pm - 7.00pm

Chair: Associate Professor Russell Hodgson

A showcase of surgical research being undertaken at Northern Health

RESEARCH WEEK PROGRAM

Friday, 24th October 2025

LECTURE SESSION 9: NORTHERN HEALTH FOUNDATION RESEARCH BREAKFAST | FUTURE-FOCUSED

NCHER Conference Room 3.1 (and via Teams)

8.00am – 10.30am

Chair: Associate Professor Mayur Garg

Introduction to the Northern Health Foundation

Pina Di Donato

Executive Director of Foundation & Public Affairs, Northern Health

Keynote: Associate Professor Sam Forster

Making Microbiome-Based Medicines a Reality

Synopsis:

Microbiome-based medicines hold enormous potential for transforming human health, yet that promise has not yet been fully realised. Less than a decade ago, we developed key methods to grow the majority of bacteria that naturally inhabit the human gut, a key advance in the design of rationally targeted therapies. The focus has now shifted from generic probiotics to therapies composed of key health-associated species identified through sampling directly at the site of disease rather than from faecal material. Current research centres on identifying the right combination of bacteria for the right patient or cohort at the right time and producing these reproducibly and at scale. Together, these advances are laying the foundation for microbiome therapeutics that are precise, effective and ready for clinical application.

Bio:

Associate Professor Sam Forster is a CSL Centenary Fellow and Research Group Leader at the Hudson Institute of Medical Research and Co-founder and Chief Scientific Officer of BiomeBank. His academic research is dedicated to developing precise, technology-driven approaches to modulate the human microbiome. This research spans the creation of advanced tools to characterize microbiome changes across a spectrum of conditions including Inflammatory Bowel Disease, Irritable Bowel Syndrome and early-life disorders with specific focus on how factors such as diet, antibiotics, phage and microbial composition influence community structure and resilience. This integrated knowledge underpins the development of next-generation microbiome-based medicines.

RESEARCH WEEK PROGRAM

Friday, 24th October 2025 cont'd

CLINICAL TRANSLATION PARTNERSHIP

9.10am - 9.40am

*Hear from **Professor Prahlad Ho, Professor Catherine Itsiopoulos** and **Professor Shekhar Kumta** as they present about the Clinical Translation Partnership.*

5-minute Funding Celebration

9.40am - 10.05am

Rapid-fire presentations from Northern Health Chief Investigators on successful competitive research grants.

- **Professor Adam Semciw**
  Musculoskeletal Wellness Program: A virtual pre-operative program to support older adults through joint replacement surgery
- **Dr Katharine See**
  Embedding AI in Cardiac Point-of-Care Ultrasound: A path to improved efficiency and person-centred outcomes
- **Dr Loren Sher**
  Transforming the delivery of acute cardiac care: Getting the right patient, the right care, at the right time and place
- **Dr Sanjeevan Muruganandan**
  A) Implementation Research to Improve Outcomes in Primary Spontaneous Pneumothorax (iIMPROVE PSP)
  B) Evaluation of a digital health model of care for the management of adults with symptomatic malignant pleural effusion

RESEARCH WEEK PROGRAM

Friday, 24th October 2025 cont'd

NETWORKING AND REFRESHMENTS
10.05am - 10.30am

THE GREAT DEBATE
10.30am - 11.15am

Moderated by: Associate Professor Mayur Garg

Back by popular demand! *Join us for one of the most entertaining and thought-provoking highlights of Research Week 2025 —* ***The Great Debate.***

This year, two teams of leading clinicians, researchers, and academics will go head-to-head, arguing for and against a provocative research question guaranteed to spark lively discussion and laughter.

Great Debate Topic: ***Robots will replace clinicians by 2050.***

Affirmative Team	**Negative Team**
Professor Don Campbell	*Ravinder Kumar*
Dr Russell Hodgson	*Associate Professor Rebecca Jessup*
Dr Karen Barclay	*Professor Shekhar Kumta*

RESEARCH WEEK PROGRAM

Friday, 24th October 2025 cont'd

AWARDS CEREMONY

11.15am - 11.30am

Chair: Professor Prahlad Ho

Join us as we announce the award recipients for the best poster and oral presentations and celebrate the great work being done by Northern Health researchers.

Awards will be presented by Professor Prahlad Ho (Chair of Research Executive Committee and Chief Medical Officer) and Chris Harding (Director of the Northern Health Foundation).

WRAP-UP & CLOSE

11.30-11.45am

Please join us for the formal closing of Research Week Northern Health for 2025.

ABSTRACTS

RESEARCH WEEK
20-24 OCTOBER 2025
INSPIRED RESEARCHERS
Northern Health

ALLIED HEALTH

#5

Effect of early post-operative outpatient physiotherapy following lower limb arthroplasty. A Systematic Review and Meta-Analysis

Authors:

Simone LeBel[1], Matthew G. King[2], Adam I. Semciw[2,3], David A. Snowdon[2,4,5]

[1]Northern Health, [Melbourne, Australia,
[2]School of Allied Health, Human Services and Sport, La Trobe University, Melbourne, Australia,
[3]Northern Centre for Health Education and Research, Melbourne, Australia,
[4]Academic Unit Peninsula Health, Frankston, Australia,
[5]National Centre for Healthy Ageing, Frankston, Australia

NH Division & Department:
Community Therapy Service, Physiotherapy

Background: Although joint arthroplasties are generally successful many patients experience persistent impairments. It is unknown whether early outpatient physiotherapy can address these persistent impairments. The objective of this systematic review is to determine whether early outpatient physiotherapy, compared to delayed physiotherapy, improves pain, physical function and quality of life (QOL) in patients following lower limb arthroplasty.

Method: A systematic review and meta-analysis was conducted following the PRISMA guidelines. Searches were conducted across MEDLINE, Embase, CINAHL, Cochrane, and PsycINFO. Eligible studies included randomised control trials (RCTs) comparing early and delayed physiotherapy in people after lower limb arthroplasty. Data were pooled using a random-effects model. Risk of bias assessment was completed using the Physiotherapy Evidence Database scale. The Grading of Recommendations Assessment, Development, and Evaluation approach was used to assess the certainty of evidence.

Results: Three RCTs involving 224 participants undergoing joint arthroplasty (lateral uni-compartment knee replacement, total knee replacement and total hip replacement) were included. Meta-analyses demonstrated no significant differences in pain, physical function or QOL between early and delayed physiotherapy in short, medium or long-term follow-ups. The certainty of evidence ranged from very low to low, with negligible to minimal effect sizes indicating minimal clinical relevance.

Conclusion: The systematic review and meta-analysis found low to very low-quality evidence that early outpatient physiotherapy following knee or hip joint arthroplasty does not improve pain, physical function, or QOL compared to delayed physiotherapy. Future research should aim to confirm modifiable risk factors contributing to poor outcomes post-operatively and evaluate the effectiveness of early targeted physiotherapy in these high-risk subgroups.

#35

The effectiveness of online clinical mentoring on physiotherapists' clinical practice. A randomised controlled trial

Authors:

Edmund Leahy[1,2,3], Lucy Chipchase[4], Rocco Cavaleri[2], Felicity Blackstock[2,5]

[1]Northern Health, Melbourne, Victoria, Australia,
[2]Western Sydney University, Sydney, Australia,
[3]La Trobe University, Melbourne, Australia,
[4]Flinders University, Adelaide, Australia,
[5]University of Sydney, Sydney, Australia

NH Division & Department:
Physiotherapy

Background: Participation in continuing professional development is thought to be essential for improving physiotherapists' clinical practice and their patient outcomes. Continuing professional development with active components, such as clinical mentoring, have been shown to enhance practice, however the relative benefits of online clinical mentoring when compared to other online learning methods is unclear. This study aimed to determine whether a short-term online clinical mentoring program was more effective than asynchronous online lectures in improving physiotherapist practice and patient outcomes.

Method: In this randomized controlled trial, 27 physiotherapists were randomized to receive either 6 hours of online clinical mentoring (experimental group) or 6 hours of pre-recorded online lectures (control group). The primary outcome was the function of patients treated by the physiotherapists, measured using the Patient-Specific Functional Scale (PSFS) at baseline and 4-week follow-up. Secondary outcomes included the Functional Rating Index (FRI) and Global Rating of Change Scale (GRC). Physiotherapist outcomes (confidence and self-reflection) were assessed using the Clinician Confidence Questionnaire for Spinal Pain and Self-Reflection Insight Scale. Linear mixed model regression was used to analyse patient outcomes, while ANCOVA analysed physiotherapist outcomes.

Results: Twenty-three physiotherapists and 122 patients completed follow-up. No significant between-group differences were found for patient outcomes (PSFS MD = 0.02, p = 0.95; FRI MD = -3.01, p = 0.42; GRC MD = -0.08, p = 0.86). Physiotherapists in the experimental group showed no greater improvement in confidence (MD = -2.17, p = 0.52) or self-reflection (MD = 3.66, p = 0.19) compared to the control group.

Conclusion: A 6-hour online clinical mentoring program did not significantly improve physiotherapist confidence, self-reflection, or patient outcomes when compared to asynchronous online lectures. These findings may inform the design of future online clinical mentoring used for the professional development of physiotherapists and other health professionals.

#44

Malnutrition Point Prevalence Study 2025

Authors:

Nadia Obeid[1], Chantal Gerges[1], Rachael Evans[1], Rebekah Fouhy[1], Rebekah Parastatdis Frimodt[1], Emily Quinton[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Allied Health, Dietetics

Background: Malnutrition is estimated to affect up to 40% of patients in Australian hospitals. This study aimed to describe malnutrition prevalence at Northern Health (NH) at a singular time-point.

Method: Auditors collected data across all inpatient beds at Northern Hospital Epping (NHE), Bundoora Centre (BC) and Broadmeadows Hospital (BH) over a two-week period during June-July 2025. The auditors screened electronic medical records and where indicated, completed the Malnutrition Screening Tool (MST) and Subjective Global Assessment (SGA) to diagnose malnutrition and its severity. Data was analysed descriptively.

Results: Of the 404 participants included in this study 19% (n=78) were malnourished (mean age 75 years, 35% male 65% female). Malnutrition prevalence was highest at BH site (32%) and on BH Unit 3 (41%). All (100%) patients with a malnutrition diagnosis were receiving care from the NH Dietetics Service.

Conclusions: The overall prevalence of malnutrition at NH (19%) is lower than the national estimated prevalence (up to 40%) but prevalence at BH Unit 3 was on par (41%). This is the seventh year this study has been completed; the data provides comparison to past and future malnutrition prevalence studies and evaluation of malnutrition prevention and management strategies at NH.

#48

Boney and Inflammatory Changes of the Ipsilateral Foot Following First Toe and Partial First Metatarsal Amputation: A Case Series

Authors:

[1]Rhiannon Mackley

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Podiatry

Background: First toe amputations, including those involving the first metatarsal, are commonly performed to manage infection, osteomyelitis, or nonhealing ulcers. While generally preserving foot function, these procedures can alter biomechanics and lead to secondary complications. This case series explores postoperative bone and inflammatory changes, addressing a gap in current literature.

Method: A retrospective case series was conducted at Northern Health, Victoria, examining patients who underwent first toe amputation with or without partial first metatarsal resection between January 2024 and January 2025. Of 265 first toe amputations during this period, five patients met inclusion criteria, which required new ipsilateral foot changes (e.g., pain, heat, swelling, erythema) and documented follow-up with the High Risk Foot Clinic. Data collected included demographics, diabetes status, vascular and neurological assessments, amputation details, symptom onset, clinical presentation, footwear, and relevant laboratory and radiological findings. Final diagnoses were determined through a combination of clinical, imaging, and pathology results, with multidisciplinary team input.

Results: Four patients developed structural or inflammatory changes following first toe amputation, with radiographic findings such as fractures, dislocation, and collapse emerging on average 13 weeks post-surgery. Clinical signs included localised erythema, swelling, and warmth, with elevated C-Reactive Protein in three cases and elevated White Cell Count in one. Four patients were provisionally diagnosed with Charcot neuroarthropathy, of which one was confirmed.

Conclusion: Amputation can cause mechanical and inflammatory changes that mimic infection or Charcot neuroarthropathy. This case series highlights the need to consider non-infective bone complications when assessing post-amputation foot symptoms. Altered gait and pressure distribution may contribute to these changes, indicating a potential role for targeted offloading strategies in prevention

CANCER SERVICES

#46

Real-world outcomes in early stage resected pancreatic cancer. Can we do better?

Authors

Tao Ouyang[1,3], Wei Hong[2], Belinda Lee[1,2,3,4,5]

[1]Northern Health, Melbourne, Victoria, Australia,
[2]Walter and Eliza Hall Institute of Medical Research, Parkville, Victoria, Australia,
[3]University of Melbourne, Parkville, Victoria, Australia,
[4]The Royal Melbourne Hospital, Parkville, Victoria, Australia,
[5]Peter MacCallum Cancer Centre, Melbourne, Victoria, Australia

NH Division & Department:

Cancer Services Division, Department of Medical Oncology

Background: Pancreatic ductal adenocarcinoma (PDAC) remains one of the most aggressive tumours and recurs in most patients after curative-intent resection. Early recurrence (ER), defined as recurrence within 12 months after surgery, is a critical determinant of poor survival, but has not been fully investigated for its predictors and clinical implications in large real-world cohorts. Our study aims to characterise patterns of recurrence in PDAC, identify clinicopathological variables that are predictive of early recurrence and reduced overall survival.

Method: Retrospective data extracted from PURPLE registry encompassing patients identified with resected PDAC across 44 institutions, treated between November 2012 to February 2025. Categorisation of clinicopathological features, Kaplan-Meier survival analysis, univariate and multivariate Cox regression models were performed.

Results: Of 1230 patients identified, with a median follow up of 21.5 months, the overall recurrence rate was 59%, with ER observed in 38% of cases. ER was associated with significantly reduced median OS of 14.65 months compared to 48.52 months in the non-ER cohort (p<0.001). Importantly, only 66% of ER patients survived the initial post-operative 12 months, compared to 99% in the non-ER group (p<0.001). Independent predictors of ER included high T stage (p=0.011), high-grade tumour (p=0.013), lymphovascular (p<0.001) and perineural invasion (p=0.008), more than 2 positive lymph nodes (p<0.001), elevated preoperative CA19-9 exceeding 154 U/ml (p<0.001), and low BMI (p=0.002). Isolated lung recurrence occurred more frequently in non-ER patients and was associated with more favourable survival outcomes (p<0.001). Importantly, administration of neoadjuvant therapy was associated with significantly reduced ER risk (p<0.001).

Conclusion: Early recurrence is associated with poor prognosis. High risk clinicopathological features identified in this study could potentially be incorporated into future studies to develop prognostic tools for risk stratification, guidance on treatment decisions and surveillance intensity in resected PDAC.

#57

Palliative care and quality of end-of-life: evidence from a Victorian public hospital

Authors:

Alison Giles[1,3], Jaclyn Yoong[1,3], Nga Dang[1], Elizabeth Davies[1], Adam King[1], Monica Gill[1], Melissa Sajeva[1], Florencia Sjaaf[2,3], Chris Schilling[2,3]

[1]Northern Health Melbourne, Victoria, Australia, [2]Melbourne School of Population and Global Health, [3]University of Melbourne; Melbourne, Victoria, Australia

NH Division & Department:

Department of Palliative Care, Cancer Services; Decision Support Unit; Health Information Services, Finance Department

Background: There is growing evidence that timely palliative care is associated with reduced rates of acute care utilization, and an improved quality of end-of-life. Our aim was to investigate this for a major Victorian public hospital.

Method: Linked data on all hospital decedents from January 2018 to December 2023 was obtained from the hospital's Decision Support Unit. Quality of end-of-life metrics were coded from the literature. Palliative care was identified via a palliative care inpatient episode, a palliative approach to care, a consultation and/or a community episode. The timing of palliative care was categorised into timely (90+ days before death) or late (<90 days before death). Logistic regression was used to evaluate the impact of palliative care, and timely palliative care, on end-of-life metrics.

Results: In total, 5,464 decedents were analysed. The mean age at death was 77.8 years (std dev: 12.9), 45.7 per cent were female, and 23.7 per cent died of cancer. Palliative care was provided to 73.9 per cent of decedents, but only 8.4 per cent received it in a timely manner. Provision of palliative care was associated with reduced ICU admissions in the last 30 days of life (OR: 0.02, p<0.001), reduced inpatient stays of 14 days or longer in the last year of life (OR: 0.43,p=0.085), and reduced chemotherapy in the last 30 days of life (OR: 0.43, p=0.094) when the cohort was limited to those with cancer. Timely palliative care, relative to late palliative care, was associated with further reduced ICU admissions (OR 0.34, p=0.002) and inpatient stays of longer than 14 days (OR: 0.66, p=0.041). Selection bias limited the analysis and could only be partially adjusted for.

Conclusion: In this public hospital, the provision of palliative care, and timely palliative care, was associated with an improved quality of end-of-life and reduced healthcare utilisation.

#58

Measuring palliative care – how does the Z51.5 perform?

Authors:

Alison Giles[1,3], Jaclyn Yoong[1,3], Nga Dang[1], Elizabeth Davies[1], Adam King[1], Monica Gill[1], Melissa Sajeva[1], Florencia Sjaaf[2,3], Chris Schilling[2,3]

[1]Northern Health, Melbourne, Victoria, Australia, [2]Melbourne School of Population and Global Health, [3]University of Melbourne; Melbourne, Victoria, Australia

NH Division & Department:

Department of Palliative Care, Cancer Services, Decision Support Unit, Health Information Services, Finance Department

Background: Several studies have investigated the impact of palliative care (PC) on healthcare utilization and quality of end-of-life metrics. The primary aim of this study was to investigate the use, cost and outcomes of PC on end-of-life healthcare utilisation and quality at a tertiary academic hospital in Melbourne. Within this study, we examined the utility of the Z51.5 code in investigating use of PC. The Z51.5 is the International Classification of Diseases (ICD)-10 code from the World Health Organization (WHO) to capture the provision of PC in activity data; to inform service planning, resource utilisation and funding.

Method: We obtained linked data on all hospital decedents from January 2018 to December 2023 from the hospital's Decision Support Unit. PC was identified via a PC inpatient bed episode, a "palliative approach to care" Z51.5 code, a consultation team visit or a community care episode.

Results: 5,464 decedents were analysed. Data from financial years FY2018 to FY2022 was examined. Over the 5 years, hospital-based PC consultancy team (HBPCCT) episodes trended up (from 1031 to 1504). The absolute number of episodes with a Z51.5 code also trended up (461 to 624); however, only less than half of HBPCCT episodes were inpatient admissions with a Z51.5 code with no corresponding increase observed. Z51.5 codes in admitted patient episodes also trended up (from 681 to 865). Approximately 70% of admissions coded with a Z51.5 code had a HBPCCT contact within the admission stay.

Conclusion: In this study PC activity in terms of HBPCCT episodes and "Palliative approach to care" Z51.5 codes rose over a 5-year period. However, the discrepancy between in the number of HBPCCT episodes versus the proportion of HBPCCT episodes with a Z51.5 code may suggest the utility of the Z51.5 has limitations in how its use reflects PC activity.

#60

Location of a Palliative Care Unit influences service provision

Authors:

Alison Giles[1,3], Jaclyn Yoong[1,3], Nga Dang[1], Elizabeth Davies[1], Adam King[1], Monica Gill[1], Melissa Sajeva[1], Florencia Sjaaf[2,3], Chris Schilling[2,3]

[1]Northern Health, Melbourne, Victoria Australia, [2]Melbourne School of Population and Global Health, [3]University of Melbourne; Melbourne, Victoria, Australia

NH Division & Department:

Department of Palliative Care, Cancer Services, Decision Support Unit, Health Information Services, Finance Department

Background: Inpatient palliative care services, known as Palliative Care Units (PCUs), exist in different locations; stand-alone facilities or co-located within an acute hospital environment. In June 2022, the PCU at a tertiary academic health service in outer metropolitan Melbourne was moved from an off-site stand-alone facility to a ward integrated within the acute hospital. The aim of this project is to investigate the impact of moving the PCU from an offsite location to an integrated onsite location on service provision.

Method: Data was extracted from 1st Jan 2018 to 31st December 2023 for palliative care inpatient beds, patient demographics and episode variables.

Results: PCU episodes have trended up over the last 5 years with a step increase in 2022 that appears to have been continued in 2023. This was an increase of 42% in the number of patients admitted. Between 14% and 23% of patients had more than one episode on PCU. Patient demographics have remained relatively stable, while the share of patients who died during the admitted episode have fluctuated (between 62 and 75%) with no clear trends. The average length of stay decreased from 11.5 days when off site to 8.3 days when integrated onsite.

Conclusion: When integrated into the acute health services, more patients were accessing care on PCU, and the average length of stay dropped. This information can assist in the planning and provision of palliative care inpatient services. Following these results, an attempt will be made to understand the revenue and costs associated with the episodes of care.

#88

Building capacity and expanding access to Cancer Clinical Trials in Northern Health

Authors:

Sharni Norouzi[1], Lisa Walker[1], Stefania Zen[2], Belinda Lee[1], Rebecca Jessup[3], Spira Stojanovik[4], Chong Chyn Chua[1]

[1]Cancer clinical trials services, Northern Health, Melbourne, Australia
[2]Transcultural and Language Services, Northern Health, Melbourne, Australia
[3]Allied Health, Northern Health, Melbourne, Australia
[4]NEMICS, Austin Health, Melbourne, Australia

NH Division & Department:

Cancer Clinical Trials Unit, Transcultural and Language Services and Allied Health

Background: Culturally and Linguistically Diverse (CALD) communities experience significant barriers to participating in clinical trials. Cancer clinical trials (CCT) unit at Northern Health (NH), based in one of Victoria's most multicultural regions, implemented a focused strategy to improve the inclusion of CALD patients in clinical trials.

Methods: Retrospective audits were conducted on patients with cancer and CCT participants covering the past decade. Three surveys targeted consumers, interpreters, and staff. Focus groups with each group supported the co-design of pilot toolkits.

Results: Cancer presentations at NH have risen over the past decade, with nearly half of patients born overseas. NH reported the highest proportion of patients with limited English proficiency in Victoria (24%). Among CCT participants, 51.8% were overseas-born and 18.6% preferred a language other than English. Currently, 42% of those enrolled in interventional studies are not born in Australia. Among 118 survey respondents, 90% of consumers, 94% of interpreters, and 69% of staff were born overseas. Although 65% of consumers had heard

of clinical trials, only 30% were aware of availability at NH. 81% had never received trial information, and 39% reported difficulty understanding consent forms. Interpreter use was high (76%), with staff preferring on-site (89%) and consecutive (70%) interpreting. However, 59% of interpreters felt neutral or uncomfortable interpreting consent forms. Around 60% of staff reported challenges with interpreter bookings and limited time per consult. Key barriers included language, health literacy, uncertainty about clinical trials, time constraints, and lack of simplified information. Solutions proposed included sufficient appointment time and improved language support. In response, the CCT unit introduced CALD-specific recruitment pathways, translated resources, a centralised trial repository, interpreter training, new interpreter request pathways, and a community awareness campaign.

Conclusion: We identified barriers to CALD participation in clinical trials and co-designed practical toolkits to support more equitable engagement in cancer research.

DIAGNOSTIC SERVICES

#6

From bite to rods: Identifying *Capnocytophaga canimorsus* on blood film

Jesica Oktaviana[1], Chris Wong[2], Dylan Sivarajan[2], Sarah Jones[3], Saliya Hewagama[2], Hui Yin Lim[1,4,5]

[1]Northern Pathology Victoria, Northern Health Melbourne, Victoria, Australia.
[2]Department of Infectious Diseases, Northern Health, Melbourne, Victoria, Australia.
[3]Department of Critical Care, Northern Health Melbourne, Victoria, Australia.
[4]Australian Centre for Blood Diseases, Monash University, Melbourne, Victoria, Australia.
[5]Department of Medicine, Northern Health, University of Melbourne, Heidelberg, Victoria, Australia.

Introduction: Septicaemia necessitates rapid diagnosis and intervention due to its critical nature. While Gram-stain culture remains the gold standard in the identification of organisms, the culture results may take a few days to become available. Occasionally, peripheral blood film assessment can help to expedite the identification of causative intracellular or extracellular pathogens.

Case report: A 63 year old male presented with non-neutropenic septic shock, which rapidly progressed to severe coagulopathy, multiorgan failure and bilateral lower limb ischaemia. Apart from a distant history of treatment with PD-1 inhibitor for colorectal cancer over 6 months prior, there were no other identifiable risk factors for immunosuppression. Initial investigations demonstrated a high anion gap metabolic acidosis, multi-organ failure and disseminated intravascular coagulation. A CT chest/abdomen/pelvis demonstrated renal cortical necrosis but no obvious foci of infection.

Peripheral blood smear (Giemsa staining) showed neutrophils with toxic changes and there was abundance of both intracellular and extracellular fusiform bacteria, suspicious for *Capnocytophaga sp*. Further questioning revealed a history of dog scratch on his lower limb, with frequent licking from the family pet. The patient was initially treated with meropenem, and switched to piperacillin-tazobactam. Gram stain culture of aerobic and anaerobic bottles subsequently confirmed *C. canimorsus* on Day 2 of admission. The patient required, mechanical ventilation, vasopressor and inotropic support and renal replacement therapy in the intensive care unit for two weeks. He subsequently underwent bilateral below knee amputations and remains dialysis-dependent.

Discussion: *Capnocytophaga canimorsus* is a Gram-negative commensal in the oral cavity of dogs and cats, which causes rare but severe infections in humans. The pathognomonic findings of intracellular and extracellular long, thin, fusiform rods in the peripheral blood smear, while uncommon, can help to expedite diagnosis in these often very unwell patients with fulminant septicaemia, allowing treating clinicians to promptly choose a more targeted therapy.

#7

A local review of the use of fresh frozen plasma and extended life plasma

Jesica Oktaviana1, Sofia Plymin1, Joseph Rigano[1], Frank Hong[1], Hui Yin Lim[1,2,3]

[1]Northern Pathology Victoria, Northern Health Melbourne, Victoria, Australia.
[2]Australian Centre for Blood Diseases, Monash University, Melbourne, Victoria, Australia
[3]Department of Medicine, Northern Health, University of Melbourne, Heidelberg, Victoria, Australia.

Background: The use of fresh frozen plasma (FFP) and extended life plasma (ELP) is largely guided by consensus recommendations due to lack of quality data. Studies demonstrated a widespread misuse of FFP products, which is concerning given the potential serious side effects associated with inappropriate use of FFP and ELP. We aim to assess the appropriateness of FFP and

ELP transfusions at Northern Health, Victoria, against available transfusion guidelines. The results will be compared to a recently published Australian FFP audit (Clarke, Transfusion, 2024).

Method: All FFP/ELP issues at Northern Health over 6 months, from 1 October 2024 to 31 March 2025, were retrospectively reviewed. Appropriateness of transfusion was defined as in keeping with the current recommendations and were cross-reviewed by two independent reviewers. Descriptive and comparative analysis were performed.

Results: During the study period, 75 units of FFP and 3 units of ELP were transfused to a total of 28 patients in 35 transfusion episodes. The mean age of the patients was 57 years old (SD 16.9) and 18 (64.3%) were males. The most frequent indications for the transfusions were massive haemorrhage (n=14, 40.0%) and pre-procedural/pre-operative use (n=9, 25.7%) (Table 1). 27/28 patients had INR performed and four patients had INR <1.5 accounting for four transfusion episodes (11.4%). Intensive care (n=15, 42.9%) and emergency (n=11, 31.4%) units were the highest prescribers. FFP/ELP were adjudicated as used appropriately in 26 transfusion episodes (74.3%), higher than the Australian audit (61%). When massive haemorrhage was excluded, 12/26 (46.2%) transfusions were appropriate, compared to 37% in the Australian audit. Three transfusions in patients with cirrhosis were inappropriate. There was one reported transfusion-related anaphylactic reaction.

Conclusion: Our local audit appears to show a higher rate of FFP/ELP appropriateness compared to the 2024 Australian audit. Nevertheless, there remains scope for improvement particularly for transfusions beyond massive haemorrhage.

#13

Balancing safety and efficiency: Outcomes of a low-risk pulmonary embolism discharge pathway

Authors:

Patrick Leung[1], Vienna Pak[1], Evangeline Wong[1], Simon Huynh[3], Prahlad Ho[1,2], Julie Wang[1,2], Hui Yin Lim[1,2]

[1]Department of Haematology, Northern Health, Melbourne, Australia
[2]Northern Clinical Diagnostics & Thrombovascular Research (NECTAR), Northern Health, Melbourne, Australia
[3]Department of Pharmacy, Northern Health, Melbourne, Victoria

Background: Low-risk pulmonary embolism (PE) accounts for approximately 30–50% of all PE presentations and is associated with low mortality. Studies have supported the safety of outpatient management for this cohort, although its practice remains limited in Australia. We examined the outcomes of patients discharged via our low-risk discharge pathway (LRP).

Method: A retrospective review was conducted on patients diagnosed with PE and discharged within 24 hours at Northern Health between January 2021 and December 2023. LRP eligibility required Pulmonary Embolism Severity Index (PESI) I–II, stable vital signs, no right heart strain or significant clot burden, no major bleeding risk, and fulfilment of additional weight, age and compliance criteria. Medical records were reviewed to assess clinical outcomes. LRP patients received expedited outpatient clinic and pharmacist follow-up.

Results: Of 120 patients discharged within 24 hours, 58 (median age 51 years; 50% male) met LRP criteria, including 27 direct discharges from the emergency department. 55 patients (94.8%) received clinic follow-up at a median of 42 days (IQR 18–58) and 23 received pharmacist follow-up (median 3 days; IQR 2–5). The 30-day readmission rate was 8.6% for LRP discharges compared to 19.2% for those not meeting criteria (p=0.27). For those not meeting criteria, decisions for discharge were based on clinical discretion. This included 51.6% with PESI III-V. PESI score did not impact the 30-day readmission rate in this subgroup (PESI I-II, p=0.48; PESI III-V, p=0.19). Two patients not meeting LRP criteria experienced major bleeding; this was not significantly different compared to the LRP group (p=0.50). Venous thromboembolism recurrence rates were also similar between these groups.

Conclusion: Our low-risk discharge pathway appears safe, with no increased complications or readmissions. While most discharged patients had favourable outcomes, major bleeding events in patients not meeting LRP criteria highlight the importance of adhering to discharge criteria for patient safety.

#16

Cirrhosis severity correlates with reduced fibrin generation and enhanced fibrinolysis

Authors:

Tengyi CAI[1, 2, 3], Siddharth Sood[4], Hui Yin Lim[1, 2, 5, 6, 7, 8] Prahlad Ho[1, 2, 5, 6, 7, 8], Julie Wang[1, 2, 3, 4, *]

[1]Northern Clinical Diagnostics & Thrombovascular Research (NECTAR), Northern Health, Melbourne, Australia
[2]Northern Pathology Victoria, Melbourne, Australia
[3]Department of surgery - Northern Health, University of Melbourne, Victoria, Australia
[4]Department of Gastroenterology, Northern Health, Melbourne, Australia
[5]Department of Haematology, Northern Health, Melbourne, Australia
[6]Department of Medicine – Northern Health, University of Melbourne, Victoria, Australia
[7]Australian Centre for Blood Diseases, Monash University, Victoria, Australia
[8]School of Health and Biomedical Sciences, RMIT, Bundoora, Australia

NH Division & Department:

Northern Clinical Diagnostics & Thrombovascular Research (NECTAR)

Background: Patients with liver cirrhosis exhibit complex alterations to their haemostatic system, resulting in a delicate and fragile equilibrium that may shift abruptly to bleeding or clotting. Standard coagulation tests do not accurately reflect the true clinical thrombosis or bleeding risks. Global coagulation assays (GCAs) may provide a more comprehensive assessment of haemostasis. However, the impact of liver cirrhosis remains to be fully characterised. We aim to characterise GCA findings in patients with stable cirrhosis and evaluate the impact of cirrhosis severity.

Method: This observational study recruited 26 patients (65% males, median age 57 years [IQR:51-67]) with stable liver cirrhosis from the hepatology clinic at Northern Health, Victoria. Cirrhosis severity was determined by the Model for End-Stage Liver Disease with sodium (MELD-Na) score (median MELD-Na score 11 [IQR:7-16]). Excess platelet-poor plasma was obtained from citrated samples collected as part of standard clinical care. GCAs evaluated included Overall Haemostatic Potential (OHP) and calibrated automated thrombogram thrombin generation (CAT). Results were correlated with the MELD-Na score and compared against previously collected age- and gender-matched healthy individuals.

Results: Compared with healthy controls, cirrhotic patients demonstrated similar endogenous thrombin potential (ETP) (1358.62 Vs 1499.77nM.min, p=0.12), but significantly lower OHP (8.18 Vs 5.69, p=0.01) and higher OFP% (79.47% Vs 82.93%, p=0.02), indicating reduced fibrin generation and enhanced fibrinolysis. Higher MELD-Na was negatively correlated with overall coagulation potential (OCP) (r= -0.62, p<0.01) and OHP (r=-0.68, p<0.01), indicating reduced fibrin generation and enhanced fibrinolysis in patients with worsening cirrhosis severity. MELD-Na did not correlate with ETP (r=0, p=0.99) or rate of thrombin generation (r=0.08, p=0.68).

Conclusion: Patients with chronic liver cirrhosis exhibited compensated thrombin production similar to healthy individuals. However, fibrin generation and fibrinolysis were significantly altered, and correlated with cirrhosis severity. Further research is required to correlate these findings with clinical thrombosis and bleeding in cirrhosis.

#17

Impact of ABO blood group on global coagulation assays

Authors:

Tengyi CAI[1, 2, 3], Vincent Lu[1, 2], Julie Wang[1, 2, 3, 4], Mani Suleiman[5], Prahlad Ho[1, 2, 3, 6, 7, 8], Hui Yin Lim1[, 2, 3, 6, 7, 8], *

[1]Northern Clinical Diagnostics & Thrombovascular Research (NECTAR), Northern Health, Melbourne, Australia
[2]Northern Pathology Victoria, Melbourne, Australia
[3]Department of surgery - Northern Health, University of Melbourne, Victoria, Australia
[4]Department of Haematology, Northern Health, Melbourne, Australia
[5]Research Development and Governance Unit, Northern Health, Melbourne, Australia
[6]Department of Medicine - Northern Health, University of Melbourne, Victoria, Australia
[7]Australian Centre for Blood Diseases, Monash University, Victoria, Australia
[8]School of Health and Biomedical Sciences, RMIT, Bundoora, Australia

Background: Emerging studies have shown ABO blood group type can influence coagulation and has previously been associated with risks of thrombosis and bleeding. Traditional coagulation studies are not predictive of these risks, while global coagulation assays (GCAs) provide a more comprehensive assessment of haemostasis and have been shown to predict thrombosis. This study aims to evaluate the effects of ABO blood group on the GCAs in healthy adults.

Method: This observational study recruited a total of 113 healthy participants without known cardiovascular risk factors (39 male, median age: 38 years old), with 47 group O, 33 group A, 25 group B and 8 group AB. GCAs including Thromboelastography® (TEG), Overall Haemostatic Potential (OHP), calibrated automated thrombogram thrombin (CAT-TG) and plasmin generation (CAT-PG) were performed. Multivariate analysis of covariance (MANCOVA) was performed to estimate the effect of blood group differences while adjusting for covariates.

Results: Compared to non-O group, O group individuals showed lower Factor VIII (121% vs 93%, p<0.01), vWF antigen (120% vs 89%, p<0.01) and higher P-selectin (56.50 vs 46.38 pg/mL, p<0.01). In CAT-TG, O group individuals demonstrated lower thrombin peak (204.68 vs 241.75 nM, p=0.006) and velocity index (56.20 vs 81.35 nM/min, p<0.01) when compared to non-O group. The influence of ABO on both parameters, however, is not significant following MANCOVA analysis. In TEG, O group individuals had lower Lysis30 (0.15% vs 0.60%, p=0.04) than non-O group. No significant differences were found on OHP or CAT-PG across blood groups.

Conclusion: O Group individuals demonstrated reduced thrombin generation but lower fibrinolysis on TEG. These findings suggest a potential compensatory mechanism in individuals with blood group O, to maintain normal coagulation physiology. Future studies with larger and more diverse cohorts may determine how this compensation may be modulated when O group individuals encounter thrombotic or bleeding challenges.

#18

Age-related global coagulation changes: From birth to old age

Authors:

Vincent Lu[1,2,3], Paul Monagle[4,5,6], Chantal Attard[4,5,6], Vasiliki Karlaftis[4,5,6], Ilaria De Simone7, Dana Huskens[7], Bas de Laat[7], Tengyi Cai[1,2], Prahlad Ho[1,2,3], Hui Yin Lim[1,2,3]

[1]Northern Clinical Diagnostics and Thrombovascular Research Group, Northern Health, Melbourne, Victoria, Australia
[2]Northern Pathology Victoria, Melbourne, Victoria, Australia
[3]School of Health and Biomedical Sciences, RMIT, Melbourne, Victoria, Australia
[4]Haematology, Murdoch Children's Research Institute, Melbourne, Victoria, Australia
[5]Department of Paediatrics, The University of Melbourne, Melbourne, Victoria, Australia
[6]Clinical Haematology, The Royal Children's Hospital, Melbourne, Victoria, Australia
[7]Synapse Research Institute, KD Maastricht, The Netherlands

NH Division & Department

[Northern Pathology Victoria & NECTAR]

Background: Global coagulation assays (GCA) provide a comprehensive view of haemostasis and show potential in predicting bleeding and thrombosis risk. Adopting GCAs into clinical practice requires understanding normal age ranges.

Aims: To evaluate the differences in GCAs (thrombin (TG) and plasmin generation (PG) using calibrated automated thrombogram (CAT) and overall haemostatic potential (OHP)) in neonates through to older adults.

Method: 380 healthy paediatric citrated samples collected as part of the HappiKids biobank (ages 0-18 years) and 166 healthy adult samples (ages 18-80 years, without known cardiovascular risk factors or medications affecting coagulation) were tested for TG, OHP and PG.

Results: Key GCA parameters, including endogenous thrombin potential (ETP), overall coagulation potential (OCP), and endogenous plasmin potential (EPP) are lowest at birth and increase rapidly during the first months of life. These parameters continue to rise throughout developmental stages, with ETP and EPP reaching their peak in the third decade and OCP in the fifth decade. Overall fibrinolytic potential (OFP) is also lowest at birth and steadily rises, although fibrinolysis remains reduced in paediatric patients. Fibrin generation in the presence of fibrinolysis (overall haemostatic potential, OHP) shows no significant difference across paediatric age groups and only begins to increase after the third decade.

Conclusion: Children under 12 months exhibited the lowest levels of thrombin (ETP), fibrin (OCP), and plasmin (EPP), but maintained similar OHP levels as other paediatric groups, indicating a balanced interplay between clot formation and breakdown, which likely protects against excessive bleeding and clotting. In adults, the balance only begins to shift after the third decade of life, which may reflect the start of rapid progression towards atherosclerosis. Overall, GCA demonstrated age-related changes of coagulation proteins. These findings emphasise the unique role of GCA in detecting subtle coagulation changes that are not detectable using routine coagulation assays.

#19

Plasmin generation assay in predicting arterial thrombotic outcome in patients with chronic kidney disease

Authors:

Vincent Lu[1,2,3], Ilaria De Simone[4], Dana Huskens[4], Bas de Laat[4], Vicki Guppy[5], Prahlad Ho[1,2,3], Hui Yin Lim [1,2,3]

[1]Haematology Department, Northern Health, Melbourne, Victoria, Australia
[2]Northern Pathology Victoria, Melbourne, Victoria, Australia
[3]School of Health and Biomedical Sciences, RMIT, Melbourne, Victoria, Australia
[4]Synapse Research Institute, Koningin Emmaplein KD Maastricht, The Netherlands
[5]Diagnostica Stago, Forest Hill, Melbourne, Victoria, Australia

NH Division & Department:

Northern Pathology Victoria & NECTAR

Background: Patients with chronic kidney disease (CKD) have a heightened cardiovascular risk. We have previously shown that global coagulation assays (GCA) assessing thrombin and fibrin generation can improve cardiovascular risk prediction. Integrating plasmin generation into the risk assessment may enhance our risk prediction ability.

Aim: To evaluate the role of plasmin generation in assessing arterial thrombosis risk in patients with CKD.

Method: This prospective observational study recruited adult CKD patients with eGFR<30 mL/min/1.73m2 from Northern Health, Australia. Patients who had the complete set of GCAs (thrombin generation (TG) and plasmin generation (PG) using the calibrated automated thrombogram) and overall haemostatic potential (OHP)) were included in this analysis. PG is tested using a plasmin-specific fluorogenic substrate. Time-to-event analysis was performed with mortality as a competing event.

Results: In this study, 84 patients (median age 67 years (IQR 58-77); 64% (n=54) males) including 62 patients on renal replacement therapy (37 haemodialysis, 25 peritoneal dialysis) were included. In 2 years, 30 patients experienced arterial thrombosis (18 myocardial infarction, 5 stroke/transient ischaemic attack and 7 critical limb ischaemia). Patients who experienced events were more likely to demonstrate higher fibrin to plasmin generation ratio (OCP (overall coagulation potential):EPP (endogenous plasmin potential) 0.18 vs 0.14, P=0.001). A multimodal risk score incorporating key variables, including OCP: EPP, time-to-peak ratio of TG and PG (ttPeak TG: PG), PG velocity index, D-Dimer, C-Reactive Protein (CRP), and Framingham Heart Score (FHS), was developed. This model achieved a Harrell's C-statistic of 0.91 (95% CI: 0.86-0.95), compared to the more modest performance of using solely FHS score of 3 and total number of cardiovascular risk factors (C-statistic 0.59 and 0.60 respectively).

Conclusion: This pilot study demonstrated that a multimodal risk assessment model using a combination of GCAs including plasmin generation, outperformed traditional models in predicting arterial thrombotic events at 24 months.

#41

When not to test JAK2: real-world JAK2 mutation testing for the investigation of erythrocytosis

Holly Taylor[1,5], Hui Yin Lim[1, 2, 4, 5, 6, 7], Prahlad Ho[1, 2, 4, 5, 6, 7], Julie Wang[1, 2, 4,5] *

[1]Northern Clinical Diagnostics & Thrombovascular Research (NECTAR), Northern Health, Melbourne, Australia
[2]Northern Pathology Victoria, Melbourne, Australia
[3]Intern, Austin Health, Melbourne, Australia
[4]Department of Haematology, Northern Health, Melbourne, Australia
[5]Department of Medicine – Northern Health, University of Melbourne, Victoria, Australia
[6]Australian Centre for Blood Diseases, Monash University, Victoria, Australia
[7]School of Health and Biomedical Sciences, RMIT, Bundoora, Australia

NH Division & Department:

Northern Clinical Diagnostics & Thrombovascular Research (NECTAR)

Background: Erythrocytosis is a commonly encountered clinical problem caused infrequently by polycythaemia vera (PV). However, JAK2 mutation testing is often done with relatively low yield. We aimed to perform a retrospective audit of JAK2 mutation testing at our centre, to identify ways to rationalise the investigation of erythrocytosis.

Method: All episodes of JAK2 mutation testing from January 2019 to mid-December 2023 were extracted from the laboratory information system of Northern Pathology Victoria, and relevant patient information were retrospectively recorded from the electronic records of Northern Health, Victoria. Tests included JAK2V617F, JAK2 exon 12 and myeloproliferative neoplasm (MPN) next-generation sequencing (NGS) panel. Patient outcomes were stratified into 3 classes according to haemoglobin (Hb) at the time of JAK2 testing: 1) according to World Health Organisation (WHO) diagnostic criteria; 2) from category 1 to local Hb upper-limit; 3) above the local Hb upper-limit.

Results: During the 5-year period, 649 tests were performed in 594 patients, and were comprised of JAK2V617F single-gene (87.2%), JAK2 exon 12 single-gene (4.1%), MPN NGS (5.4%) and JAK2 exon 12/14/16 (3.3%). Overall, there were 59 diagnoses of MPN (9.9%) and 7 patients had low JAK2 allele burden (1.2%). Erythrocytosis was the primary indication in 287 patients (48.3%) – PV was diagnosed in 18 of these patients (6.9%) and 5 had low JAK2 allele burden (1.2%). No patients within the local Hb reference range were diagnosed with PV ($p<0.001$). The most common cause of secondary erythrocytosis was hypoxia due to smoking, obstructive sleep apnoea or chronic lung disease.

Conclusion: The majority of erythrocytosis was attributable to secondary causes. PV was found only in patients with Hb higher than the local reference range, significantly higher than the WHO criteria. Targeting JAK2 testing to the local Hb reference range may improve the efficiency of erythrocytosis investigation.

#64

Fibrinogen Spectral Analysis via FTIR and Multivariate Analyses for Enhanced Risk Stratification in Venous Thromboembolism

Authors:

Sanjana Prasad*[1,2], Julie Wang*[1,2], Sukhneet Shergill[1,2], Hui Yin Lim[1,2,3], Prahlad Ho[1,2,3], Shekhar Kumta[1,3]

[1]Northern Health, Melbourne, Victoria Australia, [2]University of Melbourne, Melbourne, Victoria Australia, [3]RMIT University, Melbourne, Victoria Australia.

NH Division & Department:

Division of Diagnostic Services, Department of Thrombovascular Research Centre (NECTAR), Department of Haematology.

Background: Venous thromboembolism (VTE), including deep-vein thrombosis and pulmonary embolism, is a common and relapsing condition. Identifying persons at high risk for recurrent VTE is crucial to appropriately target long-term anticoagulation. Fibrinogen, the most abundant coagulation protein, has been shown to display pre- and post-translational changes in hypercoagulable diseases. Here we extract fibrinogen from plasma of VTE patients and analyse these using spectroscopy and advanced machine learning methods, aiming to develop a model to identify patients at high risk of recurrent VTE.

Method: This pilot study involved adult patients with confirmed VTE who completed therapeutic anticoagulation 4-6 weeks prior to blood collection. These comprised patients with isolated distal VTE (n=10), unprovoked major VTE (n=20) and those who subsequently developed recurrent VTE (n=10). Fibrinogen was extracted from the plasma using a glycine precipitation technique. The extract was then analysed using a Perkin Elmer Spectrum 3 Fourier Transform Infrared (FTIR) spectrometer, acquiring spectra in the mid-infrared range (400–4000 cm^{-1}) at a resolution of 4 cm^{-1} with triplicates per sample. Multivariate analyses and machine learning algorithms were used to classify the samples based on the spectral data. Model performance was assessed on accuracy, sensitivity, and specificity.

Results: FTIR spectroscopic signatures of the fibrinogen extracts were classified using Linear Discriminant Analysis (LDA). The true positive rate for the 3 classes, recurrent VTE, distal VTE and unprovoked major VTE were 93%, 90% and 96%, respectively; while the false positive rates were 4.5%, 1.1% and 3.1%. The accuracy of the predictive model ranged from 91.1% – 96.4%.

Conclusion: Significant differences in specific spectral regions of fibrinogen were identified, separating the three VTE groups with high accuracy. Patients who developed recurrent VTE showed different fibrinogen spectral signatures, suggesting a potential role for spectroscopy to identify this patient group. Further studies are warranted to develop these pilot findings.

#71

From procedure to recovery: The key role of serial chest x-rays in post CT-guided lung biopsy monitoring

Authors:

Akrum Hassan[1], Maimuna Ali[1], Ubah Nur[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Division of Diagnostic services, Department of Imaging

Background: CT-guided percutaneous lung biopsy is a common, minimally invasive procedure used to diagnose pulmonary and pleural lesions. While generally safe, complications like pneumothorax, haemorrhage and infection can occur. Prompt post-procedural monitoring is crucial to detect and manage such events.

This study aims to assess the value of serial chest X-rays (CXRs) at 1, 2 and 4 hours following CT-guided lung biopsy in detecting early or delayed pneumothorax. It also investigates the incidence, clinical significance and predictors of pneumothorax.

Method: A retrospective review was conducted on patients who underwent CT-guided lung biopsies between 2023 and 2025. Clinical and imaging data were analysed to determine the detection timing and clinical outcomes of pneumothorax across standardised post-procedure intervals.

Results: Pneumothorax was identified on post-procedural CT in 35 of 92 cases (38%). Among patients who received a 1-hour CXR (n = 37), 10 showed pneumothorax, while 9 were missed on CXR but visible on CT. Only one pneumothorax not seen at 1 hour was later picked up on the 4-hour CXR. Most cases followed a 1-hour and 4-hour imaging protocol in the absence of symptoms. By 4 hours, 54% had resolved, 8.5% persisted without needing intervention, and 28.6% required further management. Overall, 42.9% of pneumothoraces needed intervention, including 5.7% requiring chest tube insertion.

Conclusion: Chest radiography remains important for post-biopsy pneumothorax monitoring, particularly if seen on CT. For asymptomatic patients without pneumothorax on CT, routine serial CXRs may not be necessary but can assist with discharge planning.

#72

The role of AI guidance in interventional radiology and its potential for clinical adoption: A systematic review

Authors:

Akrum Hassan[1], Maimuna Ali[1], Ubah Nur[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Division of Diagnostic services, Department of Imaging

Background: Artificial Intelligence (AI) is emerging as a powerful force in healthcare, particularly in Interventional Radiology (IR) — a field that relies heavily on precision-guided procedures and cutting-edge technology. This study explores how AI, including Machine Learning (ML) and Deep Learning (DL), can improve decision-making, procedural accuracy and personalised care within IR.

Method: A systematic review of the current literature was undertaken, examining applications of ML and DL in improving lesion targeting, needle navigation, and multimodal image fusion. The review also evaluated AI's contributions to cancer therapy, haemorrhage control, and post-operative management, alongside ethical and operational challenges.

Results: AI has demonstrated strong potential in refining lesion targeting and enhancing procedural precision. In oncology, AI-driven systems have enabled more accurate tumour targeting, even allowing treatment of previously inoperable cases. AI applications in haemorrhage control have reduced the need for invasive procedures and improved patient safety. However, integration remains challenging due to variability in clinical workflows and the opaque, "black box" nature of many AI models, which limits trust and standardisation.

Conclusion: AI has the capacity to transform Interventional Radiology by improving accuracy, efficiency, and patient-specific care. Yet, its successful integration depends on addressing key barriers — including workflow inconsistency, ethical considerations, and model transparency. Future research and development should prioritise standardised, interpretable, and ethically sound AI systems, supported by robust regulatory frameworks to ensure safe and effective adoption in clinical practice.

#82

Extraction and Lyophilic Preservation of Biomarkers from Biological Substrates for Spectroscopic Analysis

Authors:

Sukhneet Sher Gill[1,2], Sanjana Prasad[1,2], Prahlad Ho[1], Shekhar Kumta[1,2].

[1]Northern Health, Melbourne, Victoria Australia, [2]University of Melbourne, Melbourne, Victoria Australia

NH Division & Department:

Division of Diagnostic services, Department of Thrombovascular Research Centre (NECTAR), Department of Microbiology, Division of Surgical Services, Department of Orthopaedics

Background: This project aims to improve the quality of FTIR spectra obtained from synovial fluid by analysing the supernatant of centrifuged (filtered) joint fluid. Traditional thin film methods often yield inconsistent or noisy spectra due to interference from cellular debris and

high abundance proteins. By isolating the fluid component through centrifugation, clearer and more reliable spectral data can be collected. This refined method offers a more accurate biochemical profile, enhancing diagnostic potential and representing a significant advancement over current practices.

Method: A Thin-Film method of Spectral acquisition was compared with a novel Thin-Film method, which required the samples to be ultrafiltered. Using centrifugal filtration to remove high-abundance and large molecular components of Orthopaedic Synovial Fluid. Briefly, 4 µL of Plasma was pipetted onto the germanium crystal of a Spectrum-3 FTIR Spectrometer. The excess fluid was withdrawn to create a thin-film which was then dried using an air-dryer for 1 minute. The spectra were obtained between 4000-800 cm-1 at 4 cm-1 resolution. In the novel method, the samples are centrifuged at 4000 rpm for 60 minutes, then the supernatant is measured using the Thin-Film Method. Spectra from both methods were analysed using Unsupervised Cluster Analysis (Ward's method) and Supervised classification (Partial Least Squares Discriminant Analysis) using MATLAB-PLS Tool Box (Eigenvector Solo®) to see which of the methods resulted in better clustering and/or classification.

Results: The results showed that the model achieved improved clustering accuracy when using spectra from the centrifuged supernatant, indicating better separation of sample groups. However, the spectra remained noisy. While the method shows promise, further refinement is needed to reduce variability and enhance the reliability of the spectral data for consistent model performance.

Conclusions: Centrifugal filtration improves FTIR spectral clarity and clustering accuracy, but further method refinement is needed to reduce noise and enhance diagnostic consistency.

#93

From Lipid Extraction to Analysis: Clinical Potential of Vibrational Spectroscopy for Lipid Profiling in Plasma

Authors:

Satnam Kaur[1,2,3], Shekhar Kumta[1,2,3]

[1]RMIT University, Melbourne, Victoria Australia, [2]Melbourne University, Melbourne, Victoria Australia, [3]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Northern Centre for Health Education and Research

Background: Lipid profiling plays a vital role in assessing cardiovascular and metabolic disorders, where changes in lipid structure and composition can serve as important disease biomarkers. Although mass spectrometry is the current gold standard, it requires expensive instrumentation, lengthy sample preparation, and skilled operation. This study investigates a rapid, label-free alternative using vibrational spectroscopy (FTIR, Raman, and NIR) to detect clinically relevant lipid structural features, including unsaturation, esterification, and trans-fat content, directly from plasma.

Method: Human plasma lipids were extracted using three established protocols: Folch, Bligh & Dyer, and Hexane:Ethanol:Water. Spectra were recorded using ATR-FTIR (4000-400 cm-1), Raman (500–1800 cm-1), and NIR (4000-10000 cm-1). Key lipid features were quantified using integrated peak area ratios, for example, A3004/A2855 for unsaturation, A1740/A2855 for ester carbonyls, and A967/A2855 for trans-isomer content to assess extraction performance and compositional differences.

Results: The Hexane:Ethanol:Water method yielded the highest unsaturation (A3004/A2855 = 0.13) and ester content (A1740/A2855 = 0.52), suggesting efficient recovery of unsaturated and esterified lipids. The Folch method showed the highest trans-fat marker (A967/A2855 = 0.17), while Bligh & Dyer provided intermediate values. NIR and Raman spectra supported these findings. These spectral trends indicate that extraction protocols significantly influence lipid recovery and structural representation.

Conclusion: This integrative spectroscopic workflow enables rapid, non-destructive lipid profiling directly from plasma. When paired with optimized extraction strategies, it offers a scalable platform for diagnostic lipidomics with potential clinical utility.

DIGITAL AND VIRTUAL SERVICES

#52

Bidirectional Associations Between Patient Activation and Engagement in Digital Care Pathways

Authors:

Min Gan[1], Katharine See[1], Tracey Webster[1]

[1]Northern Health, Epping, Victoria, Australia

NH Division & Department:

Clinical Leadership Effectiveness and Outcomes

Background: Patient activation, often measured by the Patient Activation Measure (PAM), reflects an individual's knowledge, skills, and confidence in managing their own health. While previous studies have evaluated the impact of digital engagement on patient activation, few have examined the bidirectional relationship between the two. This study aimed to examine both (1) whether baseline patient activation is associated with subsequent engagement levels, and (2) whether that engagement, in turn, leads to improvements in patient activation within the digital care pathways at Northern Health.

Method: A retrospective cohort study was conducted using data from 217 patients who completed a PAM assessment as part of their participation in the digital care pathways between April 2024 and June 2025. Association between baseline PAM scores (range: 0-100) and subsequent engagement ratios (range: 0.00–1.00) was examined. A pre-post analysis was conducted to examine whether digital engagement led to improvements in PAM scores.

Results: A modest but statistically significant positive correlation between baseline PAM score and engagement ratio was observed in patients with low baseline PAM levels 1-2 (n = 89, r = 0.26, p = 0.01). However, no significant correlation was found in patients with high baseline PAM levels 3-4 (n = 128, r = -0.01, p = 0.89). Among patients with both baseline and follow-up PAM scores (n = 61), those in the low baseline PAM group showed a significant improvement in activation (mean change = +5.21, 95% CI: 1.52 to 8.90, p = 0.01), whereas no significant change was observed in the high baseline PAM group (p = 0.41).

Conclusion: This study highlights a bidirectional relationship between patient activation and engagement. These findings suggest that Northern Health's digital care pathways help empower less-activated patients and that tailoring digital health strategies based on baseline PAM levels may enhance patient engagement and activation.

#90

Virtual Emergency Department for People with Dementia: Usage Patterns and Outcomes

Authors:

Adam Semciw[1,2,3], Stephen Quick[1,2,3], Rebecca Jessup[1,2,3], Suzie Miller[4], Katherine Lawler[2], David Snowdon[2]

[1]Northern Health, Melbourne, Victoria, Australia
[2]La Trobe University, Melbourne, Victoria, Australia
[3]Victorian Centre for Virtual Health Research, Melbourne, Victoria, Australia
[4]Victorian Virtual Emergency Department, Melbourne, Victoria, Australia

NH Division & Department:

Allied Health Research

Background: The prevalence and impact of dementia in Australia continues to present significant challenges for the healthcare system. The Victorian Virtual Emergency Department (VVED), the first comprehensive, multi-disciplinary statewide virtual ED in Australia, provides patients with an alternative to in-person care for non-life-threatening emergencies. This study characterised VVED usage patterns and outcomes for people with dementia.

Method: This was a retrospective audit of VVED data from July 2022 to June 2023, analysing service characteristics and outcomes for people with dementia accessing the virtual emergency service.

Results: 410 people with dementia accessed the VVED service during the 12-month period. 63% of people with dementia were successfully managed virtually, with 37% of people advised to attend physical ED for further assessment or management. Of those managed successfully virtually, 91% did not present to a physical ED within 48 hours, and 70% did not attend an emergency department in the five months following their VVED episode.

Conclusion: VVED demonstrates promising effectiveness regarding appropriate emergency care that centres on the needs of people with dementia within their familiar environment, while reducing physical presentations to ED. With higher rates of referral from VVED to physical ED (37%) compared to the general population (15%), there is scope for further research to explore the potential for a dementia-specific VVED pathway. Future research will explore stakeholder experiences to identify the barriers and facilitators to VVED use for people with dementia, supporting the development of an optimised care pathway for this population.

EMERGENCY SERVICES

23

MET calls in patients at end of life, can they be avoided?

Authors:

David Crosbie[1], Madeleine McCarthy[1], Angaj Ghosh[1], Barbara Hayes[2], Daryl Jones[3]

[1]Northern Health Epping
[2]Northern Health Advanced Care Planning
[3]Austin Health

NH Division & Department:

Intensive Care Unit (ICU), Northern Health Epping (NHE)

Background: Medical emergency teams (MET) have been shown to reduce avoidable cardiac arrests and deaths in hospitalised patients. There is considerable evidence pertaining to the involvement of the MET in patients who are at end of life, and that a significant proportion of patients who die trigger a MET review during their last admission. Little is known regarding the quality of care for these patients and whether MET involvement in a dying patient is avoidable.

Method: A retrospective analysis of all deaths at NHE for the 2022 calendar year was conducted, excluding patients who were admitted under the palliative care unit, died in the emergency department or were in the ICU for their entire admission. Data was collected on demographics, comorbidities, frailty and resuscitation status on the current or any previous Goals of Patient Care (GOPC) form, and whether the patient had a MET call in their last admission. For these patients we recorded the number and aetiology of the calls, ICU admission following the MET and time between the last MET call and death.

Results: Of 1002 deaths in 2022, 568 (56.7%) fulfilled our inclusion criteria, of which 320 patients (56.3%) had a MET call. These patients had more comorbidities and were less likely to have had treatment limitations documented prior to the MET review. Fewer than 10% of patients who died were admitted to ICU. Patients who received a MET call had a shorter time between the documentation of their final GOPC form and their death.

Conclusion: Patients who die are often trigger a MET call, yet the vast majority are not admitted to ICU. Patients attended by the MET were more co-morbid, often had repeat MET reviews, and may have had delayed transition to comfort care. Our study suggests that early review of treatment goals on admitted patients is warranted.

#24

The Impact of Socio-economic Status on Outcomes following ICU admission in Australia: A Linked-Database Study

Authors:

Sing Chee Tan[1], Daniel Capurro[2, 3], David Pilcher[4, 5]

[1]Northern Health, Melbourne, Victoria Australia,
[2]Royal Melbourne Hospital, Victoria, Australia
[3]The University of Melbourne, Victoria, Australia
[4]Alfred Health, Victoria, Australia
[5]Monash University, Victoria, Australia

NH Division & Department:

Intensive Care Unit, Division of Emergency Services
Division of Design and Discovery

Background: Socioeconomic disadvantage is recognised as a risk factor for adverse outcomes across a range of health conditions. This study aims to assess the impact of socioeconomic status on the short-term mortality of patients admitted to Australian and New Zealand ICUs.

Methods: This was a national, retrospective cohort study examining all adult patients admitted to Australian ICUs between January 2017 and December 2019. Data were obtained from two public registries. Clinical and outcome data were obtained from the Australian and New Zealand Intensive Care Society Adult Physiology Database (APD), and socioeconomic data was obtained from the Australian Bureau of Statistics Socio-economic index for areas (SEIFA) score, using the 2016 Index for Relative Socio-economic Advantage and Disadvantage (IRSEAD). SEIFA scores were linked to the APD using individual patient postcodes.

The primary outcome was hospital mortality in each SEIFA decile, adjusted for severity of illness, hospital type, and individual ICUs (modelled as a random effect).

Results: 440 381 admissions were identified for inclusion in the study. Most patients were male (56.1%), with a median age of 66.1 years (IQR 52.2 – 75.7). Compared to the most advantaged group (SEIFA decile 10), there was a reduction in mortality from the top SEIFA decile (decile 9)(OR for mortality 0.94, 95% CI 0.88 – 1.0, p =0.04) to the most disadvantaged SEIFA decile (decile 1) (OR for mortality 0.82, 95% CI 0.77 – 0.88, p<0.001). This relationship was present only in tertiary and private hospitals.

Conclusions: A lower SES was unexpectedly associated with a lower risk of hospital mortality after ICU admission in Australia. This is likely to be related to unmeasured confounders on the mechanistic pathway between SES and health outcomes. Our findings also have implications for the current practice of benchmarking ICU outcomes, with the potential need to consider SES as a factor in risk-adjustment methodology.

#26

Myopericarditis From Bevacizumab/5-FU in a Patient Presenting with ST-elevated Myocardial Infarction (STEMI)

Authors:

Amarpal Singh Karamjit Singh[1], Rifly Rafiudeen[1], Chiew Wong[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Emergency Services, Cardiology Research

Fluoropyrimidines encompass 5-fluorouracil (5-FU) and its oral prodrug capecitabine, are extensively

utilized in conjunction with bevacizumab as first-line chemotherapy for metastatic colorectal cancer. Although generally well tolerated, these agents are associated with a range of cardiotoxic effects that, while infrequent, can be clinically significant. Among these, myopericarditis and coronary vasospasm present challenging diagnostic considerations, particularly when clinical manifestations mimic acute coronary syndrome. We report on a gentleman in his 70's who experienced chest discomfort and electrocardiographic features indicative of ST-elevation myocardial infarction (STEMI) on the background of receiving adjuvant 5-FU and bevacizumab, following high anterior resection for node-positive metastatic sigmoid adenocarcinoma. Urgent coronary angiography revealed unobstructed coronary arteries, and subsequent cardiac magnetic resonance imaging confirmed the diagnosis of myopericarditis. The temporal association with chemotherapy, in the absence of other identifiable causes, strongly implicated 5-FU as the causative agent, with a possible contributory role from coronary vasospasm.

#28

A literature review of Ivabradine and delayed rectifier potassium current (IKr)

Authors:

Amarpal Singh Karamjit Singh[1], Dominic Chow[1]

[1]Northern Health, Melbourne, Victoria Australia.

NH Division & Department:

Emergency Services, Cardiology Research

Background: Ivabradine primarily acts on the hyperpolarization-activated cyclic nucleotide-gated channels (HCN) channel. Evolving evidence shows that it also prolong phase 3 repolarization in ventricular tissues by inhibiting the rapid component of the (IKr) mediated by the ether-à-go-go related gene (hERG) channel. This literature review focuses on current knowledge of the unique inhibitory effect of ivabradine on IKr.

Method: We approached this by conducting a search using OVID Medline with a focus on bench-top experiments, animal studies, post-marketing case reports and to include randomized controlled trials (RCTs) where evidence is available to evaluate Ivabradine's electrophysiological effect on IKr.

Results: Our review supports evidence that while the relationship of Ivabradine and hERG inhibition is concentration-dependent in vitro studies, its effect in vitro on prolonging action potential and TdP would occur at supratherapeutic plasma levels, especially with co-administration of CYP3A4 inhibitors. Hence, while large scale clinical trials have not demonstrated TdP, co-administration of Ivabradine with CYP3A4 inhibitors (such as class III anti-arrhythmic and macrolide antibiotics) should be avoided. Further in vivo studies are warranted to study the electrophysiological effect of Ivabradine on action potential prolongation and clinicians should practice pharmacovigilance when prescribing Ivabradine while avoiding co-administration with CYP3A4 inhibitors.

Conclusion: While current bench top studies show that the inhibitory concentration of ivabradine required to inhibit hERG channel and prolong action potential appears to be higher in human induced pluripotent stem cells than in animal cardiomyocytes [4-6,8], in clinical practice, this translates into a supratherapeutic plasma concentration of Ivabradine that is needed to prolong phase 3 repolarization [4-6,8] and when used concurrently with other drugs that prolong phase 3 repolarization such as class III anti-arrhythmic, could lead to profound bradycardia and the development of TdP. Hence, clinicians exercise caution when concurrently prescribing CYP3A inhibitors such as Amiodarone with vabradine.

#63

Global Trends in Non-pharmacological Interventions Acute Pain Management in Emergency Departments: A Scoping Review of Clinical Guidelines

Authors:

Zhen Zheng[1], Sue Xiang[1], Yiyuang Zhang[1] , Xiuju Yin[1], Heng Cheok[2], Tony Zhang[1]

[1]School of Heath and Biomedical Sciences, STEM College, RMIT University, Bundoora, Victoria, Australia

[2]Northern Health, Epping, Melbourne, Victoria Australia

NH Division & Department:

Emergency service, Emergency Department

Background: Acute pain affects half of all Australian Emergency Department (ED) patients, with opioids prescribed in 60% of cases, despite recognised limitations such as ineffectiveness for certain pains and adverse effects. Each year ED-related acute pain presentations and opioid prescribing contribute to approximately 12% of long-term opioid use and 15% of chronic pain cases. The needs for safe, effective, non-drug approaches in the ED settings is both compelling and urgent. This study aimed to review the global inclusion non-pharmacology interventions within ED acute pain management guidelines.

Method: We systematically searched PubMed, EMBASE, major Chinese databases (CNKI, CBM, Wanfang, VIP), Google, and ChatGPT assisted search for ED acute pain management guidelines using translated terms where necessary ("acute pain", "emergency department", "guideline", "country name"). The quality of guidelines was assessed using the GRADE II tool.

Results: Out of 894 identified documents (2015-2025), 14 international guidelines were included (4 from the USA, 5 from China, 5 from Europe). Australia does not have national guidelines addressing acute pain management in ED. Of the 14 included guidelines, only two recommended non-pharmacological strategies as first-line treatments (2/14). Core consensus

interventions across guideline included education/self-management (13/14), exercise (11/14), thermal therapies (10/14), pain education (10/14) and acupuncture (6/14). The quality of guidelines was moderate to high with the majority scored high on scope and purpose, and low on applicability. Despite frequent recommendations, few guidelines provided practical implementation strategies or supporting materials.

Conclusion: Non-pharmacological interventions for acute pain in EDs are underutilised and poorly implemented despite being widely recommended in guidelines. Addressing key barriers, such as implementation support, training, and system readiness, could reduce opioid reliance and help prevent the development of chronic pain conditions worldwide.

#79

The Personalised Add-On Acupuncture (PANDA) Project: Exploring the feasibility of acupuncture for acute pain in the emergency department

Matilda Douglas[1], Heng Cheok[1], Associate Professor Joe Rotella[1], Tony Zhang[2]

[1]Northern Health, Melbourne, Victoria, Australia
[2]Royal Melbourne Institute of Technology

Division and Department

Emergency Services Division, Emergency Department

Background: Acute pain is one of the most common reasons for presentation to Emergency Departments (EDs) worldwide, yet management remains inconsistent, with overreliance on opioids and variable documentation of pain scores. Acupuncture has emerging evidence as a non-pharmacological adjunct for pain relief. The Personalised Add-On Acupuncture (PANDA) Project was designed to assess the feasibility and acceptability of integrating acupuncture into pain management strategies in Northern Health's ED.

Method: Stage 1 of the PANDA Project included retrospective analysis of 300 adult Fast-Track ED presentations between December 2024 and March 2025 and surveys of 100 clinicians and 100 consumers. Presentations included abdominal pain, back pain, and headache. Data were extracted from electronic medical records and analysed descriptively. Clinician and consumer perspectives were collected through structured surveys using Likert scales and open-text responses.

Results: The cohort had a median age of 41 years (range 18–77), with 62.7% male. The mean highest pain score was 7.30, while the mean lowest pain score was 2.90; however, pain score documentation was frequently incomplete. Oxycodone was the most commonly prescribed analgesic, given to 55.3% of patients. Clinician surveys indicated strong support for multimodal pain management, with 91.8% endorsing non-drug therapies. A total of 77.4% reported they would offer acupuncture if available, though time and resource constraints were noted. Consumer surveys found 76% were willing to try acupuncture, increasing to more than 90% if it reduced medication use.

Conclusion: Stage 1 findings indicate both clinicians and consumers are receptive to the integration of acupuncture in the ED as part of a multimodal approach to acute pain management. While logistical and resource challenges remain, acupuncture shows promise in reducing opioid use and improving patient care in the ED.

#94

Co-design an Acupuncture Protocol for Acute Pain in Emergency Departments

Authors:

Xiuju Yin[1], Tony Zhang[1], Gillian Vesty[1], Amy O'Brien[1], Heng Cheok[2], Zhen Zheng[1]

[1]RMIT, STEM, Health and biomedical science, Melbourne, Victoria, Australia
[2]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Northern Health Emergency Department

Background: Acute pain is a leading reason for emergency department (ED) visits. While opioids are commonly used as first-line treatments, they can cause side effects and may not be suitable or effective for all patients. Moreover, post-ED opioid prescribing contributes to long-term use in up to 12% of cases. Acupuncture has shown promise in managing acute pain and reducing opioid use; however, its use in EDs remains rare, informal, and lacks a standardised, feasible protocol.

Method: A draft acupuncture protocol was developed based on existing literature. We conducted semi-structured interviews and a focus group discussion with 10 national and international experts experienced in delivering acupuncture for acute pain in emergency or acute care settings. The interviews explored ED-specific aspects, including pain conditions treated, acupoint selection principles, treatment parameters and techniques, workflow, collaboration with ED staff, and implementation challenges. Transcripts were analysed thematically using NVivo software.

Results: Preliminary themes indicated that acupuncture is suitable for certain acute pain conditions in EDs, but protocols must be adaptable to individual presentations. Challenges specific to ED settings must be addressed. Additional themes included: (1) commonly treated conditions (e.g., low back pain, headache, musculoskeletal strain); (2) acupoint selection principles focusing on distal points and patient positioning; (3) the importance of acupuncturist skill, technique familiarity, and appropriate training; (4) strategies to improve referrals and interdisciplinary collaboration; (5) mixed views on adjunct modalities (e.g., electroacupuncture, infrared lamps, press needles, ear seeds); and (6) general consensus on safety and low incidence of adverse events.

Conclusion: Acupuncture can be safely integrated into ED practice if tailored to individual patients and the fast-paced ED environment. These findings support the development of a flexible and practical ED-specific acupuncture protocol.

#8

Adequacy of disclosures in oral presentations at an international gastroenterology medical conference

Authors:

Ethan X Tan[1], Calvin Z Xu[1], Mayur Garg[1,2], Robert D Little[1,3]

[1]Gastroenterology Department, Northern Health, Melbourne, Victoria, Australia
[2]Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Melbourne, Victoria, Australia
[3]Faculty of Medicine, Nursing and Health Sciences, Monash University, Melbourne, Victoria, Australia

NH Division & Department:

Gastroenterology, Medicine

Background: Conflicts of interest (COI) potentially introduce bias into research, clinical decision making and guideline development. It is recommended that COIs are openly disclosed in medical conferences as influential arenas impacting clinical practice. We aimed to characterise the adequacy of COI disclosures at the 2025 European Crohn's and Colitis Organization (ECCO) Congress.

Method: Two investigators independently conducted assessments of COI for all recorded scientific presentations on the ECCO 2025 virtual portal. We assessed for the presence of a COI statement, duration of COI slide display, number of disclosures, adequacy of disclosure (defined as highlighting how COIs might relate to their presentation), presence of a potential drug/industry product in the presentation, and consistency with the written abstract COIs.

Results: A total of 206 presentations were reviewed. 57% had COIs to disclose, 25% stated there were no COIs, and in 18% the COI statement was absent. Inconsistencies in COI data between written abstracts and oral presentations were present in 22%. The median slide display duration was 2.3 seconds (IQR 1.5-3.4). The median number of disclosures was 10 (IQR 5-29). There was no correlation between duration of slide display and number of disclosures (r=0.06, p=0.53; Figure 1). Only 6% of COIs were discussed adequately even though 59% had potential drug/industry products directly related to the presentation. The median slide display time for adequately discussed COIs was higher at 6.5 seconds (IQR 3.5-9.3) versus 2.3 seconds (IQR 1.4-3.0) for inadequately discussed COIs (p=0.01; Figure 2).

Conclusion: COI disclosure practice was suboptimal in oral presentations at the 2025 ECCO Congress. COI statements were missing in up to one-fifth, shown too briefly to be read, or not presented despite potential relevance to the presentation topic. Formal guidance or protocolisation of COI disclosures during conferences are warranted to allow informed interpretation of data by delegates.

#9

Diverting loop ileostomy instead of colectomy in acute severe ulcerative colitis flare following checkpoint-inhibitor therapy

Authors:

Ethan X Tan[1], Vinna An[3], Mayur Garg[1,2]

[1]Department of Gastroenterology, Northern Health, Melbourne, Victoria, Australia
[2]Department of Colorectal Surgery, Eastern Health, Box Hill, Victoria, Australia
[3]Department of Medicine, University of Melbourne, Parkville, Victoria, Australia

NH Division & Department:

Medicine, Gastroenterology

Background: Checkpoint-inhibitors are increasingly prescribed for malignancies, and may worsen pre-existing ulcerative colitis (UC) in up to 40% of patients. Most patients with severe disease require corticosteroids, one-third require checkpoint-inhibitor discontinuation and escalation to biologic therapy, and up to 5% require surgery. We describe the first case of successful loop ileostomy and reversal in checkpoint-inhibitor worsening of UC.

Case: An 81-year-old man with previously well-controlled ulcerative proctitis diagnosed in 1970, with documented symptomatic, endoscopic and histologic remission on sulfasalazine, was referred in 2022 with increased blood-stained diarrhoea up to 5 per day. He was diagnosed with metastatic melanoma 4 months earlier and commenced on combination ipilimumab-nivolumab. Despite withholding immunotherapy, maximising oral and topical 5-ASA therapy, and commencement of oral steroids, he progressed to severe left sided colitis over the following 6 weeks, with >10 blood-stained bowel actions/day, Mayo endoscopic subscore 3, with CRP>100mg/L and albumin<20g/L. Stool cultures were negative including for Clostrioides difficile. Cytomegalovirus immunohistochemistry on biopsies was negative. His UC remained refractory despite accelerated infliximab (5mg/kg x3 doses) and vedolizumab (300mg x2 doses) over 3 weeks with persistent bloody diarrhoea of 6-8 bowel motions per day, CRP 40mg/L and albumin 22g/L.

A decision was made to perform a rescue diverting loop ileostomy instead of a colectomy; concurrently, a left hemi-hepatectomy for a 58mm Segment 4a metastatic melanoma deposit was performed. His UC reached clinical and histological remission while on 8-weekly vedolizumab, and his ileostomy was reversed 14 months later. Colonoscopy one-year following ileostomy reversal showed his UC to be in histological remission on maintenance 8-weekly vedolizumab. His melanoma remains in remission 3 years after the last dose of immunotherapy.

Conclusion: Diverting loop ileostomy may be an alternative to emergent colectomy in severe checkpoint-inhibitor associated worsening of UC. This may enable medical optimisation and time for checkpoint-inhibitor washout prior to ileostomy reversal.

#14

Patients with stricturing Crohn's disease are more likely to report a history of skin scarring

Authors:

Mayur Garg[1,2], Mustafa Mohamedrashed[1], Saiumaeswar Yogakanthi[1], Ayushi Chauhan[1], Sarah Lucas[1], Aaron Robinson[1]

[1]Northern Health, Melbourne, Victoria Australia,
[2]University of Melbourne, Melbourne, Australia

NH Division & Department:

Medical division, Gastroenterology Department

Background: The mechanism and prediction of stricturing Crohn's disease (CD) to guide medical therapy remains elusive. Formation of hypertrophic and keloid skin scars have not been previously studied in Inflammatory Bowel Disease (IBD). This study aimed to evaluate the nature of skin scars in patients with CD, and their association with different phenotypes.

Method: Adult patients attending a tertiary IBD service were invited to participate in this cross-sectional observational study. Patients were divided into three groups (non-IBD controls, non-structuring/non-penetrating CD and stricturing/penetrating CD). A patient survey tool, consisting of 8 questions was administered to assess for the presence of scars and their type. Disease characteristics were ascertained using electronic medical records. The primary outcome of the study was the prevalence of either hypertrophic or keloid scarring across the 3 groups. Secondary outcomes included the rates of scarring overall as well as keloid and hypertrophic scars individually.

Results: 189 patients were recruited for this study. Patients with stricturing/penetrating CD (36.5%) were more likely to have either hypertrophic or keloid scars than those with non-stricturing/non-penetrating CD (11.1%) and non-IBD controls (6.3%), p = <0.0001. Pairwise comparisons revealed differences individually between the stricturing/penetrating and non-stricturing/non-penetrating (p = 0.001) and healthy controls (p < 0.001), but not between the latter two groups (p = 0.52). 8 patients with structuring/penetrating CD had a history of keloid scars, but none in the other 2 groups (p < 0.001). Across the 3 groups, there was no difference in the rates of normal scars (p = 0.112).

Conclusion: A higher rate of hypertrophic or keloid scarring was demonstrated in patients with stricturing or penetrating disease in comparison to healthy controls and those with non-stricturing/non-penetrating disease, suggesting potential underlying common pathophysiology. Future studies confirming this novel association may provide an avenue for further study of predictive and therapeutic targets for IBD.

#20

Evaluating vaccine coverage in populations at high risk for vaccine-preventable disease and its complications.

Authors:

Sachira Chandrasekara1, Dorothy Ling1

[1]Northern Health, Melbourne, Victoria Australia,

NH Division & Department:

Division of Medicine, Department of Infectious Diseases

Background: Vaccination is a highly effective tool in preventing infection and transmission of vaccine-preventable diseases (VPD) in vulnerable cohorts. In high-risk populations, such as immunocompromised patients, VPDs are associated with higher rates of adverse outcomes and substantial healthcare costs. This study aimed to assess vaccination coverage amongst high-risk patients.

Method: This retrospective study assessed the immunisation status of high-risk patients at Northern Health (NH) in March 2025 (1st to 31st). High-risk groups included patients with malignancies, chronic respiratory conditions, HIV, those on haemodialysis, and geriatric inpatients. The study reviewed 100 oncology, haematology, and respiratory outpatients, 100 dialysis patients, all HIV patients under care at NH, and all geriatric inpatients admitted to a Geriatric Evaluation and Management unit in March. Vaccination records were obtained from electronic medical records and the Australian Immunisation Register. The primary outcome was up-to-date vaccination status based on Australian Technical Advisory Group on Immunisation (ATAGI) guidelines.

Results: 15.7% (n=94) of 599 patients across 7 high-risk patient groups were fully vaccinated per national guidelines. Completion of Covid-19 vaccination primary course was high (92%), however subsequent booster coverage was substantially lower (12.8%). Only 1 inpatient aged over 65 (n=50) was fully vaccinated in March, while admitted to geriatric inpatient ward at high-risk for nosocomial outbreaks. Amongst outpatients, the rates of complete vaccination coverage were lowest amongst the HIV (2%) cohort. Coverage was 8% amongst Oncology patients and 9% amongst those on dialysis, while higher amongst Haematology (17%), Respiratory (21%) and Antenatal patients (36%). Vaccination gaps were highest for Meningococcal B and ACWY (93.9%) and pneumococcal (83.6%) vaccines with the smallest being DTP (33%).

Conclusion: The results reveal alarmingly low immunisation rates amongst vulnerable patients, highlighting the need for proactive and integrated vaccine delivery strategies. Addressing these gaps could reduce VPD-related morbidity and mortality, avoidable hospitalisations and hospital-associated outbreaks.

#25

Diaphragm Ultrasound Education for Novice Respiratory Scientists: Proficiency and Reliability Assessment

Authors:

Himaka Gunasinghe[1], Liam Hannan[2,3], Nicholas Romeo[2], Sanjeevan Muruganandan [2,3]

[1]Medical Student, Northern Health
[2]Department of Respiratory Medicine, Northern Health, Melbourne, Victoria, Australia
[3]Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Melbourne, Victoria, Australia

Background: Diaphragm ultrasonography is a non-invasive diagnostic tool used to assess diaphragm dysfunction, yet it is not fully integrated into clinical practice. This pilot study evaluated the feasibility of a 4-week structured training program to teach diaphragm ultrasound to novice respiratory scientists (Scientists).

Method: Four Scientists underwent training which involved online modules, practical sessions and supervised scanning. Ultrasound competency was independently assessed using a modified UG-STAT tool, followed by unsupervised measurements of diaphragm excursion during tidal and sniff breathing and diaphragm thickness on ten healthy volunteers (Models). Measurements were repeated with a two-week interval to determine test-retest reliability. Intra-class correlation coefficients (ICCs) were used to evaluate inter-rater and intra rater reliability. Scatterplots were used to visualize the distribution of measurements of subjects across two different sessions and time taken to scan Models, in order of Model scanned.

Results: The results demonstrated that the range of inter-rater reliability was poor for diaphragm excursion (ICC: 0.12-0.41), thickness measurements (ICC: -0.05-0.31). Intra-rater reliability was also poor for all measurements, across all scientists ranging from (ICC: -0.31-0.49). Scan times decreased with practice, but measurement consistency did not improve. Feedback highlighted insufficient hands-on training and difficulties with caliper placements and probe positioning.

Conclusion: A 4-week training program was insufficient to achieve acceptable levels of reliability for ultrasound measures of diaphragm function in novice Scientists. This pilot work underscores the complexity of diaphragm ultrasonography and informs the design of future training curricula by highlighting the need for extended supervised practice and improved anatomical teaching to better equip novice Scientists in the performance of diaphragm ultrasound.

#29

Use of Oxygen Insufflation to Localise a Persistent Small Air-Leak for Directed Endobronchial Valve Placement

Authors:

Pierce Marsden[1], Melissa Yang[1], Kane Gardner[1], Kirstin Tirant[1], Sanjeevan Muruganandan[1], Kanishka Rangamuwa[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division and Department:

Department of Respiratory Medicine

Background: Endobronchial Valve (EBV) treatment is an option to manage persistent air-leak (PAL) in secondary spontaneous pneumothorax (SSP). Systematic and sequential bronchoscopic balloon occlusion can be used to localise air-leak. This case describes the technique of bronchoscopic oxygen insufflation during EBV placement to localise air-leak in a patient with PAL.

Case Report: An 80-year-old man with a 50-pack-year smoking history and bullous emphysema presented with a third episode of right-sided SSP, all occurring within a six-month period. The first two episodes were managed with tube thoracostomy. On this occasion tube thoracostomy brought satisfactory lung expansion, but air-leak persisted. The patient was not a surgical candidate and EBV treatment was recommended. Ventilation scintigraphy did not localise a visceral pleural focus due to heterogenous tracer deposition due to severe bullous disease. At the time of bronchoscopy, air-leak measurement via a digital chest drainage system (DCDS) was up to 160mL/min. Sequential balloon occlusion of each lobe demonstrated no change in observed air-leak. Subsequent sequential oxygen insufflation via bronchoscope at 4L/min to each subsegment demonstrated increase in air-leak up to 1100mL/min when right lower lobe sub-segments (RB7+RB8) were targeted. EBV insertion to right lower lobe led to resolution of air-leak. Subsequent talc slurry pleurodesis was performed day two post EBV insertion. The patient was discharged eight days post procedure and remains stable at one month follow-up.

Discussion: Bronchoscopic oxygen insufflation may assist in localising PAL when bronchial occlusion alone is inconclusive. Our case adds to the literature as the only additional report describing a similar technique by Ueno et al (2024).

#36

Isolated neutropenia: a clinical audit to assess cost-effectiveness of investigation in a commonly referred, and often benign entity

Authors:

Michael Yousef[1], Matthew Murphy[1], Rachel Cooke[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Northern Health Division of Medicine, Department of Haematology

Background: Neutropenia, defined by a reduced absolute neutrophil count, can range from benign to life-threatening depending on the underlying cause. Benign neutropenia, often seen in individuals of African, Mediterranean, or Middle Eastern descent, is typically asymptomatic and not associated with increased infection risk. Despite this, referrals for isolated neutropenia to specialist clinics remain common, potentially leading to unnecessary investigations and healthcare expenditure.

Method: A retrospective audit was conducted on 42 adult patients referred for isolated neutropenia to the Northern Health outpatient haematology clinics between January and December 2023. Data on demographics, severity of neutropenia, clinical history, investigations performed, diagnoses, follow-up, and healthcare costs were collected and analysed for patterns of practice, clinical outcomes, and cost-effectiveness. Patients with recent chemotherapy or known malignancy were excluded.

Results: Most patients had mild neutropenia and were young, with 59.5% from North African, Sub-Saharan African, or Middle Eastern backgrounds. Extensive investigations were performed despite the low risk of malignancy or infection: 78.6% were diagnosed with benign neutropenia, 9.5% with immune or drug-induced causes, and only 4.8% with low-grade haematological malignancy, both of whom had concerning clinical features at presentation. No patients required hospitalisation for infection. The average cost per patient for investigations and follow-up was $589 AUD, with a total cost of $24,732.4 AUD for all referrals.

Conclusion: The findings suggest that most referrals for isolated neutropenia result in a diagnosis of benign or self-limiting causes, with limited need for specialist intervention. The low diagnostic yield and high cost associated with specialist referral for isolated neutropenia suggest a greater role for primary care in initial work-up. A greater role for general practitioners in the initial investigation and monitoring of low-risk patients could reduce unnecessary referrals and investigations, lower healthcare costs, alleviate patient anxiety, and improve clinic efficiency and access to specialist services.

#37

At-home care for chronic liver disease patients is associated with improvement in quality of life

Authors:

Sarah Taylor[1], Leya Nedumannil[1], Catherine Yu[1], Kristen Peake[1], Deanne South[1], Vanessa Lowen[1], Kendall Fitzpatrick[1], Mayur Garg[1,2], Diana Lewis[1], Siddharth Sood[1,2]

[1]Gastroenterology Department, Northern Health, Melbourne, Victoria, Australia
[2]The University of Melbourne, Melbourne, Victoria, Australia

NH Division & Department:

Medicine, Gastroenterology

Background: Chronic liver disease (CLD) can have a profound impact on both physical and psychosocial aspects of a patient's daily life. The liver at home (LAH) program provides 12 weeks of clinical nurse consultant, home or telehealth reviews, after acute hospital admission for CLD. This study aimed to evaluate the effect of LAH on patient-reported quality of life (QoL).

Method: Participants completed the validated 29-item Chronic Liver Disease Questionnaire (CLDQ) at baseline, week 4, and week 12 from March 2023 to April 2025. Scores ≥5 were considered to represent a high health related QoL with those <5 representing a lower QoL. Patient demographic data was also collected, and changes over time assessed using Wilcoxon signed-rank tests.

Results: Baseline assessments were completed by 68 (median age 62 [IQR 52-71] y, 47 [69%] female) patients, with 22 and 26 completing follow-up surveys at week 4 and 12 respectively. The most common aetiology of CLD was alcohol (48,70%) followed by MASLD (12, 18%). Most patients had significant liver disease with a Child Pugh score of B (40, 59%) or C (20, 29%).

At baseline, the most impacted areas were 'fatigue' and 'strength'. QoL improved from baseline (median 100 [IQR 86-137]) to week 4 (144 [IQR 118–166]), p=<0.05. At week 4 the largest improvement was in 'strength' (median 5 [IQR 4-6], median increase 2, [IQR 0-3]). This was maintained at week 12, with significant improvements in 'energy levels', 'eating ability' and 'abdominal discomfort' also noted. 'Muscle cramps', 'pruritis' and 'concerns about future health' remained unchanged throughout the program. At week 12 an improvement in overall QoL score was maintained (median 144, [IQR 119-173], p= <0.05).

Conclusion: A structured at-home care program for patients with chronic liver disease can lead to significant improvements in quality of life, noted at four weeks with improvement maintained at 12 weeks.

#38

What is the correct duration of antimicrobials in infected, obstructed nephrolithiasis?

Authors:

Jordan Kahn[1], Dennis Gyomber [1], Mani Suleiman [1,2], Saliya Hewagama[1]

[1]Northern Health, Melbourne, Victoria Australia, [2]Northern Centre for Health Education and Research, Epping, VIC, Australia

NH Division and Department:

Department of Infectious Diseases, Medicine Division Department of Urology, Surgical Division

Background: Infected renal calculi are a significant risk factor for the development of symptomatic urinary tract infection and sepsis. In an infected obstructed renal system caused by nephrolithiasis, the duration of antimicrobials post initial surgical intervention is not standardised, and evidence is lacking.

Method: Retrospective observational audit of inpatients over a 5 year period (2019-2023) with obstructing nephrolithiasis with microbiologically confirmed infection, and grouped into those who received a short antibiotic course (SC) of defined duration vs suppressive antibiotics (SA) until their planned surgical procedure.

Groups were compared to determine the impact on subsequent hospitalisation with symptomatic infection, and secondarily, development of antibiotic resistant pathogens. Categorical variables were analysed via Chi squared and Fisher's exact tests, continuous variables using t-test and Mann-Whitney test. Logistic regression was performed with regards to the primary outcome.

Results: Seventy-nine patients were identified with infected obstructed nephrolithiasis – 37 (46.8%) received SC antibiotics vs 42 (53.3%) receiving SA. The SA group were more likely to have a longer initial admission, more likely to have bilateral calculi and more often diabetic ($p<0.01$). The SA group were less likely to have symptomatic infection on their next hospitalisation (2% vs 17%, $p=0.05$; univariate OR 0.12, 95% CI 0.01-1.08; $p=0.06$). SA had a noticeable effect on subsequent urine microbiology, with a reduction in gram negative bacteria, but increasing frequency of Candida species.

Conclusion: This study identifies potential associations between antibiotic strategy and infection risk whilst awaiting elective surgery for obstructed nephrolithiasis. SA appeared to reduce the risk of symptomatic infection requiring hospitalisation, and provides a basis for a larger prospective randomised study to confirm this association.

#40

Evaluating cirrhosis and Respiratory Syncytial Virus infection: should we vaccinate?

Authors:

Irene Lu[1], Nirbaan Walia[1], Nicholas Hannah[1,2], Siddharth Sood[1,2]

[1]Department of Gastroenterology, Northern Health, Melbourne, Victoria, Australia,
[2]Department of Medicine, University of Melbourne, Melbourne, Victoria, Australia

NH Division and Department:

Northern Health Division of Medicine, Department of Gastroenterology

Background: Respiratory Syncytial Virus (RSV) is a common respiratory infection, with studies suggesting that cirrhosis patients experienced double the odds of inpatient mortality compared to non-cirrhotic patients (1). RSV vaccination has recently been approved in Australia and recommended for individuals at higher risk. Given the paucity of research evaluating the risk in cirrhosis, the aim of this study was to assess the burden and compare to other conditions included in vaccination recommendations.

Method: We conducted a retrospective, single-centre study at Northern Health between 2017-2024. Using International Statistical Classification of Diseases (ICD-10) codes, patients hospitalised with RSV and either cirrhosis, ischaemic heart disease (IHD), congestive heart failure (CHF), chronic kidney disease (CKD), chronic obstructive pulmonary disease (COPD), obesity and diabetes were identified. Data were collected and statistical analysis using multivariable logistic regression was performed to compare prevalence of RSV amongst different comorbidities and assess predictors of in-hospital mortality.

Results: Among 163 patients hospitalised with RSV, 2 had cirrhosis (1.2%) – this is lower than other comorbidities of diabetes (38.7%), CHF (17.8%), COPD (14.7%), CKD (10.4%) and IHD (6.1%). Of 744 individual patients with cirrhosis known to our service over the 8-year study period, 0.3% were hospitalised with RSV. This was higher than obesity alone (0.0%), IHD (0.1%) and diabetes (0.2%), but lower than CHF (0.5%), COPD (0.7%) and CKD (0.7%). 50 RSV-positive patients died during their admission (30.7%), including 1 cirrhotic patient. Independent risk factors for inpatient mortality included age (OR 1.05, 95% CI:[1.02 – 1.09], $p<0.001$) and diabetes (OR 2.19, 95% CI:[1.01 – 4.84], $p=0.049$), but not cirrhosis.

Conclusion: The burden of RSV amongst patients with cirrhosis over an 8-year period appears to be low, but higher than other at-risk conditions. With limited numbers in this study, cirrhosis was not associated with higher inpatient mortality. Overall, population-level data is required to inform RSV vaccination strategies in Australia.

#42

Utility of Repeated Inpatient N-Terminal pro-B-type Natriuretic Peptide (NT-proBNP) Testing: Retrospective Study at Northern Health

Authors:

Michael Gibney[1], Kay Weng Choy[1], Madiha Damalinka[1], Saliya Hewagama[1]

[1]Northern Health, Melbourne, Victoria, Australia

NH Division & Department:

Division of Medicine, Pathology

Background: N-terminal pro-B-type natriuretic peptide (NT-proBNP) is widely used in diagnosing fluid overload and heart failure. However, its utility in repeat inpatient testing, particularly among patients with previously elevated results, remains unclear. This study aimed to determine the likelihood of NT-proBNP reversion from positive to negative on subsequent admissions, and to characterise associated clinical features.

Methods: We performed a retrospective review of NT-proBNP testing among inpatients at Northern Pathology Victoria between August 2022 and August 2024. Patients with multiple admissions and NT-proBNP tests were identified using standardised, age-specific thresholds. Those transitioning from rule-in (positive) to rule-out (negative) status were examined in more detail using clinical records to compare features between their first and second admissions.

Results: Of 1,312 patients with repeat testing, only 50 (3.8%) reverted from positive to negative. This reversal was age-dependent. Among patients <50 years old, 11 of 58 (19.0%) reverted to a negative result. Among those >75 years old, only 9 of 814 (1.1%) reverted. Patients who reverted had a significantly lower median age (63.9

years) compared to the full cohort (78 years), with an odds ratio of 0.27 (p <0.01) for reversion with increasing age.

Of the 50 patients who reverted, 24 (48%) had no clinical features of heart failure at the second admission, and 17 (34%) had radiographical signs suggestive of heart failure.

In patients aged >75 years with prior positive NT-proBNP results, repeat testing accounted for an estimated cost of $48,906 over two years.

Conclusion: NT-proBNP reversion from a positive to negative result occurs in a minority of inpatients, particularly amongst older adults. Many of these retests were not associated with clinical or radiological features of heart failure. These findings support a more judicious approach to repeat NT-proBNP testing, with the potential to reduce unnecessary investigations and healthcare costs.

#43

Early Infliximab therapy is associated with reduced length of stay in acute severe ulcerative colitis

Authors:

Mayur Garg[1,2], Mustafa Mohamedrashed[1], Saiumaeswar Yogakanthi[1], Calvin Xu[1], Ryan Bartlett[1], Melissa Chew[1], Leya Nedumannil[1], Ayushi Chauhan[1], Sarah Lucas[1], Diana Lewis[1], Soleiman Kashkooli[1]

[1]Northern Health, Melbourne, Victoria Australia,
[2]University of Melbourne, Melbourne, Australia

NH Division and Department:

Medical Division, Gastroenterology Department

Background: Acute severe ulcerative colitis (ASUC) represents a medical emergency. Up to 40% of patients may require rescue therapy with infliximab, traditionally administered on day 3 of admission. This study aimed to evaluate the impact of early (≤ 72 hours) versus standard (> 72 hours) infliximab administration on clinical outcomes.

Method: A single centre retrospective cohort study was conducted for patients admitted with ASUC who received infliximab therapy between January 2016 and October 2024. Patients were divided into 2 groups: early infliximab therapy (≤ 72 hours of admission) and standard infliximab therapy (>72hrs of admission). Outcomes assessed included length of stay, 12-month readmission and colectomy rates.

Results: 84 patients (53% male, 37% female) were included in this study. Of these (37%) received early infliximab therapy (median 52 [IQR 45-56] hours) and (63%) had standard (median 105 [IQR 94-149] hours) infliximab therapy.

The median length of stay was shorter in patients who received early vs standard infliximab therapy at 6 vs 7 days (p= 0.048). No significant difference was seen in requirement for colectomy at index admission (3.2% vs 3.8%, (p = 1.0) or at 12-months follow up (6.6% vs 6.9%, (p = 1.0). Similarly, there was no significant difference in readmission rates at 6-months (33.3% vs 26%, p= 0.67) and at 12-months (40% vs 28.8% p= 0.63). There was no difference in rate of infective complications in the first 30 days (6.4% vs 7.5%, p = 0.85).

A propensity matched cohort of 30 patients further confirmed shorter length of stay in the early vs standard group at a median of 6 vs 7 days (p= 0.039).

Conclusion: In patients admitted with ASUC, early infliximab therapy was associated with shorter hospitalisation. An early treatment strategy may reduce the burden of this condition upon health care utilisation.

#62

Impact of limited English proficiency on cognitive enhancer prescription rates

Authors:

Eva Stachnik[1], Andrew Huynh[2], Zi Low1, Kim Jeffs[1]

[1]Geriatric Medicine, Northern Health, Melbourne, VIC, Australia
[2]Austin Health, Melbourne, VIC, Australia

Background: Patients from culturally and linguistically diverse (CALD) communities often face health inequities. Studies have shown that CALD patients living with dementia present late and access specific cognitive treatments less. What is less clear is the impact language proficiency may have on cognitive enhancer prescription. This study aims to determine if limited English proficiency affects the rates of prescription of cognitive enhancers (acetylcholinesterase inhibitors or memantine) in patients newly diagnosed with Alzheimer's disease (AD) at a Cognitive Dementia and Memory Service (CDAMS) clinic.

Methods: A retrospective cohort study was performed of patients newly diagnosed with Alzheimer's dementia or mixed dementia including AD, in CDAMS clinics across Northern Health in 2023. Patients requiring an interpreter during any CDAMS clinic appointment were classified as limited English proficient (LEP), while those not requiring an interpreter were classified as English proficient (EP). Logistic regression was used to compare cognitive enhancer prescription patterns between LEP and EP patients.

Results: 85 patients were included (54% female, median age 83 years). Of these, 71% had Alzheimer's dementia, the median Mini Mental Score Examination was 19 (interquartile range 14 – 23) and mean clinical frailty scale was 5.2 (standard deviation, SD 1.3). 30 patients (35%) had LEP. Compared to EP patients, LEP patients had lower cognitive test results (p=0.009) and were frailer (p=0.001). Of the total 85 patients, 38 (45%) were prescribed a cognitive enhancer. LEP patients had 62% reduced odds of being prescribed a cognitive enhancer compared to EP patients (odds ratio 0.38, 95% confidence interval 0.15 – 0.99, p=0.047).

Conclusions: LEP is associated with reduced prescription of cognitive enhancers in people newly diagnosed with AD. Further studies with larger sample size at a state and national level are required to corroborate our findings and understand potential causes in order to minimise health inequities.

#65

A specialist liver home-based program following inpatient admission facilitates alcohol abstinence in patients with cirrhosis

Authors:

Leya Nedumannil[1], Catherine Yu[1], Kristen Peake[1], Kendall Fitzpatrick[1], Vanessa Lowen[1], Mustafa Mohamedrashed[1], Mayur Garg[1,2], Diana Lewis[1], Siddharth Sood[1,2]

[1]Northern Health, Melbourne, Victoria Australia
[2]The University of Melbourne, Victoria, Australia

NH Division & Department:

Division of Medicine, Department of Gastroenterology

Background: Liver At Home (L@H) is a 3-month home-based program designed for the community-based management of recently hospitalised patients with cirrhosis. L@H provides continued care for such patients, a large proportion of whom have alcohol-related cirrhosis, through regular home visits and telehealth reviews led by hepatology nurse consultants. This study aimed to evaluate alcohol use in patients enrolled to L@H with alcohol-related cirrhosis.

Method: Patients with cirrhosis discharged from Gastroenterology Unit were prospectively enrolled to L@H between 01/03/2023 and 01/09/2024. Exclusion criteria from L@H included patient preference not to participate, residence outside the hospital catchment, and high-risk score on home safety screening. Harmful alcohol consumption amongst enrolled patients was analysed before and after L@H.

Results: Of 61 patients enrolled to L@H, 75% (n=46) had alcohol-related cirrhosis, of whom 65% (n=30/46) reported harmful alcohol consumption up until hospital admission [median age in years 45 (IQR 41-58), 26.6% (n=8) female, median MELD-Na score 20 (IQR 17-23)]. 70% (n=21/30) of enrolled patients who were actively drinking prior to hospital admission engaged well with L@H, and of these, 95% (n=20/21) achieved alcohol abstinence whilst with L@H. At 3-month follow-up, 5% (n=1/20) of those who engaged well and achieved alcohol abstinence had a liver-related readmission to hospital at 3 months, compared to 20% (n=2/10) who did not, p= 0.25.

Conclusion: We have identified a large proportion of patients with alcohol-related cirrhosis and ongoing harmful alcohol consumption prior to hospitalisation achieving alcohol abstinence through good engagement with L@H. This was in the absence of leading hepatology nurses having any formal training in addiction management. These notable results suggest that the support imparted through consistent liver-focused home visits for patients with alcohol-related cirrhosis could significantly increase their chances of achieving alcohol abstinence, and in turn, potentially improve long-term outcomes.

#66

Trends in pleural disease admitted to Victorian public hospitals: An accumulating challenge

Authors:

Victor Duong[1,2], Liam M Hannan[1,2,3], Behzad Niknami[1], Mani Suleiman[4,5], Sanjeevan Muruganandan[1,2]

[1]Department of Respiratory Medicine, Northern Health, Victoria, Australia
[2]Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Victoria, Australia
[3]Institute for Breathing and Sleep, Austin Health, Victoria, Australia
[4]Northern Centre for Health Education and Research, Epping, Victoria, Australia
[5]Research and Industry Engagement, La Trobe University, Bundoora, Victoria, Australia

NH Division and Department:

Division of Medicine, Department of Respiratory and Sleep Medicine

Background: There are no Australian data available on the burden of pleural diseases. We conducted an analysis of the Victorian Admitted Episodes Dataset (Department of Health, Victoria) to examine inpatient burden of pleural disease and identify trends.

Method: Adults ≥20 years admitted to Victorian public hospitals between 2012 and 2021 with a primary or additional diagnosis of pleural disease were included. The International Classification of Diseases, 10th Edition (ICD-10) codes were categorised into empyema, malignant pleural disease, pneumothorax, other pleural disorders, unclassified pleural effusion and pleural disease without effusion. Primary outcomes examined were population-adjusted separations, hospital funding (Weighted Inlier Equivalent Separation, WIES) and length of stay (LOS). Secondary outcomes included proportions of admissions to regional hospitals, elective admissions, admissions involving a procedure, and population-adjusted inpatient mortality. Subgroup analysis for each diagnosis was performed.

Results: Modelling showed an increase in pleural disease separations of 2.33% per year (63/100,000 in 2012 to 74/100,000 in 2021, $p < 0.01$). There was a correlation between increasing age and the number of separations. The most frequent ICD-10 categories were unclassified pleural effusions, pneumothorax and malignant pleural disease. WIES increased by 0.5% per year ($p < 0.01$). LOS per separation declined by 0.36% per year ($p = 0.02$). Around 75% of admissions were presentations via an Emergency Department. Mortality rates per separation did not change.

Conclusion: Pleural disease is imposing an increasing burden on the Victorian hospital system with rising admission rates and complexity of presentations – often after emergency department presentation. New models of care and improved resource allocation may be required to meet growing demands for these disorders.

#67

Tracking a growing burden: trends in admissions for malignant pleural disease in Victoria

Authors:

Victor Duong[1,2], Liam M Hannan[1,2,3], Behzad Niknami[1], Mani Suleiman[4,5], Sanjeevan Muruganandan[1,2]

[1]Department of Respiratory Medicine, Northern Health, Victoria, Australia
[2]Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Victoria, Australia
[3]Institute for Breathing and Sleep, Austin Health, Victoria, Australia
[4]Northern Centre for Health Education and Research, Epping, Victoria, Australia
[5]Research and Industry Engagement, La Trobe University, Bundoora, Victoria, Australia

NH Division and Department:

Division of Medicine, Department of Respiratory and Sleep Medicine

Background: The global incidence of malignant pleural disease is rising, driven by improved cancer survival and an ageing population. Contemporary Australian data confirming this trend are lacking.

Method: We conducted a retrospective analysis of the Victorian Admitted Episodes Dataset (Department of Health, Victoria), including all adults (≥20 years) admitted to public hospitals between 2012 and 2021 with a primary or additional diagnosis of malignant pleural disease (ICD-10 codes: C38.4, C38.8, C78.2, C45). Primary outcomes were population-adjusted separations (admissions), hospital funding (Weighted Inlier Equivalent Separation [WIES]), and length of stay (LOS). Secondary outcomes included the proportion of admissions to regional hospitals, proportion of elective admissions, proportion of admissions involving a procedure, proportion involving surgery and separation-adjusted inpatient mortality.

Results: A total of 10,254 separations were identified. Unadjusted annual separations increased from 864 in 2012 to 1,307 in 2021. Per 100,000 population, separations increased from 15.1 to 19.9, representing a 2.9% annual increase ($p < 0.01$). Average LOS declined non-significantly from 7.10 to 6.58 days ($p = 0.10$), however bed-days increased from 6,133 to 8,601 ($p < 0.01$). WIES decreased from 2.02 to 1.83 units ($p < 0.01$). The proportion of admissions to regional hospitals remained stable (24–28%; $p = 0.91$), as did elective admissions (33–39%; $p = 0.16$). The proportion of admissions involving a procedure declined from 62% to 54% ($p < 0.01$), whilst surgical management declined from 14% to 9% ($p<0.01$). Inpatient mortality remained stable (1.82–1.78 per 100,000 population; $p = 0.33$).

Conclusion: Malignant pleural disease is imposing an increasing burden on health systems and Victorian data reflects similar observations overseas. Hospital admissions for malignant pleural disease in Victoria result in relatively long LOS, are frequently unplanned and commonly require invasive procedures including surgery.

#69

A hepatology home-based care program improves readmissions and mortality in recently hospitalised patients with cirrhosis.

Authors:

Leya Nedumannil[1], Catherine Yu[1], Kristen Peake[1], Kendall Fitzpatrick[1], Vanessa Lowen[1], Mustafa Mohamedrashed[1], Mayur Garg[1,2], Diana Lewis[1], Siddharth Sood[1,2]

[1]Northern Health, Melbourne, Victoria Australia
[2]The University of Melbourne, Victoria, Australia

NH Division & Department:

Division of Medicine, Department of Gastroenterology

Background: Liver At Home (L@H), a 3-month program offering home-based care led by hepatology nurses, was initiated in early 2023 at Northern Health Through regular home visits and telehealth reviews, L@H facilitates the continued medical management of patients with cirrhosis following inpatient admission. We aimed to evaluate hospital readmission and mortality outcomes in patients enrolled to L@H.

Method: Patients with cirrhosis enrolled to L@H between 01/03/2023-01/09/2024 (L@H group) were compared to patients who were referred to L@H but not enrolled (non-L@H group). Reasons for non-enrolment included ineligibility based on home safety screening, residence outside hospital catchment, and patient preference. Readmission was defined between 8-90 days, and failed discharge between 0-7 days of initial hospitalisation. Only index enrolments to L@H were included. The groups were compared using intention-to-treat analysis. Survival and readmission differences were evaluated using Cox proportional hazards regression.

Results: 61 index patients enrolled to L@H were compared to 50 non-L@H patients. The L@H and non-L@H groups were similar in median age [59 (IQR 45-69) vs. 57 (IQR 53-72), p=0.31] and proportion of females [29.5% (n=18) vs. 42% (n=21), p=0.17], respectively. Compared to the L@H group, median MELD-Na was significantly lower in the non-L@H group [17 (IQR 11-19) vs. 19 (14.5-22), p=0.02]. 3-month follow-up demonstrated significantly reduced liver-related hospital readmission [hazard ratio (HR) 0.39 (0.19-0.8), p=0<0.01]. On extended follow (censor date 01/11/2024), a statistically significant mortality benefit was associated with the L@H enrolment [HR 0.41 (0.18-0.92), p=0.03].

Conclusion: The 18-month outcomes of L@H reveal a significantly lower proportion of 3-month liver-related hospital readmission in L@H patients, and significant reduction in all-cause mortality associated with enrolment to L@H that was seen well beyond the enrolment period. Our findings suggest that liver-focused transitional care programs such as L@H may have enduring morbidity and mortality benefits for recently hospitalised patients with cirrhosis.

#70

Impact of a liver nurse-led care program on disease knowledge in patients with cirrhosis.

Authors:

Leya Nedumannil[1], Catherine Yu[1], Kristen Peake[1], Kendall Fitzpatrick[1], Vanessa Lowen[1], Mustafa Mohamedrashed[1], Mayur Garg[1,2], Diana Lewis[1], Siddharth Sood[1,2]

[1]Northern Health, Melbourne, Victoria Australia
[2]The University of Melbourne, Victoria, Australia

NH Division & Department:

Division of Medicine, Department of Gastroenterology

Background: Insufficient disease knowledge in patients with cirrhosis contributes to increased healthcare utilisation. We aimed to evaluate the impact of Liver-At-Home-(L@H), a novel 3-month home-based program led by hepatology nurses for the continued community-based management of recently hospitalised patients with cirrhosis, on patient disease knowledge.

Method: Patients with cirrhosis discharged from the Gastroenterology Unit and enrolled to L@H between 01/03/2023-01/09/2024 were included. The cirrhosis knowledge questionnaire (CKQ) was offered on a voluntary basis at enrolment and completion of L@H. The questionnaire comprised 14 questions covering management of ascites (/5), varices (/3), hepatic encephalopathy (HE) (/3), and other complications/ lifestyle (/4). The primary outcome was change in total knowledge score, and secondary outcome was change in knowledge category scores. Results were compared using Chi square and Mann-Whitney U tests for categorical and continuous variables, respectively.

Results: Of 89 patients enrolled to L@H, 20 completed the questionnaire at enrolment and completion of L@H [median age 56 years (IQR 43.5-70.5), 30% (n=6) female, MELD-Na score 17.5 (IQR 12.5-20.5)]. Of these, 80% (n=16) had ascites, 10% (n=2) variceal bleeding, and 25% (n=5) > Grade II HE during hospital admission. Baseline median total knowledge score was 7.5/14 (IQR 7-9), which significantly improved to 9/14 (IQR 9-12) at the end of L@H (p<0.001), with most patients (n=17, 85%) demonstrating improvement. Median breakdown scores revealed significantly improved knowledge regarding ascites [4/5 (IQR 3-5) vs. 3 (IQR 2-3.5), p=0.003] and a trend towards improved knowledge regarding HE [2/3 (IQR 1-3) vs. 1 (IQR 0.5-2), p=0.08], and stable knowledge regarding varices [2/3 (IQR 2-3) vs. 2 (IQR 1.5-3)].

Conclusion: These findings highlight the potential of specialist hepatology nurse-led transitional care programs-such-as-L@H for recently hospitalised patients with cirrhosis as an intervention to help improve their disease knowledge and awareness regarding the major complications of this complex condition.

#73

Association of Acute Kidney Injury with Non-Home Discharge in Critically Ill Elderly Patients: A retrospective study

Authors:

Junzhe Zhu[1,2], David Crosbie[2], Timothy Pianta[1,2]

[1]Northern Health, Melbourne, Victoria Australia, [2]University of Melbourne, Melbourne, Victoria Australia

NH Division and Department:

Division of Nephrology, Department of Intensive Care

Background: Acute kidney injury (AKI) is common among elderly intensive care unit (ICU) patients and is associated with adverse outcomes and an inability to return home. However, the direct association between AKI and discharge destinations remains unclear. This study evaluated whether AKI was independently associated with adverse outcomes, including non-home discharge.

Method: We collected demographic, clinical, and outcome data for patients aged ≥ 65 years admitted to Northern Health ICU (2022- 2023). AKI diagnoses were extracted from administrative data. The primary outcome was a composite of in-hospital death and non-home discharge. Secondary analysis examined each component separately, along with unplanned readmission and subacute care use within one year post-discharge. Multivariate regression analyses were used to identify independent associations between AKI and outcomes of interest, after adjusting for confounding variables. Exploratory analysis examined whether AKI requiring renal replacement therapy (RRT) was associated with worse outcomes.

Results: Among 936 subjects, 488 (52%) developed AKI, of whom 64 (13%) required RRT. The primary outcome occurred in 374 patients (40%). Factors independently associated with the primary outcome included advanced age, frailty, dementia, emergency admission, primary diagnosis, and greater illness severity. AKI was not independently associated with the primary outcome (adjusted odds ratio [aOR]= 1.32, 95% confidence interval [CI]= 0.94- 1.85). However, AKI showed a modest independent association with non-home discharge (aOR= 1.54; 95% CI= 1.05- 2.27). It was not independently associated with in-hospital death, need for subacute care, or one-year readmission. AKI requiring RRT was more strongly associated with adverse outcomes.

Conclusion: Although elderly ICU patients with AKI experienced high rates of adverse outcomes, these appeared predominantly attributable to concurrent demographic and clinical factors rather than AKI itself. Practical prognostication and strategies to improve outcomes such as non-home discharge in this cohort will require consideration of broader characteristics beyond AKI alone.

#74

High rates of oral 5-aminosalicylic acid co-prescription with advanced therapy in patients with ulcerative colitis

Authors:

Ziheng Calvin Xu[1], Marwan Al-Banaa[1], Ethan Tan[1], Bilqis Onibon[1], Shees Salman[1], Tim Levar[1], Rebecca Pearce[1], Mayur Garg[1,2], Soleiman Kashkooli[1], Robert Little[1]

[1]Northern Health, Melbourne, Victoria, Australia
[2]Department of Medicine, University of Melbourne, Victoria, Australia

Background: 5-aminosalicylates (5-ASAs) appear to provide no incremental benefit when prescribed alongside advanced therapies in ulcerative colitis (UC). We aimed to quantify the prevalence of oral 5-ASA and advanced therapy co-prescription in UC, evaluate associations with disease activity and estimate annual costs.

Methods: Retrospective observational study of all consecutive adult patients with UC receiving advanced therapy from a single tertiary IBD centre. Data collection included patient and disease characteristics, 5-ASA and advanced therapy type, dose and duration and objective disease activity (most recent intestinal ultrasound, faecal calprotectin [FCP], endoscopy within 12 months). Biochemical remission was defined as FCP <150µg/g, sonographic remission as normal bowel wall thickness without hyperaemia, endoscopic remission as Mayo endoscopic score of 0 and histological remission as the lack of active inflammation including no neutrophilic infiltrate.

Results: 230 patients were included (42% female, median age 40 [IQR 29-54] years, median disease duration 96 months). Concurrent oral 5-ASA therapy was used in 116 patients (50%) for a median duration of 42 months (IQR 11–59), including 19 overlapping months with the most recent advanced therapy. The majority (89%) remained on maximal induction doses and annual average costs were estimated at $3469.73 per patient. Concurrent oral 5-ASA and advanced therapy use was associated with higher topical 5-ASA use (p = 0.002) and shorter duration on current advanced therapy (p = 0.03) compared to those on an advanced therapy alone. Almost two-thirds of patients remaining on 5-ASAs were in biochemical and/or sonographic remission and a third were in endoscopic and histological remission. 5-ASA co-prescription rates varied according to advanced therapy type but no significant differences in clinical, biochemical, endoscopic or histologic activity were observed between groups (Table 1).

Conclusion: Co-prescription of 5-ASAs and advanced therapies is common despite high rates of objective remission. Identifying patients suitable for 5-ASA withdrawal may allow substantial reductions in healthcare expenditure.

#75

User experience of a person-centred, ambulatory model of care for the management of malignant pleural effusion

Authors:

Victor Duong[1,2], James Rule[3], Sanjeevan Muruganandan[1,2], Urooj Raza Khan[3]

[1]Department of Respiratory Medicine, Northern Health, Victoria, Australia
[2]Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Victoria, Australia
[3]Digital Health Information Management, Latrobe University, Victoria, Australia.

NH Division and Department:

Division of Medicine, Department of Respiratory and Sleep Medicine

Background: Malignant pleural effusion (MPE) is a complication of advanced cancer, causing breathlessness and chest pain, often requiring repeated invasive procedures and hospitalisation. While traditional management is hospital-based, ambulatory approaches are equally effective and reduce healthcare utilisation. This study evaluates the feasibility and user experience of a novel, virtual ambulatory model of care; the Specialist Ambulatory Pleural Service (SAPS), which integrates telehealth, teleultrasound, community nursing support, and patient-reported outcomes.

Method: Phases 4 and 5 of a 6-phase, prospective, mixed-method study examined patient and nursing perspectives on the SAPS model. In total, 57 patients with symptomatic MPE were enrolled between September 2023 and July 2025. Quantitative data were analysed using a modified, 13-item Health-ITUES framework based on a 5-point Likert scale, and qualitative data were thematically coded from semi-structured interviews. Two weeks post-enrolment, a SAPS nurse conducted a home visit with remote telehealth consultation. Real-time teleultrasound was performed, alongside education and support. Monthly home visits continued for up to six months, with 24/7 phone access and ad hoc visits as required.

Results: Preliminary data from 34 participant surveys, 15 interviews, 4 nurse surveys, and 2 nurse interviews show high satisfaction. The percentage of "somewhat agree" or "strongly agree" responses on the participant survey ranged from 70.8% (1 item) to 100% (6 items). Study participants reported improved self-management, ease of use, and a sense of empowerment. Emerging themes included personalised care, convenience, and strong technical performance. Nurses valued the model's impact on patient care but noted early challenges with scheduling and workflow. Both groups highlighted improved symptom management and potential cost-effectiveness of the model.

Conclusion: SAPS is a feasible, well-received virtual model of care for MPE. These early findings support continued evaluation, with potential for broader implementation across different health services.

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Healthcare expense in patients with acute severe ulcerative colitis (ASUC) is driven by initial length of stay and need for rescue therapy

Authors:

Ziheng Calvin Xu[1], Ethan Tan[1], Mustafa Mohamedrashed[1], Melissa Chew[1], Sarah Lucas[1], Ayushi Chauhan[1], Diana Lewis[1]. Soleiman Kashkooli[1], Robert Little[1], Mayur Garg[1,2]

[1]Northern Health, Melbourne, Victoria, Australia
[2]Department of Medicine, University of Melbourne, Victoria, Australia

Background: Acute severe ulcerative colitis (ASUC) contributes substantially to morbidity and healthcare expenditure in patients with ulcerative colitis (UC). We aimed to evaluate healthcare costs and associated factors in patients with ASUC for the first 12 months.

Method: Consecutive patients admitted to a tertiary inflammatory bowel disease centre with ASUC between January 2016 and January 2024 were included, with electronic health records analysed. Costs were calculated for the index admission and over the subsequent 12 months. Associations between costs and clinical factors (length of hospital stay, disease phenotype, disease severity, need for colectomy or inpatient rescue therapy, prior biologic use, CRP/albumin ratio, total steroid exposure, and hospital readmission) were evaluated.

Results: 122 patients (51 [30%] female; median age 39 [IQR 25–54] years) were included. Seventy-two (59%) had a prior diagnosis of UC. The median length of stay for the index admission was 6 (IQR 4–8) days. 67 (55%) received medical rescue therapy during the index admission (infliximab in 65, upadacitinib in 1, adalimumab in 1) and 4 required second-line rescue therapy (upadacitinib in 3, tacrolimus in 1). Four underwent colectomy during index admission, and a further 6 in the subsequent 12 months. The median cost of the index admission was $16,422 (IQR $11,449-24,131) AUD, associated with length of stay (P<0.01) and the need for rescue therapy (p<0.01). The median total healthcare cost over 12 months was $35,502 (IQR $22,106-52,119) AUD, driven by length of stay (P<0.01), need for rescue therapy (P<0.01), and readmission (P=0.018). Need for colectomy was not associated with cost for index admission or at 12 months.

Conclusion: Healthcare expenditure related to ASUC remains high, driven by initial length of stay and need for rescue medical therapy, but not need for colectomy. Measures to reduce length of stay and readmission warrant investigation.

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Delirium risk prediction from routinely collected electronic health records: model development and internal validation.

Authors:

Swapna Gokhale[1,4,6], Yitayeh Belsti[1], David Taylor[3], Nikolajs Zeps[2,5,6], Helena Teede[1,2], Joanne Enticott[1,2]

[1]Monash Centre for Health Research and Implementation, Faculty of Medicine, Nursing, and Health Sciences, Monash University, Clayton, Victoria, Australia.
[2]Monash Partners Academic Health Sciences Centre, Clayton, Victoria, Australia.
[3]Office of Research and Ethics, Eastern Health Institute, Eastern Health, Box Hill, Victoria, Australia.
[4]Clinical Governance Quality and Patient Safety, Eastern Health, Box Hill, Victoria, Australia.
[5]Eastern Health Clinical School, Faculty of Medicine, Nursing and Health Sciences, Monash University, Box Hill, Victoria, Australia.
[6]Honorary Research Fellow, Northern Centre for Health Education and Research, Northern Health, Epping, Victoria

NH Division and Department:
Northern Centre for Health Education and Research

Background: Delirium, an acute neuropsychiatric confusional state; is correlated with complications, longer length of stay and long-term cognitive health. Identifying patients at high risk for delirium early can help healthcare providers intervene proactively, potentially preventing or mitigating the condition's severity. The objective of this study was to develop and validate a risk prediction model using machine learning to identify patients at risk of delirium.

Method: Risk prediction model was developed using non-identifiable data from adult patient admissions between 1st January 2023 to 31st October 2024, for all adults (50 years and older) in a large metropolitan publicly funded hospital in Victoria, Australia. Candidate predictors, informed by the literature, were sourced from routinely collected electronic data in the first 48 hours of admission. Delirium diagnosed during admission was outcome. A random forest classifier (RFC) model was developed using 23 categorical and continuous variables like age, risk scores, lymphocytes, haemoglobin, vitals and co-morbidities. Stratified k-fold cross-validation and bootstrapping were used for internal validation. Model performance was assessed using confusion matrix, area under curve (AUC) and calibration metrics including decision curve analysis for clinical applicability.

Results: Following data cleaning and pre-processing, a cohort of 28965 admissions was obtained with 2334 (8.06%) delirium. The developed RFC model had an AUC of 0.93 each, and modest calibration shown by a calibration intercept and slope of -0.093 and 1.611, respectively. The top 5 features were aggression risk score (BOC), delirium screening score (4AT), dementia, age and anticholinergic drug burden score.

Conclusion: Machine learning methods like RFC showed high degree of discrimination and fair calibration in predicting the risk of delirium from routinely collected hospital data with the top features demonstrating excellent explainability for clinical application. Further transferability of these models needs to be explored via external validation and pragmatic randomised control trials to ascertain impact.

MENTAL HEALTH

#1

Mental Health Nurses burnout and implications upon recovery-orientated care within the inpatient mental health services.

Authors:

Anabelle Shimmins[1],

[1]Northern Health, Melbourne, Victoria Australia.

NH Division and Department:

Mental Health Division and North West Area Mental Health Service

Background: Mental Health (MH) Inpatient Units (IPU) are fundamental in providing care for consumers experiencing distress. Burnout (BO) experienced by mental health nurses working in this setting is a frequent and significant barrier to providing strong recovery-oriented care. There are vague practical recommendations that could be successfully implemented into nursing practice promoting opportunity for further exploration. Through conducting this research study that examines the impact upon consumers, families and carers accessing care it can propose recommendations derived from evidence- based literature that can strengthen the mental health nursing workforce and the quality of care provided.

Method: A new systematic review of current published literature was conducted to collect robust evidence for this research study. This review utilised the following clinical search databases; Cumulative Index to Nursing and Allied Health Literature, Cochrane Library, Scopus and MEDLINE collecting an initial sample size of 855 research articles. Following, critical appraisal of the publication dates, peer review, full access and targeted population group identified 25 research articles for further analysis and basis for practice recommendations.

Results: The 25 research articles identified leadership skills of MH nursing leaders, little equal collaboration of the multidisciplinary team and limited emotional intelligence of MH nurses as key issues. This promoted establishing recommendations which surrounded promoting adequate training for mental health nurse's leadership and MH nurses focusing the identification and prevention of workforce BO and prioritising collaborative workspaces on the IPU. Such decreases mental health nurses' risk of BO and promote recovery-orientated approach to consumers accessing the IPU services.

Conclusion: BO of MH nurses in IPU directly impacts the quality of recovery-oriented care which consumers receive. Asserting for MH IPU settings to promote training for both the leadership and nursing workforce and creating an equal and supportive environment where all professionals can collaborate in designing recovery orientated care.

12

Improving Sexual and Reproductive Health of Those with Serious Mental Illness: Scoping Review

Authors:

Trudy Brown[12], Bindu Joseph[2], Gary Ennis[1], Michael Olasoji[2]

[1]Northern Health, Melbourne, Victoria Australia, [2]Federation University, Berwick, Victoria, Australia

NH Division & Department:

Mental Health Division

Background: Sexual and reproductive health care is an important part of holistic health care for mental health consumers. It is known that those with serious mental illness have higher rates of sexually transmitted infections, blood borne viruses and unintended pregnancies. They also participate in cervical screening, prostate screening and breast screening at lower rates than the general population leading to poorer health outcomes. The aim of this literature review is to explore the extent of literature available on how mental health services address the sexual and reproductive health needs of those with serious mental illness who engage with their service.

Method: A scoping review was conducted following the Johanna Briggs Institute approach alongside the PRISMA-ScR Checklist. Three databases were used to search for literature including MEDLINE, PsychINFO, and SCOPUS. 403 articles were initially screened through title and abstract screening. 80 articles then received full-text reviews by two separate reviewers. A final 15 articles were deemed suitable for this literature review.

Results: The scoping review focused on sexual and reproductive health care received by those with serious mental illness from mental health clinicians. Several primary themes emerged from the review: 1) Poor sexual health screening is provided to mental health services users; 2) Consumers welcome sexual health screening and education; 3) Mental health clinicians do not view sexual health as part of their role; and 4) Mental health clinicians should be trained in sexual health.

Conclusion: There is limited research available that shows successful incorporation of sexual health care within mental health settings. However, there appears to be a shift to incorporate more physical health care within the mental health setting and both those with serious mental illness and the clinicians who provide mental health care for them appear to be ready to work towards adequate sexual and reproductive health care.

PHARMACY

#10

Breath of Fresh Air: Uncovering Inhaler Waste in Our Hospital

Authors:

Nohail Punjwani[1], Elise Simionato[1], Jeff Khoshaba[1], Samantha Botta[1], Jier Nguyen[1]

[1]Northern Health, Melbourne, Victoria Australia,

NH Division & Department:

Pharmacy Department, Chief Medical Officer Division

Background: Medication wastage places a financial and environmental strain on the healthcare system. Due to their single patient usage inhaled medications are common culprits of this wastage. The Northern Hospital investigated the rate of wasted inhaler and wasted dosages, due to the high usage for both maintenance and as required therapy this audit focused on Symbicort®. The aim of this audit was to assess the number of patients with a wasted Symbicort® turbuhaler and/or rapihaler and assess factors contributing to wastage.

Method: A retrospective audit was conducted reviewing all double (or more) dispensing of Symbicort turbuhalers and rapihalers between April 2024 to April 2025. Information was extracted from the pharmacy dispensing system and compared to the administration and documentation in patients Electronic Medical Records (EMR); and the reason for double dispensing or potential wasted dosages was investigated and recorded.

Results: In total 77 patients received a double dispensing of a Symbicort® inhaler. Of these, 66 cases were identified as resulting in inhaler wastage. The primary cause of this wastage was patient transferring between wards, during which the original inhaler was either lost or presumed lost. Other contributing factors included the dispensing of a new inhaler on discharge, despite the patient having an existing supply. These findings negatively contribute to environmental harm but also a significant financial inefficiency with an estimated cost of $1273.

Conclusion: These findings highlight a significant opportunity to reduce both environmental and financial waste within Northern Health. Implementing better workflows around medication tracking during patient transfer and discharge may help prevent unnecessary inhaler wastage and ensure more sustainable use of healthcare resources.

#80

Pharmacological Management of Delirium in Hospitalised Patients with Parkinson's Disease

Authors:

Amanda Kirollos[1], Emily Ristovski[1], Sarah El-Naggar[1], Samantha Botta[1], Jeff Khoshaba[1] and Jier Nguyen[1].

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Pharmacy

Background: Patients with Parkinson's Disease (PD) are at an increased risk of developing delirium resulting in prolonged hospital stays and worsening motor symptoms. While there are various pharmacological treatments routinely used to manage delirium, many of these medications can exacerbate PD symptoms. Some research suggests that certain medications should be avoided in patients with PD, but no comprehensive guidelines exist to provide prescribers with clear recommendations on managing psychotic symptoms of delirium in this population. This research aims to identify which medications are most commonly administered to manage the psychotic symptoms of delirium in hospital inpatients with PD.

Method: We identified patients with PD admitted to Northern Hospital (NH) between 01/01/2024 and 31/12/2024, who were administered psychotropic medicines to manage delirium during their inpatient stay. Psychotropic medications administered as when required (PRN) doses, doses to be administered immediately (STAT) or doses to be given ONCE only were extracted from the electronic medical record. Clinical notes and charts were reviewed and only doses administered to manage delirium were included in the study. Data was compared to existing NH delirium guidelines that provide some recommendations on the pharmacological management of delirium in patients with PD.

Results: Out of 227 patients assessed, 31 patients received pharmacological therapies and were included in the study. 45.2% of patients were administered benzodiazepines not listed in the NH guideline while 35.5% received the preferred agent, quetiapine. Of clinical concern, one patient experienced worsening PD symptoms following two doses of droperidol highlighting the significant risks which may eventuate without clear guidelines.

Conclusion: Psychotropic medications known to exacerbate motor symptoms of PD were administered to manage delirium in the hospital inpatient setting. To safely manage delirium in patients with PD, it is prudent to develop clear guidelines specifying optimal management and support appropriate prescribing.

#81

Auditing the intravenous to oral switch with azithromycin, and an assessment of prescribing patterns.

Authors:

Stephen Halliwell[1], Danni Miatke[1], Samantha Botta[1], Jeff Khoshaba[1], Jier Nguyen[1],

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Pharmacy Department, Chief Medical Officer Division

Background: Azithromycin is used as part of a combination therapy for community acquired pneumonia (CAP), particularly to provide atypical bacteria coverage. Intravenous (IV) azithromycin is often first-line treatment for suspected severe CAP, however should be stepped down to oral treatment after 24 hours once the patient

is haemodynamically stable. The total length of an azithromycin course should be continued beyond three days only in severe legionella pneumonia. Anecdotally, patients are inappropriately prescribed longer durations of IV therapy and receive longer durations of total therapy, this may contribute to antimicrobial resistance and adverse outcomes. The aim of this retrospective audit was to determine azithromycin prescribing patterns.

Method: Adult patients admitted to the Northern Hospital in March 2025, diagnosed with CAP, and prescribed azithromycin were included in the audit. Clinical data for 60 patients was extracted from Electronic Medical Records (EMR) and severity of CAP was assessed 24 hours after first dose of azithromycin, with this assessment of patient parameters the appropriateness of ongoing azithromycin prescribing was determined. This was then compared to medication administration records to determine the appropriateness of IV or oral medication administration.

Results: Azithromycin is frequently initiated alongside ceftriaxone empirically in patients at a high risk of severe CAP. The average severity at 24 hours was determined as mild-moderate, highlighting the rarity of severe CAP and therefore minimal cases requiring longer courses of IV azithromycin. However, the average number of IV doses was 1.45 indicating that IV therapy is often extended.

Conclusion: There is a prolonged duration of IV azithromycin beyond the current guidelines, additionally it is frequently administered empirically in patients without severe CAP. These findings highlight the need for increased awareness of guideline-based prescribing to more tightly control its initiation and may inform future antimicrobial stewardship interventions.

#85

Evaluating the Appropriateness of Proton Pump Inhibitor Prescribing in General Medical Inpatients

Authors:

Hirusha Liyanage Kananke[1], Vanessa Inserra[1], Samantha Botta[1], Jeff Khoshaba[1], Jier Nguyen[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

Pharmacy Department and Chief Medical Officer Division

Background: Proton Pump Inhibitors (PPIs) are widely prescribed for acid-related gastrointestinal conditions. Although effective, prolonged or inappropriate use has been linked to adverse outcomes including infections, micronutrient deficiencies, and fractures. While overuse in the community is well documented, inpatient prescribing, particularly in peri-urban hospitals such as Northern Hospital remain underexamined. This study evaluated the appropriateness of PPI prescribing among general medical inpatients, focusing on alignment with guidelines, documentation quality, and deprescribing practices.

Method: This retrospective observational audit was conducted through examination of Electronic Medical Records. The audit included 142 adult inpatients admitted to General Medicine Units 1A and 1B at Northern Hospital and prescribed a PPI between 01/06/2024 and 30/09/2024. PPI prescribing was assessed using predefined criteria developed from current national and international deprescribing guidelines, focusing on indication, dosing, documentation and deprescribing practices.

Results: Only 11.97% (n=17) of PPI prescriptions met all four criteria for appropriate prescribing. The most frequent deficiencies were missing deprescribing plans (78.87%) and missing review dates (79.58%), followed by inappropriate dosing (66.90%) and undocumented or invalid indications (52.82%). The majority of patients (82.39%, n=117) were prescribed a continuation of their pre-admission PPI therapy, while 18.31% (n=26) were newly initiated during admission. High-dose regimens were prescribed in 22.54% (n=32) of cases, yet deprescribing was initiated in only 7.75% (n=11). A PPI plan on discharge was documented for just 9.15% (n=13). July recorded the highest usage, with 414.0 Defined Daily Doses (DDDs) administered.

Conclusion: Inappropriate PPI prescribing is common, with nearly 88% of patients not meeting evidence-based criteria. The prescribing intensity of 908.52 DDDs per 1,000 bed-days highlights the need for improved stewardship in inpatient settings. Future initiatives to help increase the rate of compliance with policy may include multidisciplinary team involvement, education and training as well as stewardship programs.

#87

Evaluating patient parameters that contribute to unplanned presentations within an emergency department for iron infusions

Authors:

Jishun Liu[1], Simon Huynh[1], Jeff Khoshaba[1], David Nguyen[1], Samantha Botta[1], Jier Nguyen[1]

[1]Northern Health, Melbourne, Victoria, Australia

NH Division & Department:

Pharmacy Department, Chief Medical Officer Division

Background: In recent years, the Emergency Department (ED) has experienced an increase in presentations related to iron deficiency, with many patients requiring intravenous (IV) iron infusions. These cases contribute to ED overcrowding and delays in care. To address this, Northern Health established a dedicated outpatient iron infusion clinic in February 2025 to triage community referrals, streamline treatment, and reduce pressure on the ED. This retrospective audit aimed to characterise patients presenting to the Short Stay Unit (SSU) with iron deficiency and assess their suitability for outpatient management.

Method: A retrospective audit was conducted on adult patients who presented to the SSU at Northern Hospital with symptoms and a diagnosis of iron deficiency between April 2024 and March 2025. Patients with heart failure, chronic kidney disease, or pregnancy were excluded. Data extracted from Electronic Medical Records (EMR) included demographics, presenting symptoms, haemoglobin and ferritin levels, IV iron formulations administered, and discharge management.

Results: A total of 121 patients met the inclusion criteria, with 83% identifying as female. Among the patients who received an IV iron infusion in the SSU, 14.1% met criteria for immediate administration, 70.2% were appropriate for outpatient clinic management, and 15.7% did not meet criteria for immediate iron infusion. Only 20% of patients received dietary or oral iron advice at discharge, and 10.4% had documentation of prior iron supplement use.

Conclusion: The majority of patients receiving IV iron in the SSU could have been managed in an outpatient setting, suggesting potential over-utilisation of acute care resources. Improved triage protocols and greater utilisation of the outpatient iron clinic may reduce unnecessary ED and SSU presentations. Additionally, the limited provision of dietary and oral iron supplements highlights a potential role for pharmacist-led education and follow-up to improve patient outcomes.

SURGERY

#2

Improving Documentation Standards in Upper Limb Tendon Surgery

Authors:

Mahta Mohajeri[1], Sam Hamilton[1], Rizwan Sheikh[1]

[1]Plastics department, Northern Health, Melbourne, Victoria, Australia

Background: Effective documentation in surgical practice can improve outcomes. Evidence indicates structured templates improve adherence, one study showing compliance increasing from 71.1% to 100%.1 This study aims to evaluate the use of an upper limb tendon repair operation report template in a single institution. To enhance documentation in upper limb flexor and extensor tendon repair operation reports to enhance hand therapy.

Method: A retrospective study developed a documentation template for upper limb tendon surgeries, adhering to the Royal College of Surgeons guidelines.2 Operation reports (Pre audit: January 2023–June 2024, Post audit: June - December 2024) were audited pre- and post-implementation. A survey assessed hand therapists' perspectives on whether improved notes reduced clarification needs, saved time, facilitated faster therapy initiation, and enhanced therapy quality.

Inclusion criteria were upper limb tendon repairs requiring hand therapy.

Results: Before the template, 90 operation reports showed 81.70% general compliance: surgeons' names (98.8%), anesthetic type (95.5%), injury zone (64.4%), injury percentage (94.4%), repair type (56.6%), repair quality (47.7%), and direct hand therapy orders (81.1%). Flexor-specific documentation (e.g., pulley involvement) was 19.4%; extensor-specific documentation (injury relative to juncture tendinea) was 1.8%.

Post-template, 36 notes improved general compliance to 97.8%, flexor-specific compliance to 66.7%, and extensor-specific compliance to 14.3%. Six general categories reached 100% adherence.

Surveys revealed 100% of therapists experienced fewer delays and reduced clarification needs, saving time and enabling faster therapy. However, 50% indicated a need for additional detail in operation notes.

#3

Pre-operative fasting times and the incidence of regurgitation and aspiration – a single-network retrospective data analysis

Authors:

Ella Francis[1,2], Megha Kohli Mehrotra[1], David Dunbar[1], Lisa John[1], Shorsha Ross[1], Amanda Baric[1,2]

[1]Northern Health, Melbourne, Victoria, Australia,
[2]The University of Melbourne, Victoria, Australia

NH Division and Department:

Division of Surgical Services, Department of Anaesthesia

Background: Aspiration is a rare but universally feared complication of anaesthesia, leading to the implementation of strict preoperative fasting guidelines. Recent evidence and subsequent changes in local policy are increasingly pointing towards the safety of more liberal liquid fasting guidelines, such as the Sip Til Send policy. We aimed to assess the liquid and solid fasting durations of patients at Northern Health, prior to the implementation of Sip Til Send.

Methods: We performed a single-centre retrospective data analysis of the mean liquid and solid fasting durations of 1,077 surgical patients at Northern Health, additionally recording the incidence of intraoperative regurgitation and aspiration. Cases were divided into three key groups, Northern Hospital elective patients, Northern Hospital emergency patients, and Broadmeadows Hospital elective patients.

Results In a sample size of 1077 patients, the mean liquid fasting time was 8.83 hours and the mean solid fasting time was 13.33 hours. Northern Hospital emergency patients fasted from liquids for on average 1.5 hours longer than Northern Hospital elective patients. No other statistically significant differences were observed between groups. One case of regurgitation was recorded, and no cases of aspiration were recorded.

Conclusion: Northern Health patients fast well in excess of current ANZCA guidelines. The results of this audit suggest that Northern Health patients may benefit from a more liberal liquid fasting policy, such as Sip Til Send, to reduce liquid fasting duration and enhance patient comfort. A post-implementation audit will be required to evaluate the effects of this policy.

#4

Perioperative Outcomes in Smokers Undergoing Major Surgery: A Retrospective Audit at Northern Health

Authors:

Vince Chen[1,2], Amanda Baric[1,2], Andrew Jamie Mackay[1]

[1]Northern Health, Melbourne, Victoria, Australia,
[2]University of Melbourne, Melbourne, Australia

NH Division & Department:

Division of Surgery, Department of Anaesthesia and Perioperative Medicine, Northern Health

Background: Although smoking rates have declined in Australia, a significant proportion of patients continue to smoke at the time of surgery. While existing literature has shown that smoking is associated with worse surgical outcomes, there is limited data from tertiary hospitals in Australia. Understanding the relationship between smoking status and postoperative outcomes is essential for optimising preoperative management. Therefore, this study aimed to determine the prevalence of smoking among patients undergoing major elective surgery and evaluate the association between smoking status and postoperative outcomes at Northern Health.

Methods: This retrospective observational cohort study included patients who underwent major elective general, orthopaedic, thoracic, and vascular surgeries at Northern Health between July 2021 and June 2022. Patients were categorised as current smokers, ex-smokers, and non-smokers. Primary outcomes included postoperative respiratory, cardiac, wound, and other hospital-acquired complications. Secondary outcomes included unplanned return to theatre, length of hospital stay, 30-day hospital readmission, and 30-day mortality. Logistic regression analyses were adjusted for age, body mass index, American Society of Anaesthesiologists status, and chronic obstructive pulmonary disease.

Results: A total of 574 patients were included in this study, comprising 19.3% current smokers, 29.6% ex-smokers, and 50.5% non-smokers. Ex-smokers had the highest rate of postoperative complications, though this was not significantly higher than current smokers. Adjusted analyses demonstrated that current smokers trended towards higher rates of postoperative respiratory complications compared with non-smokers (odds ratio 2.53, 95% confidence interval 0.84–7.55, p = 0.09). No significant differences in cardiac, wound, or other hospital-acquired complications were observed.

Conclusion: Smoking prevalence remains high among surgical patients at our institution, well exceeding the Australian national average of 10.1%. This study did not demonstrate strong associations between smoking and postoperative complications, but observed trends highlight the need for further investigation into the effects of perioperative smoking.

21

Colorectal Cancer Outcomes at the Northern Hospital: A Retrospective Review 2016 – 2021

Authors:

Jialin (Dora) Du[1, 2], Vincent Wang[2], Basil D'Souza[1], Russell Hodgson[1]

[1]Northern Health, Melbourne, Victoria Australia,
[2]Melbourne Medical School, University of Melbourne, Melbourne, Victoria Australia

NH Division & Department:

Colorectal Surgery, General Surgery

Background: Colorectal cancer (CRC) remains a major contributor to cancer-related mortality worldwide, with survival influenced by many prognostic factors. This study aimed to evaluate survival outcomes and prognostic factors for patients diagnosed with CRC at the Northern Hospital between 2016 – 2021, with a focused subgroup analysis of patients with metastatic disease.

Method: A retrospective review was performed using data from the Bowel Cancer Outcomes Registry (B-COR) and electronic patient records. Overall survival (OS) was analysed using Kaplan-Meier modelling. Univariate and multivariate cox proportional hazards analysis was used to determine independent prognostic factors.

Results: A total of 518 patients were included. Median OS was 93.1 months, with a 1-year OS of 92.4% and a 5-year OS of 67.1%. Independent predictors of survival were age, TNM stage, abnormal carcinoembryonic antigen (CEA), and primary tumour resection. In stage III disease, chemotherapy also improved survival (HR=0.31, 95% CI: 0.18 – 0.55, p<0.001). Socioeconomic status, measured by the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD), was not associated with survival. In metastatic disease, patients with lung-only metastasis had the best 5-year survival at 46.0%. Curative-intent chemotherapy (HR=0.40, 95%CI: 0.20 – 0.79, p=0.008) and metastasectomy (HR=0.32, 95%CI: 0.17 – 0.62, p<0.001) independently improved survival

in this group, whilst timing of metastasis (synchronous vs. metachronous), primary tumour site, and primary tumour resection did not influence survival.

Conclusion: The Northern Hospital has comparable CRC survival outcomes to other high-income countries. TNM staging and CEA are key prognostic markers and should guide prognostication. In metastatic disease, curative-intent approaches can significantly improve survival. These findings support the necessity of early detection and multimodal treatment in patients with CRC.

31

Patient experiences and outcomes from a novel multidisciplinary pre-operative shared decision making clinic

Authors:

Yiying (Sally) Tsang[1], Kate Hurley[1], Sean Hui[1], Sarah Jones[1], Andrea Ditoro[1] Daire MacCormack[1], Jamie MacKay[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division and Department:

Division of Surgery, Department of Anaesthesia and Perioperative Medicine

Background: The Northern Health Complex Decision Making (CDM) clinic, is a multidisciplinary preoperative clinic established in January 2023 to support complex, frail or comorbid patients in making informed surgical using the principles of Shared Decision Making (SDM). Staffed by an anaesthestist, geriatrician and an intensivist, the CDM clinic offers a collaborative model where patients are jointly assessed by multiple specialists.

This study evaluated the first year of CDM clinic and aims to examine the patient characteristics, postoperative outcomes and quality of SDM.

Methods: Patients attending the CDM clinic in 2023 were followed up by telephone interview. Data on patient demographics, pre-operative status and postoperative outcomes was collected from medical records, and the quality of SDM obtained using survey tools CollaboRATE-5 and the Decisional Regret Scale.

Results: 71 patients were reviewed with median age of 78, 86% classified as American Society of Anesthesiologists (ASA) Physical Status Classification score 3 or 4 and 69% with Clinical Frailty Scale ≥ 4. After review 65% chose to proceed with surgery while 35% declined.

At 14 months follow up, 41 (58%) patients had undergone surgery. Of these 46% required ICU admission (median stay 1 day) and the median hospital stay was 4 days. Patients spent a median of 25.5 days alive and out of hospital within 30 days post-surgery. 17 patients (24%) had died by follow up including 7 who had surgery.

Telephone interviews with 23 patients (32%) showing high quality SDM (median CollaboRATE 5 score: 12) and low decisional regret (median DRS score: 6.5) with similar results across surgical and non-surgical groups.

Conclusion: The CDM clinic successfully facilitated high-quality SDM for a cohort of frail and comorbid patients. A proportion (35%) elected not to proceed with surgery reflecting the clinic's role in guiding informed, values-based decisions. Among those who underwent surgery, postoperative outcomes were generally favourable.

#32

Incidence of postoperative delirium in Northern Health surgical patients aged 65 years and older

Authors:

Jack Li[1], Sangiun Jin[1], Jane Doan[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division and Department:

Division of Surgery, Department of Anaesthesia and Pain Medicine

Background: Delirium is an acute change in cognitive function characterised by sudden, fluctuating changes in attention and cognition. It is a common hospital-acquired condition, with a significant incidence in postoperative patients, particularly older adults aged 60-70years and high-risk surgical groups. Postoperative delirium (POD) is associated with increased hospital stay, expenditure, increased 30-day mortality and long-term cognitive decline.

Method: A retrospective audit was conducted at Northern Health over a four-month period (November 2023 - February 2024) involving patients aged 65 and older who underwent elective or emergency surgery and were admitted for at least 48 hours. Data on demographics and perioperative factors were collected via the REDCap database. POD was identified through clinical documentation in electronic medical records, and further analysis included delirium duration, complications, management strategies and multidisciplinary involvement.

Results: Of 460 patients, the mean age was 77 years, and 64% had emergency procedures. Orthopaedics was the most represented specialty (31%), followed by general surgery (30%), vascular (15%) and urology (10%). The mean American Society of Anesthesiologists (ASA) Physical Status Classification score was 3, and the average hospital stay was nine days.

POD was diagnosed in 28 patients (6.1%), predominantly in those undergoing emergency surgery (89%), orthopaedic procedures (57%), with pre-existing cognitive (32%) or sensory impairments (18%) and among those administered ketamine. These patients had longer admissions (average 14 vs. 8 days) and were frequently discharged to geriatric, rehabilitation, or aged care services (92%).

Conclusion: The observed POD rate was lower than anticipated, potentially reflecting effective interventions such as routine geriatric reviews. However, under-reporting, under-diagnosis, and a relatively small sample may have influenced findings. Limited use of screening tools like 4AT and miniCOG was noted. Recommendations include enhanced preoperative screening, targeted prevention strategies, consistent use of assessment tools, and improved documentation to support more accurate detection and management of delirium.

#39

Retrospective audit of total knee arthroplasty anaesthesia and post-operative pain management patterns at Northern Health

Authors:

Alexander Grogan[1], Victoria Dale[1], Nicole Gauthier[1], Moira Rush[1]

[1]Northern Health, Melbourne, Victoria, Australia

NH Division & Department:

Division of Surgery, Department of Anaesthesia, Perioperative Medicine and Pain

Background : Total knee joint replacements (TKJR) are one of the most common orthopaedic surgeries performed for patients with severe osteoarthritis. They are associated with moderate to severe postoperative pain which may contribute to increased length of stay and poor functional outcomes. The 2017 Northern Anaesthetic Department perioperative management pathway was reviewed in the context of new recommendations.

Method: A retrospective audit was conducted on all patients over the age of 18 who presented for an elective primary TKJR between 1/2/2023 and 30/7/2023. Deidentified patient data including comorbidities, preoperative pain scores and medications, intraoperative anaesthetic technique and post-operative analgesia, pain and functional status was collected and analysed.

Results: A total of 54 patients were included in this analysis. Anaesthetic techniques varied with the most common being neuraxial anaesthesia and sedation and neuraxial, sedation and adductor canal block (ACB). All patients received local infiltration analgesia. Dexamethasone and parecoxib administration were not universal. Postoperatively 94.4% of patients had regular paracetamol charted, 59.3% had regular time limited non-steroid anti-inflammatory drugs (NSAIDs) charted, 77.8% of patients had patient-controlled analgesia (PCA) with the remaining 22.2% given oral opioids only. 16.7% of patients had intra-articular catheters. The average oral morphine equivalent daily dosing (OMEDD) was 105.2mg. Patients who received neuraxial techniques were more likely to report lower pain scores at rest. However, these patients had a higher proportion completing only bed or chair-based exercises. There were no significant differences in length of admission across groups.

Conclusion: This audit highlighted the wide variability in anaesthetic technique. Based on international recommendations for anaesthetic management, the rates of neuraxial and regional based techniques and administration of steroids and anti-inflammatory medications intraoperatively are areas for improvement. Due to heterogeneity of date and limited sample size there was no clear trend to one anaesthetic technique or analgesic modality being superior.

#47

Laparoscopic common bile duct exploration for the next generation: A rationale for junior surgeons to operate.

Authors:

Yuchen Luo[1,2], Renata Pajtak[1], Mani Suleiman[1,3,4], Siobhan McKay[1,2], David Bird[1], Russell Hodgson[1,2]

[1]Northern Health, Epping, Victoria, Australia,
[2]Department of Surgery, University of Melbourne, Epping, VIC, Australia,
[3]Research Development and Governance Unit, Northern Health, Victoria, Australia,
[4]Research and Industry Engagement, Latrobe University, Victoria, Australia

NH Division & Department:

Division of Surgery, Department of Surgery

Backgrounds: Laparoscopic common bile duct exploration (LCBDE) offers a single-stage alternative to ERCP. However, concerns remain regarding the experience required to perform such procedure safely and effectively. This study aims to address the feasibility of involving junior surgeons in this procedure.

Methods: All adult patients that underwent LCBDE in Northern Health, Australia, from the 1st of January 2008 to 1st of January 2023 were retrospectively audited. Data including patient demographics, pre-operative, operative and post-operative details were collected.

Results: A total of 962 patients were identified over the 15-year period. Success rate based on operative report was 84.4%, and 6-month post-discharge common bile duct retained stones occurred in 3.6% of all cases. Junior surgeons (pre- and post-fellowship trainees) as independent primary operators demonstrated comparably high success rate (87.3%), short overall operative time (150.0 minutes, $p<0.001$) and low bile leak rate (0.5%, $p=0.29$). On multivariate analysis, junior surgeons as either independent or partial primary operators (Odds Ratio 1.8, 95% CI, 1.1 – 2.9, $p=0.02$) were statistically correlated to a successful outcome without 6-month stone recurrence and not requiring perioperative ERCPs.

Conclusion: Junior surgeons should be actively encouraged to participate and undertake primary operator roles, as the clinical outcomes demonstrate safety and efficacy. As junior surgeons progressively develop competency, LCBDE has the potential to become a mainstream treatment option in appropriately selected patient cohorts, offering value to patients and ensuring the confident transfer of skills to younger surgeons.

49

Early drain colour change for detection of Clinically Relevant Postoperative Pancreatic Fistula (CR-POPF)

Authors:

Yuchen Luo[1,2], Jurstine Daruwalla[1], Mani Suleiman[1], Russell Hodgson[1,2], Nezor Houli[1,4], Tuck Leong Yong[1]

[1]Northern Health, Melbourne, Victoria, Australia,
[2]Department of Surgery, University of Melbourne, Epping, Melbourne, Victoria, Australia,
[3]Melbourne School of Population and Global Health, University of Melbourne, Carlton, Melbourne, Victoria, Australia
[4]Department of Surgery, Western Health, Footscray, Melbourne, Victoria, Australia

NH Division & Department:

Division of Surgery, Department of Surgery

Backgrounds: Clinically relevant postoperative pancreatic fistula (CR-POPF) is the most significant complication of pancreatic resection. It is a challenging complication to manage and has potential to lead to mortality. This study aims to investigate the value of using drain fluid colour as an early indicator of CR-POPF.

Method: All adult patients who underwent pancreatic resection at Northern Health, from 1 January 2010 to 31 December 2022 were retrospectively audited. Patient demographics, preoperative, operative and postoperative data were collected.

Results: A total of 169 patients were identified over the 13-year period. Soft pancreatic texture (Odds ratio 4.8, 1.9 – 12.1, p<0.001) and pancreatic ductal diameter less than 3 mm (OR 2.3, 1.04 – 5.1, p=0.04) were identified as risk factors. Abnormal drain colour (i.e. dark red, brown or port wine) in the first 5 days following surgery was successful in predicting CR-POPF with a sensitivity of 72.5% and specificity of 86.8%, and an odds ratio of 11.7 (4.7 – 29.2, p <0.001) on multivariate analysis.

Conclusions: Abnormal drain fluid colour offers clinical value for early detection of CR-POPF. Early detection may allow earlier management or prevention of secondary complications.

#50

Care delivery to culturally and linguistically diverse patients within a Barrett's oesophagus surveillance program

Authors:

Yuchen Luo[1,2], Sandeep Tamang[1], Robert Jordan Roscioli[1], Joshua Butt[3], Russell Hodgson[1,2]

[1]Division of Surgery, Department of Surgery, Northern Health, Epping, Melbourne, Victoria, Australia
[2]Department of Surgery, University of Melbourne, Epping, Melbourne, Victoria, Australia
[3]Department of Gastroenterology, Northern Health, Epping, Melbourne, Victoria, Australia

NH Division & Department:

Division of Surgery, Department of Surgery

Background: Barrett's oesophagus (BE) surveillance is established to detect early changes and prevent its transition into oesophageal adenocarcinoma, yet disparities in care exist for culturally and linguistically diverse (CALD) populations. This study aims to examine BE surveillance adherence of the CALD patients.

Method: All patients underwent BE surveillance in Northern Health, Australia, between the 1st January 2010 and the 31st December 2019 were retrospectively audited, allowing for inclusion of follow-up data and avoiding confounding factors disrupting outpatient service arising from the COVID-19 pandemic from 2020. Endoscopic biopsy was audited using the Seattle protocol, and follow-up endoscopy and its timing were studied using the national guidelines defined by the Cancer Council Australia.

Results: A total of 376 patients and 791 endoscopic procedures were identified during the 10-year study period. There was no statistically significant difference in cohort's country of birth, first language or use of interpreter services in endoscopic follow-up versus non-follow-up groups. Among the 791 procedures, approximately 38.1% were adherent to the Seattle protocol for biopsy. It was observed that patients born overseas (65.8% vs 58.5%, p = 0.064), using English as a second language (80.6% vs 60.1%, p = 0.001) and requiring interpreter services (81.2% vs 60.2%, p = 0.001) shared underlying characteristics with endoscopic procedures that did not adhere to the Seattle protocol for biopsy.

Conclusion: Despite comparably successful BE surveillance endoscopic follow-up rates, CALD may negatively impact the quality of such surveillance program in adherence to the Seattle protocol for biopsy.

#51

Junior Doctors' Experiences on Surgical Cover Shifts – A Qualitative Interview Study

Authors:

Yuchen Luo[1,3], Duy Dinh[1], Sandeep Tamang[1], Rebecca Jessup[2], Russell Hodgson[1, 3]

[1]Division of Surgery, Northern Health, Epping
[2]Victorian Centre for Virtual Health Research, Northern Health, Epping
[3]Department of Surgery, University of Melbourne, Epping

NH Division & Department:

Division of Surgery, Department of Surgery

Background: Junior Doctors (JDs) provide after-hours surgical care to patients when the home team doctors are not rostered and are crucial for the timely, efficient and safe care provided to patients. This study aims to explore the experiences of JDs and to understand the positive and negative factors that contribute to their professional satisfaction and training progression during surgical cover rotations.

Methods: A prospective qualitative study using interviews was conducted at Northern Health. Data followed a descriptive qualitative approach based on naturalistic enquiry, with transcripts being analysed separately by two researchers using an inductive thematic analysis technique with no pre-formulated codes or theories.

Results: Twelve JDs of postgraduate year four or below who had completed at least four weeks of surgical cover rotation were interviewed. Eight themes were identified from the analysis, with multiple challenges (range 6-12) identified in each theme. Four themes had identifiable benefits (range 0-3). The main challenges were the lack of proper orientation, communication, handover, supervision and support with no learning opportunities or professional development and limited job satisfaction.

Conclusions: There were significant challenges identified with lack of supervision, unsociable working hours and limited learning opportunities. Providing better support for junior staff and facilitating their career progression may create a better environment for junior doctors in surgical cover rotations, and improved patient care and outcomes.

#53

Perioperative Outcomes in Smokers Undergoing Major Surgery: A Retrospective Audit at Northern Health

Authors:

Vince Chen[1,2], Amanda Baric[1,2], Andrew Jamie Mackay[1]

[1]Northern Health, Melbourne, Victoria, Australia, [2]University of Melbourne, Melbourne, Australia

NH Division & Department:

Division of Surgery, Department of Anaesthesia and Perioperative Medicine, Northern Health

Background: Although smoking rates have declined in Australia, a significant proportion of patients continue to smoke at the time of surgery. While existing literature has shown that smoking is associated with worse surgical outcomes, there is limited data from tertiary hospitals in Australia. Understanding the relationship between smoking status and postoperative outcomes is essential for optimising preoperative management. Therefore, this study aimed to determine the prevalence of smoking among patients undergoing major elective surgery and evaluate the association between smoking status and postoperative outcomes at Northern Health.

Methods: This retrospective observational cohort study included patients who underwent major elective general, orthopaedic, thoracic, and vascular surgeries at Northern Health between July 2021 and June 2022. Patients were categorised as current smokers, ex-smokers, and non-smokers. Primary outcomes included postoperative respiratory, cardiac, wound, and other hospital-acquired complications. Secondary outcomes included unplanned return to theatre, length of hospital stay, 30-day hospital readmission, and 30-day mortality. Logistic regression analyses were adjusted for age, body mass index, American Society of Anaesthesiologists status, and chronic obstructive pulmonary disease.

Results: A total of 574 patients were included in this study, comprising 19.3% current smokers, 29.6% ex-smokers, and 50.5% non-smokers. Ex-smokers had the highest rate of postoperative complications, though this was not significantly higher than current smokers. Adjusted analyses demonstrated that current smokers trended towards higher rates of postoperative respiratory complications compared with non-smokers (odds ratio 2.53, 95% confidence interval 0.84–7.55, p = 0.09). No significant differences in cardiac, wound, or other hospital-acquired complications were observed.

Conclusion: Smoking prevalence remains high among surgical patients at our institution, well exceeding the Australian national average of 10.1%. This study did not demonstrate strong associations between smoking and postoperative complications, but observed trends highlight the need for further investigation into the effects of perioperative smoking.

#54

Patient experiences and outcomes from a novel multidisciplinary pre-operative shared decision making clinic

Authors:

Yiying (Sally) Tsang [1], Kate Hurley [1], Sean Hui [1], Sarah Jones [1], Andrea Ditoro [1] Daire MacCormack [1], Jamie MacKay [1].

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department

Division of Surgery, Department of Anaesthesia and Perioperative Medicine

Background: The Northern Health Complex Decision Making (CDM) clinic, is a multidisciplinary preoperative clinic established in January 2023 to support complex, frail or comorbid patients in making informed surgical using the principles of Shared Decision Making (SDM). Staffed by an anaesthestist, geriatrician and an intensivist, the CDM clinic offers a collaborative model where patients are jointly assessed by multiple specialists.

This study evaluated the first year of CDM clinic and aims to examine the patient characteristics, postoperative outcomes and quality of SDM.

Methods: Patients attending the CDM clinic in 2023 were followed up by telephone interview. Data on patient demographics, pre-operative status and postoperative outcomes was collected from medical records, and the quality of SDM obtained using survey tools CollaboRATE-5 and the Decisional Regret Scale.

Results: 71 patients were reviewed with median age of 78, 86% classified as American Society of Anesthesiologists (ASA) Physical Status Classification score 3 or 4 and 69% with Clinical Frailty Scale ≥ 4. After review 65% chose to proceed with surgery while 35% declined.

At 14 months follow up, 41 (58%) patients had undergone surgery. Of these 46% required ICU admission (median stay 1 day) and the median hospital stay was 4 days.

Patients spent a median of 25.5 days alive and out of hospital within 30 days post-surgery. 17 patients (24%) had died by follow up including 7 who had surgery.

Telephone interviews with 23 patients (32%) showing high quality SDM (median CollaboRATE 5 score: 12) and low decisional regret (median DRS score: 6.5) with similar results across surgical and non-surgical groups.

Conclusion: The CDM clinic successfully facilitated high-quality SDM for a cohort of frail and comorbid patients. A proportion (35%) elected not to proceed with surgery reflecting the clinic's role in guiding informed, values-based decisions. Among those who underwent surgery, postoperative outcomes were generally favourable.

#55

Pre-operative Diagnosis of Idiopathic Myointimal Hyperplasia of Mesenteric Veins via TAMIS Biopsy

Authors:

Tien Yew Chern[1], Saiumaeswar Yogakanthi[2], William Chiang[3], Mustafa Mohamedrashed[2], Sophie Hale[3], Basil D'Souza[1,5], Neil Strugnell[1,5], Mayur Garg[2,4]

[1]Colorectal Surgery, Northern Health, Epping, Victoria, Australia
[2]Department of Gastroenterology, Northern Health, Epping, Victoria, Australia
[3]Anatomical Pathology, Northern Health, Epping, Victoria, Australia
[4]Department of Medicine, University of Melbourne, Victoria, Australia
[5]Department of Surgery, University of Melbourne, Victoria, Australia

NH Division & Department:

Division of Surgery, Department of Colorectal Surgery

Background: Idiopathic myointimal hyperplasia of the mesenteric veins (IMHMV) is a rare vascular cause of colitis characterized by myointimal proliferation. Diagnosis is challenging and typically made post resection as clinical, endoscopic and mucosal biopsy findings are non-specific and histopathological demonstration of myointimal hyperplasia of the mesenteric veins is required for diagnosis. We aimed to demonstrate a novel approach to diagnosis using transanal minimally invasive surgery (TAMIS) to obtain a full-thickness rectal biopsy for pre-operative diagnosis.

Method: A 65-year-old man presented with progressive left-sided colitis unresponsive to medical therapy. Conventional mucosal biopsies were non-diagnostic. A TAMIS full-thickness biopsy of the rectum was performed and histopathological analysis was performed.

Results: Histopathology revealed myointimal hyperplasia in the submucosal veins of the TAMIS biopsy confirming IMHMV. Elective curative resection of all bowel affected by the disease consisted of a laparoscopic anterior resection, left hemicolectomy and Deloyers procedure for reconstruction, allowing a tension-free colorectal anastomosis. The patient had good post-operative recovery with no evidence of disease recurrence.

Conclusion: This is the first reported case of IMHMV diagnosed pre-operatively and the first case diagnosed via TAMIS full-thickness biopsy. Early definitive diagnosis enabled elective curative surgery with functional reconstruction, avoiding the need for emergency surgery or permanent stoma. TAMIS may be a valuable diagnostic tool in suspected IMHMV.

#56

Comparing Neuraxial Opioid Techniques for Caesarean Section Analgesia: A Northern Health Study

Authors

Wil Lehmann[2], Amanda Baric[1,2] and Moira Rush[1]

[1]Department of Anaesthesia, Perioperative Medicine and Pain, Northern Health, Melbourne, Victoria Australia
[2]The University of Melbourne. Melbourne, Victoria, Australia

Background: Optimising analgesia after lower uterine segment caesarean section (LUSCS) is essential for maternal recovery and function. In line with evidence-based guidelines, Northern Health introduced epidural morphine in September 2022. This retrospective, single-site audit evaluates the analgesic efficacy and side effect profiles of intrathecal morphine (ITM), epidural morphine (EDM) and epidural fentanyl (EDF) alone in neuraxial anaesthesia for LUSCS.

Method: Data was collected from 480 patients from June to December 2022 undergoing a LUSCS at The Northern Hospital. Postoperative outcomes over 24-hours included resting pain scores, time to first rescue opioid dose, oral morphine equivalent dose (OMED), administration of medications for pruritus, nausea, vomiting, constipation, and respiratory depression. Route and type of neuraxial analgesia were stratified into three groups comprising of intrathecal morphine (ITM, n=328), epidural fentanyl with a 2 mg bolus of morphine (EDM, n=53), and epidural fentanyl alone (EDF, n=63). Non-parametric data was summarised using medians and interquartile ranges for graphical representation in GraphPad Prism (v10.4.2). Statistical significance for non-parametric comparisons was determined by the Kruskal-Wallis H-test and further analysis was followed by ad hoc pairwise Mann-Whitney U test.

Results: Pain scores were lowest in the EDM (median 0.31, n=53) and ITM (0.36, n=328) groups, while EDF showed significantly higher values (0.88, n=63, $p<0.01$). The EDF group required greater opioid doses postoperatively (median 55 mg versus intrathecal/epidural morphine 15 mg, $p<0.01$). ITM provided superior pain control, showing longer duration until the first opioid request (median 21.5-hours) compared to EDM (8-hours, p=<0.01) and EDF (5-hours, p=<0.01). Side effects were more frequent in the EDM and ITM groups, with EDM patients requiring significantly more anti-emetics ($p<0.01$). Constipation and pruritus followed similar trends. No cases of respiratory depression were reported.

Conclusion: ITM was the most effective analgesic. EDM remained a viable alternative despite increased side effects. EDF alone demonstrated inferior efficacy.

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Impact of multimodal analgesia on hospital length of stay, opiate consumption and discharge destination of hip and knee arthroplasty patients

Authors:

Louay Baroun-Agob[1], Vassili Mark Papageorge[1], Kevin Mao[2], Sitong Chelsea Chen[1,2], Sianne Toemoe[1], Sam Bewsher[1]

[1]Northern Health, Melbourne, Victoria, Australia,
[2]Department of Surgery, Northern Clinical School, The University of Melbourne, Melbourne, Australia

NH Division & Department:

Division of Surgery, Department of Orthopaedic Surgery

Background: Primary knee and hip arthroplasty procedures are a common orthopaedic operation accounting for ~30% of all elective orthopaedic procedures at Northern Health (NH). Despite the prevalence of arthroplasty, the optimal post-operative pain management plan remains elusive. Analgesia is a requirement during the perioperative period of arthroplasty patients, in order to achieve the patient's desired level of function. Enhanced recovery after surgery (ERAS) pathways have been described to reduce patient length of stay (LOS), saving inpatient bed days1. The objective of this study was to conduct an audit of arthroplasty (hip and knee) patients at NH to determine if multimodal analgesia is associated with a decreased LOS and a reduction in opioid consumption in the community.

Method: A retrospective audit was conducted in which patient medical records were reviewed for all elective patients who had undergone Total Hip or Knee Arthroplasty at NH between Jan2021-Jun2023 (Excluded: Revisions, Neck-of-femur fractures, those with complications or requiring additional procedures). Baseline demographic information and surgery-specific information (surgeon, approach, implant details, type of anaesthetic) were captured on a customised REDCap database. ERAS cohort consisted of: intra-articular local anaesthetic pump (LA-Pump)2, non-steroidal anti-inflammatory drugs (NSAIDs) and intra/post operative steroids. Descriptive statistics were used to report outcome measures.

Results: In our cohort of 313 knee and hip arthroplasty patients, we found that in the ERAS group: there were significantly lower rehabilitation admissions ($p=0.02$), Visual Analogue Scale (VAS) pain scores ($p<0.01$) and less repeat opiate scripts being filled in the community. Mean LOS in the ERAS cohort was 3.90 days compared to 4.75 ($p=0.03$) in the control.

Conclusion: Our audit confirmed that using multimodal analgesia perioperatively, can result in earlier discharge home, less opiate usage and fewer rehabilitation admissions.

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SPECTRAL (Spectral Profiles of Joint Effusions with Confirmed Test Results and Arthropathy Library): an update

Authors:

Vassili Mark Papageorge[1], Saeed Asadollahi[1], Sanjana Prasad[1,2], Sukhneet Sher Gill[2], Aziz Rawal[1], Thomas McIntire[1], Sam Bewsher[1], Shekhar Kumta[1,2,3]

[1]Northern Health, Melbourne, Victoria, Australia,
[2]Department of Surgery, Northern Clinical School, The University of Melbourne, Melbourne, Australia,
[3]Department of Clinical and Translational Research, RMIT University, Melbourne, Australia

NH Division & Department:

Division of Surgery, Department of Orthopaedic Surgery

Background: Patients suffering from joint conditions [Septic Arthritis (SA), Gout or Pseudogout] often have complex clinical presentations, and are subjected to numerous tests/procedures to achieve an accurate diagnosis. This poses a significant problem for patients, clinicians, and from a health economic perspective due to suboptimal/delayed management of these conditions. At Northern Health (NH) we set out to establish a biobank of joint fluid aspirates (JFAs) from patients and incorporate the use of Spectroscopy to generate unique 'spectral signatures' for individual patient conditions that could possibly distinguish SA from other confounding arthropathies. Clinical Spectroscopy is a non-destructive, chemically label-free, reproducible, and repeatable chemical analysis technology.

Method: 1-2mL of JFAs were collected following microbiological assessment (NH Microbiology Laboratory). Samples were stored and analysed at the NCHER laboratory. Patient demographic/clinical data, including clinical/microbiological diagnosis for each sample were recorded for comparative analysis. JFAs were analysed utilising Fourier Transform Infrared and Raman Spectroscopy whereby each sample generated a unique spectral signature (~60 seconds). Machine Learning Models were established using Spectral Signatures incorporating a) Unsupervised Cluster Analysis (CA), b) Principal Component Analysis (PCA), and c) Partial Least Squares Discriminant Analysis (PLS-DA).

Results: 295 JFAs were collected from 248 patients and used to train a computational model to differentiate between SA, Pseudogout, and Gout confidently. Of particular focus are: 22 Pseudogout, 28 Gout, and 7 native joint SA samples. Machine Learning Models (CA, PCA and PLSDA) showed distinct grouping and clear delineation of Gout, Pseudogout, and Infection compared to one another, and to other diagnoses. Using these models, Spectra obtained from JFAs may be used for diagnostic classification with a confidence level of 95% within a short period of time.

Conclusion: Spectroscopy shows great promise as a diagnostic tool, providing rapid and reliable differentiation of joint arthropathies, possibly at point of care in the near future.

#91

Swabs to Withhold Irrigation and Promote Surgical Efficiency: A prospective pilot study protocol

Authors:

Eamonn Grennan[1], Ranesh Palan[1], Russell Hodgson[1]

[1]Northern Health, Melbourne, Victoria, Australia.

NH Division & Department:

Division of Surgical Services; Department of General Surgery

Background: In elective laparoscopic cholecystectomy (LC) for biliary colic, the routine usage of disposable suction/irrigation devices (SIDs) potentially generates unnecessary environmental and economic costs. Alternatives, such as fabric swabs, could present a suitable intraoperative replacement, without affecting surgical outcomes. The primary objective of this pilot study is assessing feasibility of SID omission in elective LC via substitution with a single swab within Morrison's pouch, and secondary objectives include cataloguing instruments used per procedure to identify the opened instruments unused, with the aims to minimize sterilisation and wastage.

Method: Twenty (20) consecutive adult patients undergoing elective LC for biliary colic at Broadmeadows Hospital (BHS) within Northern Health will be recruited. Once routine laparoscopic ports are placed, one fabric swab will be placed within Morrisons pouch, and for the duration of operating time, the surgeon may open a SID if clinically indicated. The primary outcome is the proportion of surgical cases completed without SID usage. Secondary data will include demographics, intraoperative duration, intraoperative instruments used, post operative complications and qualitative assessment of surgeon satisfaction with swab usage.

Results: Data collection is in progress. Results will quantify the rate of SID-free procedures, identify patterns in instrument usage and subjective measurement of surgeon satisfaction with SID versus swab usage.

Conclusion: This study aims to implement a simple, potentially impactful intervention aimed to reduce surgical waste and economic costs. The findings will inform future sustainability-focused protocols within general surgery.

NURSING

#77

Barriers and enablers to evidence-based care for laparotomy wounds: A scoping review

Authors:

Sarah Montalto[1], Auxillia Madhuvu[2], Victoria Team[3]

[1]Northern Health, Melbourne, Victoria Australia,
[2,3] Monash University, Melbourne, Victoria, Australia

NH Division & Department:

Division of Nursing and Midwifery Education Unit

Background: Laparotomy procedures carry a high risk of postoperative complications, elevated mortality rates, and unpredictable recovery trajectories. Previous research into acute care nurses' experiences with surgical wound care reveals inconsistencies and gaps in evidence-based practice. There is a critical need to strengthen the evidence base for the prevention and management of surgical site infections (SSIs) in laparotomy wounds to support consistent care in acute settings.

Method: This scoping review systematically synthesised existing evidence on the barriers and enablers to evidence-based care for laparotomy wounds. The review focused on wound assessment, holistic care, wound dressing selection, infection prevention and control, escalation, dressing application and documentation.

This scoping review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist. The review was structured using the methodological framework developed by Arksey and O'Malley, further refined by Levac et al., and informed by the Joanna Briggs Institute (JBI). Data synthesis was guided by the Theoretical Domains Framework (TDF), which was used to identify and describe the barriers and enablers to the evidence-based laparotomy wound management.

Results: Six articles met the inclusion criteria, identifying barriers and enablers across five TDF domains. Barriers included limited use of assessment tools and guidelines, suboptimal time management, and inconsistent practices linked to ward culture and inadequate knowledge of aseptic technique and wound assessment. Enablers included awareness of multifactorial risks to wound healing, appreciation for education and reflection, and recognition of nutrition and mobility as essential to holistic care.

Conclusion: Acute care nurses demonstrate inconsistent adherence to evidence-based clinical practice guidelines in the management of laparotomy wounds. Despite the critical role of evidence-based practice in ensuring safe and effective wound care, this review reveals a notable lack of standardised and readily accessible nursing recommendations. Strengthening the evidence base is essential to support consistent, high-quality care in acute surgical settings.

WOMEN'S AND CHILDREN'S

#11

Historical analysis of initial post-caesarean analgesia: Intravenous vs per rectal

Authors:

Darren John Lowen[1], Mani Suleiman[1], Russell Hodgson[1]

[1]Northern Health, Melbourne, Victoria Australia

NH Division & Department:

NH Division of Surgery, Department of Anaesthesia, Perioperative Medicine & Pain

Background: The optimal route for initial analgesia following caesarean section—intravenous (IV) versus per rectal (PR)—remains debated. A prior audit indicated reduced opioid use with IV administration, though unidimensional pain scores showed no significant

difference. We conducted a non-blinded randomised controlled trial to determine whether one route offered superior pain control, hypothesising a 20% reduction in total pain score using the Short-Form McGill Pain Questionnaire (SF-MPQ) if a true difference existed.

Method: Based on prior audit data, we calculated a sample size of 200 to detect a 20% difference in SF-MPQ scores. This single-centre, non-blinded RCT recruited women undergoing elective caesarean section, randomising them to receive initial post-operative analgesia via either IV or PR route. Outcomes included opioid requirements, pain scores, quality of recovery (QoR-15), and cost of analgesia. Data were compared using medians.

Results: From September 2015 to May 2018, 199 women were recruited; one was excluded due to conversion to general anaesthesia. There were no significant differences in parity (p=0.52) or age (p=0.19). The IV group required significantly less opioid (p=0.005), but incurred higher cost (p<0.001). No significant differences were observed in unidimensional pain scores (p=0.92, 0.43, and 0.83) or in SF-MPQ multidimensional scores (p=0.76). QoR-15 scores also showed no significant difference (p=0.83).

Conclusion: While IV analgesia reduced opioid use post-caesarean, this did not translate to lower pain scores or improved recovery. Given the lack of benefit in pain or quality of recovery and a higher average cost of $15 per patient, PR analgesia may be more cost-effective. Switching to PR analgesia could yield an estimated annual saving of $20,000 without compromising patient outcomes.

#15

Large Bore Mechanical Thrombectomy for Intermediate-High Risk Pulmonary Embolism: Northern Health Experience

Authors:

Roy Kingsley Wong[1], Hui Yin Lim[2,3,4,5,6], Goran Mitreski[1,2,5], David Crosbie[7], Rohit Paliwal[7], Prahlad Ho[2,3,4,5,6], Hong Kuan Kok[1,2,5,6]

[1]Interventional Radiology Service, Northern Imaging Victoria, Northern Health, Melbourne, Australia.
[2]Northern Clinical Diagnostics and Thrombovascular Research (NECTAR) Centre, Northern Health, Melbourne, Australia.
[3]Department of Diagnostic Haematology, Northern Pathology Victoria, Northern Health, Melbourne, Australia
[4]Department of Clinical Haematology, Northern Health, Melbourne, Australia.
[5]Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Australia.
[6]School of Health and Biomedical Sciences, RMIT University, Melbourne, Australia.
[7]Intensive Care Unit, Northern Health, Melbourne, Australia.

NH Division & Department:

Interventional Radiology Service, Northern Imaging Victoria

Background: Recent findings from the PEERLESS RCT and FLASH registry support large bore mechanical thrombectomy (LBMT) over catheter-directed thrombolysis (CDT) in managing intermediate-high risk pulmonary embolism (PE). This study evaluates LBMT's impact on early clinical outcomes and ICU utilisation, providing insights into its role in optimising patient outcomes and critical care resource utilisation.

Method: A retrospective comparative analysis of intermediate-high risk PE patients presenting prior to the availability of LBMT (May 2023-May 2024) and following introduction of a PE response team (PERT) and LBMT management (May 2024–June 2025) at Northern Health was performed. The PERT comprises of Haematology, Intensive Care and Interventional Radiology specialties with access to LBMT for clinically appropriate patients.

Results: Seventeen patients were treated with LBMT (mean age 59±18.9 years; 47.1% male) compared to 43 patients treated with anticoagulation (AC) and/or thrombolysis (mean age was 73.9±12.2 years; 34.9% male) for intermediate-high risk PE. LBMT significantly reduced mean pulmonary arterial pressure (mPAP) from 27.6±9.2 to 20.9±5.7mmHg (p=0.017). Within 24 hours post-LBMT, significant reductions in the respiratory rate (from 23.6±5.6 to 18.9±2.5 breaths/min;20% relative reduction, p=0.005) and heart rate (104.6±19.3 to 88.3±14.9;16% relative reduction, p=0.009) were observed. The LBMT cohort required shorter ICU admission (20.2±7.4 vs 32.2±17.3 hours, 37% relative reduction, p=0.004). Follow-up CT imaging at 3 months in the LBMT cohort demonstrated improvement in RV/LV Ratios (from 1.8±0.6 to 0.9±0.1, 50% relative reduction, p<0.001). All LBMT patients had no major complications or 30-day all-cause mortality. In contrast, the non-LBMT group experienced two major bleeding complications following anticoagulation and/or thrombolysis with a 7% (n=3) 30-day all-cause mortality.

Conclusion: LBMT within a multidisciplinary PERT context is a safe and effective treatment for intermediate-high risk PE leading to rapid improvement in physiological parameters, shorter ICU admission and reduced all-cause mortality at 30-days.

#27

Neurodevelopmental Outcomes and Associated Risk Factors in Moderate to Late Preterm Infants: A Retrospective Study

Authors:

Yousif Khawajeh[1], Wei Ling Lean[1,2] & Wei Qi Fan[1,2]

[1]University of Melbourne, Melbourne, Australia
[2]Department of Paediatrics/Neonatology, Northern Health

Background: Moderate to late preterm (MLPT) infants account for the majority of preterm births. However, they remain underrepresented in developmental outcome research. Although historically considered low-risk, emerging evidence indicates they may experience adverse neurodevelopmental outcomes. This study aimed to evaluate the developmental outcomes of MLPT infants and identify risk factors associated with neurodevelopment impairment (NDI).

Methods: A retrospective cohort study was conducted at a level five neonatal unit in Victoria, Australia. Infants born between 1 January 2018 and 31 December 2020 were included if they had at least one outpatient

appointment at 12 months of age or older. Patient data were extracted from electronic medical records, and NDI was defined based on documented diagnoses. Statistical analyses included univariate analysis and multivariate logistic regression. Firth's penalised regression was also performed as a sensitivity analysis.

Results: Among the 264 eligible infants, 22.3% were diagnosed with NDI. An Apgar score of < 7 at five minutes and male sex were significantly associated with NDI. Maternal diabetes showed a trend towards association with NDI, but was not statistically significant. No significant differences in NDI rates were observed between moderate and late preterm groups.

Conclusion: Low Apgar scores and maternal diabetes may be helpful in risk stratification for NDI in MLPT infants. These findings support the use of a risk-stratified approach to developmental monitoring and provide insights into the limitations of using gestational age alone to determine follow-up needs.

#33

A Cross Comparison of Jaundice Measurement Techniques in the Neonatal Unit

Authors:

Andrew Xu[1,2], Bincy Francis[1], George Dargaville[1], Amy Surkitt[1], Barbara Rischitell[i1], David Tran[1,2], Rami Subhi[1,2], Kay Weng Choy[1], Wei Qi Fan[1,2]

[1]Northern Health, Melbourne, Victoria Australia, [2]University of Melbourne, Melbourne, Australia

NH Division & Department:

Department of Neonatology

Background: Neonatal jaundice is a common condition that, if left untreated, can lead to severe complications such as bilirubin-induced neurologic dysfunction (BIND) and kernicterus. While serum bilirubin (SBR) remains the gold standard, point-of-care methods such as transcutaneous bilirubinometry (TcB) and blood gas analysers (BGA) offer rapid, less invasive alternatives. However, direct comparisons of their diagnostic accuracy remain limited. This study aims to assess and compare the diagnostic accuracy and clinical utility of TcB and BGA against SBR in screening for neonatal hyperbilirubinemia.

Method: This retrospective study included neonates with concurrent SBR, BGA, and TcB measurements. Agreement was assessed using Passing-Bablok regression, Bland-Altman analysis, and Spearman correlation. Diagnostic performance was evaluated against Bhutani nomogram threshold for phototherapy (≥95th percentile). Subgroup analyses considered phototherapy status, haemoglobin concentration, and Fitzpatrick skin type.

Results: Among 333 measurements from 221 neonates, BGA showered stronger agreement with SBR (R2=0.88) than TcB (R2=0.43). BGA remained accurate regardless of phototherapy or haemoglobin levels. TcB accuracy declined post-phototherapy and showed reduced predictive value in darker-skinned neonates (Fitzpatrick III-VI), with increased false discovery rates. Both methods had low sensitivity (45.8%) but high specificity (>95%) and negative predictive value (~91%). BGA had a higher diagnostic odds ratio (47.5) than TcB (19.3).

Conclusion: BGA is a more reliable alternative to SBR than TcB, particularly in time-critical or resource-limited settings. While TcB remains useful as a non-invasive screening tool, its limited accuracy post-phototherapy and in neonates with darker skin highlight the need for confirmatory SBR testing. These findings support the selective and context-aware use of BGA and TcB in neonatal hyperbilirubinemia management to optimise diagnostic accuracy and reduce unnecessary interventions.

#34

Purinergic Receptor Inhibition Impairs Trophoblast and Trophectoderm Outgrowth During Early Placentation

Authors:

Christine Farah[1,2], Natasha de Alwis[1,2], Rose Freemantle[1,2], Natalie K. Binder[1,2], Sally Beard[1,2], Sunhild Hartmann[3,4,5,6,7,8,9], Stefan Botha[3,4,5,6,7,8,9], Olivia Nonn[4,5,6,8] Tu'uhevaha J. Kaitu'u-Lino[3], Lisa Hui[2] and Natalie J. Hannan[1,2]

[1]Therapeutic Discovery & Vascular Function in Pregnancy Group, Department of Obstetrics, Gynecology and Newborn Health, University of Melbourne, Heidelberg, Australia
[2]Northen Health, Melbourne, Victoria, Australia
[3]Translational Obstetrics Group, Department of Obstetrics & Gynaecology, University of Melbourne, Heidelberg, Australia
[4]Charité - Universitätsmedizin, a cooperation between the Max-Delbrück-Center for Molecular Medicine in the Helmholtz Association and the Charité - Universitätsmedizin Berlin, Berlin, Germany
[5]Max-Delbrück-Center for Molecular Medicine in the Helmholtz Association (MDC), Berlin, Germany
[6]DZHK (German Center for Cardiovascular Research), partner site Berlin, Germany
[7]HELIOS Clinic, Department of Cardiology and Nephrology, Berlin, Germany
[8]Division of Cell Biology, Histology and Embryology, Gottfried Schatz Research Center, Medical University of Graz, Graz, Austria
[9]Freie Universität Berlin, Institute for Chemistry and Biochemistry, 14195, Berlin, Germany

Background: Early placentation relies on tightly coordinated trophoblast differentiation, adhesion, migration and invasion. Purinergic signalling is an understudied but exciting area due to the ability of extracellular nucleotides, including ATP (adenosine triphosphate) and UTP (uridine triphosphate) to act as rapid messengers, enabling swift cellular responses to environmental cues via surface purinergic receptors. Thus, purinergic signalling offers a novel avenue to explore mechanisms driving early placentation. However, specific purinergic signalling function during early placentation remain unclear. This study aimed to determine functional actions of purinergic receptors P1A1 and P2Y6 on trophectoderm and trophoblast migration, invasion and expansion.

Method: Spatial transcriptomics on human placentas (n=13; 5–13 and ≥38 weeks) was undertaken to assess the purinome across gestation. First trimester placental

tissue (7–12 weeks) was cultured on collagen and treated with antagonists to P1A1 (DPCPX) or P2Y6 (MRS2578) for 48 hours. Outgrowth area was measured to assess trophoblast migration and expansion. Mouse blastocysts were also cultured on fibronectin with the same antagonists for 96 hours to evaluate trophectoderm/trophoblast outgrowth.

Results: Spatial transcriptomic analysis revealed low expression of P1A1 across samples assessed. P2YR6 expression was abundantly detected in cytotrophoblasts and syncytiotrophoblasts, suggesting a trophoblast specific function. Inhibiting both receptors significantly reduced first trimester placental outgrowth, suggesting their effects in early trophoblast expansion. P2Y6 inhibition also caused altered differentiation and increased cell death in placental explants, indicating a potential disruption in trophoblast function. Preliminary findings suggest that mouse blastocysts treated with both P1A1 and P2Y6 antagonists showed reduced trophectoderm outgrowth compared to control, suggesting these receptors may play a critical role in early trophoblast function.

Conclusion: Collectively, these findings suggest that dysregulation of P1A1 and P2Y6 in early trophectoderm and trophoblast may disrupt placental development. Therefore this may contribute to placental dysfunction in major pregnancy complications, including preeclampsia and fetal growth restriction.

#45

A Retrospective Review of Neonatal Bilious Vomiting in a Non-Tertiary Neonatal Unit

Authors:

Donna Chen[1], Amy Surkitt[1], Andrew Xu[2], Kayla Arcamo[1], Wei Qi Fan[1,2]

[1]Northern Health, Melbourne, Victoria Australia, [2]The University of Melbourne, Melbourne, Victoria Australia

NH Division & Department:

Women's and Children's, Neonatal Unit

Background: Bilious vomiting (BV) in neonates can be a sign of life-threatening surgical pathology such as malrotation with volvulus requiring timely intervention. Consequently, infants with BV are often transferred from our non-tertiary unit to other sites for further investigation and surgical review. However, BV can also be a sign of various non-surgical pathologies. The aim of this review was to identify the range of aetiologies and review diagnostic approaches in order to inform future clinical work-up of infants with BV.

Method: A retrospective analysis of infants admitted to Northern Health (NH) with BV between 2015 and 2024. Data points collected included maternal history, birth history, neonatal comorbidities, onset and assessment of bilious vomiting. Predictors of surgery were assessed using Fisher's exact and Chi-squared test; weekend and after-hours effects were evaluated using the Mann-Whitney U test.

Results: 122 infants satisfied the inclusion criteria. The median gestational age was 38+5 and median birth weight 3080g. Surgical review via transfer was sought for 52% (n=65) with surgery performed on 9% (n=11). Any abnormal imaging ($p<0.001$), including abdominal X-ray ($p=0.02$) or upper GI contrast study ($p<0.001$), was predictive of surgery, though upper GI contrast study is the superior imaging modality (diagnostic odds ratio: abdominal X-ray = 4.94, GI contrast = 59). There was no weekend nor after-hours effect in timing between onset of BV to PIPER transfer nor surgery. The most common diagnosis for BV was presumed early onset sepsis (31%, n=38) and 3% (n=4) had intestinal malrotation.

Conclusion: The rate of surgical pathology amongst infants with BV at NH was much lower than the predicted rate (20-50%) based on similar audits. However, BV frequently results in transfer of infants for further investigation and management. Upper GI contrast study at NH has the potential to reduce unnecessary BV transfer, but further evaluation is needed.

#61

Can Weekly Telephone Support Prolong Breastfeeding Duration in Mothers at Higher Risk of Early Cessation?

Authors:

Jessica Zhang[2], David Tran[1,2], Wei Qi Fan[1,2]

[1]Northern Health, Melbourne, Victoria, Australia, [2]University of Melbourne, Melbourne, Victoria, Australia

NH Division & Department:

Department of Paediatrics & Neonatology

Background: Exclusive breastfeeding (EBF) benefits mother and infant. However, women with select risk factors report shorter feeding durations. A randomised controlled trial at The Northern Hospital (TNH), Melbourne, Australia, found that weekly, proactive postpartum telephone support increased EBF rates up to 6 months. This study evaluates the efficacy of the program for mothers at increased risk of early breastfeeding cessation (IRBFC).

Method: Secondary analysis of 762 English-speaking mothers (Control, n = 378; Intervention, n = 384), who gave birth to infants (>36 weeks) between 2018–2019 at TNH. Infant feeding outcomes, including EBF, were recorded at 1, 3 and 6 months. Feeding outcomes analysed in association with maternal risk factors using bivariate analysis. Odds ratios and 95% confidence intervals were reported.

Results: The intervention significantly increased 6-month EBF rates in these groupings: European [2.03 (1.10–3.75)] $p=0.031$; South Asian [2.48 (1.43–4.32)] $p=0.001$; employed [1.72 (1.16–2.56)] $p=0.009$; unemployed [3.35 (1.87–6.01)] $p<0.001$; married [2.22 (1.55–3.19)] $p<0.001$; without social support [5.20 (1.70–15.92)] $p=0.004$; chronic illness [2.48 (1.50–4.09)] $p<0.001$. Significant increases in EBF rates across the study period occurred for maternal obesity [1.66 (1.17-2.34)] $p=0.003$; mental illness (MI) history [1.51 (1.01-2.25)] $p=0.044$. No effect was observed in East/Southeast Asian, Middle Eastern or unmarried mothers or those

with MI history and concurrent unemployment, chronic illness or obesity–unless social support was present [2.86 (1.67-4.91)] p<0.001.

Conclusion: Early postpartum telephone support significantly improved EBF duration for maternal subgroups at IRBFC. Findings highlighted that MI combined with other risk factors increased vulnerability to early EBF cessation. Larger multicentre trials are required for targeted strategies to supplement this promising modality.

#78

Partnering with the community to co-design abortion care in Melbourne's north

Authors:

Eleanor Johnson[1,2], Kate Chaouki[1], Cathy Vaughan[2], Mridula Shankar[2], Lisa Hui[1,2], Jeanette Henderson[1], Meghan Bohren[2]

[1]Northern Health, Melbourne, Victoria Australia,
[2]University of Melbourne, Melbourne, Victoria Australia

NH Division & Department:

Women's & Children's

Background: Women/gender diverse people of reproductive age based in Melbourne's north may face socioeconomic disadvantage and discrimination which could delay or inhibit abortion access. This study aimed to understand how to optimise abortion care by partnering with consumers, care providers, and community stakeholders to explore consumer experiences of accessing abortion care, insights into barriers to access, and ideas for service improvements.

Method: We conducted two in-person experience-based co-design workshops which brought together consumers (i.e. people who lived in the region and had experience accessing surgical and/or medication abortions in the public and/or private systems), care providers (i.e. Northern Health staff), and community stakeholders (i.e. representatives from local women's and sexual/reproductive health advocacy organisations). The qualitative data were analysed pragmatically.

Results: In total, 18 people participated in the workshops. The majority of the participants were consumers. There was also representation from the midwifery, social work, and medical workforce within the Northern Health abortion service, the Aboriginal Support Unit: Narrun Wilip-giin, and community stakeholders including: 1800 My Options, the Abortion Project, Multicultural Centre for Women's Health, Women's Health in the North, and academic researchers.

Participants highlighted that the process and experience of accessing abortion care can be arduous and that services need to provide a 'trauma-informed process' as well as 'trauma-informed care'. Local service improvement suggestions included: increased service information available online, an online intake assessment and booking option, the option of accessing midwife-led early medical abortion through telehealth, point-of-care ultrasound, and enhanced follow up.

Conclusion: This study is the first to apply co-design methodology to abortion care delivery in the Australian tertiary care setting. The findings offer a revised model of care that is tailored to consumer needs, optimises care, and promotes equitable access. This provides practical insights into what to prioritise implementing locally and is translatable to other similar settings.

#84

Establishing a first-trimester placental infection model of human cytomegalovirus

Authors:

Ishara Atukorala[1,2,3], Jose L. Huaman Torres[1], Natasha de Alwis[2,3,4], Elif Kadife[1,3], Natalie J. Hannan[2,3,4], Lisa Hui[1,2,3,5]

[1]Department of Obstetrics Gynaecology and Newborn Health, Melbourne Medical School, The University of Melbourne, Heidelberg, Victoria, Australia
[2]Northern Health, Melbourne, Victoria, Australia
[3]Mercy Perinatal, Mercy Hospital for Women, Heidelberg, Victoria, Australia
[4]Therapeutics Discovery and Vascular Function in Pregnancy Group, Department of Obstetrics Gynaecology and Newborn Health, Melbourne Medical School, The University of Melbourne, Heidelberg, Victoria, Australia
[5]Reproductive Epidemiology Group, Murdoch Children's Research Institute, Parkville, Victoria, Australia

NH Division & Department:

Northern Centre for Health Education Research

Background: Congenital cytomegalovirus (CMV) is the leading infectious cause of childhood disability worldwide, especially when acquired in the first trimester. Valaciclovir can reduce maternal-fetal transmission but does not treat infection within the fetoplacental unit. More potent antivirals like letermovir and maribavir are not used in pregnancy due to limited safety data. Human placental models provide a high-fidelity system for studying early CMV infection and assessing novel therapeutics in the absence of suitable animal models. We previously demonstrated the safety of these drugs during early placental development. Here, we developed a CMV-infection placental model to test their efficacy in reducing placental infection.

Method: First-trimester placental tissue was obtained following surgical termination for psychosocial indications. Human CMV strain Merlin was propagated in MRC-5 cells, and the viral titre was determined using standard plaque assay. Explants were infected with 2×10^7 PFU/mL. After five days, tissues were fixed, paraffin-embedded, and stained with hematoxylin and eosin. CMV DNA from tissue and culture media was quantified by qPCR targeting CMV genes UL55, UL123-exon 4, and UL83.

Results: CMV-infected tissue demonstrated extensive structural damage, compared to the uninfected tissue. The villous stroma showed edema and necrosis, with pale, acellular areas and prominent vacuolization. Cytomegalic inclusion bodies with hyperchromatic nuclei

– a hallmark of CMV replication - were observed. The trophoblast layer appeared discontinuous, with syncytial knot formation and nuclear clumping, indicating impaired barrier integrity. A decrease in fetal capillary density was observed in the infected tissue, indicating impaired vasculogenesis. qPCR confirmed CMV replication in the tissue with viral DNA increasing by day five post-infection.

Conclusion: We established a reproducible first-trimester human placental model of CMV infection that reflects in utero pathology. Next, we will test new, more effective antiviral therapies to lower viral burden during early pregnancy, using this model.

#95

Patient experiences of Medical Obstetrics at Home care at Northern Health: A qualitative study

Authors:

Chamani Kodikara[1], Eleanor Johnson[1,2], Rebecca Jessup[1,3], Vinita Rane[1], Siaw Wong[1,4]

[1]Northern Health, Melbourne, VIC, Australia
[2]University of Melbourne, Melbourne, VIC, Australia
[3]La Trobe University, Melbourne, VIC, Australia
[4]Mercy Hospital for Women, Melbourne, VIC, Australia

NH Division & Department:

Division of Women's and Children's – Medical Obstetrics

Background: The Medical Obstetrics at Home service (MOAH) at Northern Health in Melbourne, Australia is an innovative care model serviced by Midwives and Obstetric Medicine physicians, providing home visits and telehealth consultations to those with hyperemesis gravidarum and/or hypertensive disorders of pregnancy There is established literature linking positive healthcare experiences with better engagement and health-seeking behaviour, highlighting the importance of evaluating patient experience. However, there are no published studies assessing patient experience of a program like MOAH. This cross-sectional qualitative study aims to understand patient's experience of MOAH.

Method: Ethics approval was granted for this project through the Research Development and Governance Unit at Northern Health. Patients who had been part of MOAH were contacted at random regarding voluntary participation in semi-structured individual interviews. Participants were given the option of telephone or face-to-face interview format, and option of an interpreter. In total 32 patients were contacted; 15 participants consented and completed interviews, 3 declined participation and 14 did not answer the call. All interviews were conducted over telephone, and an interpreter was organised for 1 patient. Transcription was analysed using reflexive thematic analysis.

Results: Participants valued the emotional support and advocacy from the MOAH team, were more comfortable receiving care in the own home, felt care was consistently high quality and easy to access, and believed the program improved their quality of life and supported them to fulfil other personal and professional duties better. All study participants thought this program should be offered more widely.

Conclusion: There was a clear demonstration of acceptance of the program, qualitative analysis highlighting specific strengths in providing emotional support and improving perceived quality of care. These findings, in conjunction with other analyses of health outcomes and economic impact, can inform service optimisation and scalability of the service to other hospitals providing maternity care.

#96

Timely administration of Enoxaparin following caesarean section for VTE prevention: A retrospective audit

Authors:

Maryam Awrooj[1], Darren Lowen[1], Arzoo Khalid[1]

[1]Northern Health, Melbourne, Victoria, Australia

NH Department and Division

Women's and Children's Division, Department of Obstetrics and Gynaecology

Background: Venous thromboembolism (VTE) is a leading cause of maternal morbidity and mortality, particularly following caesarean sections. Enoxaparin, a low molecular weight heparin, is widely used for VTE prophylaxis. Timely administration post-operatively is critical to its effectiveness and safety. This audit evaluates whether the timing of enoxaparin administration after caesarean section aligns with local hospital protocols and international clinical guidelines.

Methods: A retrospective audit was conducted in the obstetrics department of the Northern Hospital over 1month(1November-30November2024). Medical records of115 post-caesarean patients were reviewed. Data collected included time of neuraxial manipulation, type of anaesthesia, timing of first enoxaparin dose, and documentation of VTE risk factors. Compliance was assessed against local thromboprophylaxis protocols (The Northern Hospital and Queensland Pregnancy and Puerperium Guidelines) and international recommendations (New York School of Regional Anaesthesia and Society of Obstetric Medicine of Australia and New Zealand).

Results: Of the 115 patients reviewed, 96 (83.5%) received enoxaparin postoperatively. Only 9 (9.4%) of those received the first dose within the recommended 5–7hour window. One patient (1.0%) received it too early (<4 hours), posing a bleeding risk. Most doses were administered later than recommended: 34 (35.4%) between 7–10hours, 42 (43.8%) between 10–24 hours, and 11 (11.5%) after 24 hours, potentially reducing prophylactic effectiveness. Additionally, 3 patients (2.6%) were given enoxaparin without clinical indication, while 6 (5.2%) did not receive it despite indication.

Conclusions: Over 90% of patients received enoxaparin outside the recommended time, potentially increasing the risk of bleeding or VTE. Contributing factors included limited staff education and a new electronic VTE risk assessment form. Educational initiatives are being implemented, and the electronic tool is being revised to improve clarity, accessibility, and usability. A follow-up audit is planned to evaluate the impact of these interventions on clinical practice and patient safety.

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- ADAM SEMCIW
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- STEPHEN CARNELL

RESEARCH DEVELPMENT AND GOVERNANCE UNIT

- JUSTINE ELLIS
- BRITTANY SZABO
- PREE HOLMAN
- TILINI GUNATILLAKE
- BELINDA DE POI
- HALA MEHDI
- FLONA YOUSIF
- MANI SULEIMAN
- ASSOCIATE PROFESSOR MAYUR GARG

ABSTRACT REVIEWERS:

- RUSSELL HODGSON
- DARREN LOWEN
- VICKY KARTSOGIANNIS
- AMANDA BARIC
- SANJEEVAN MURUGANANDAN
- SHEKHAR KUMTA
- TIM PIANTA
- CRAIG ABOLTINS
- MAYUR GARG
- JUDY SAVIGE
- SING CHEE TAN
- VANESSA LEONARD ROBERTS
- ANGAJ GHOSH
- DAVID CROSBIE
- RACHEL COOKE
- BELINDA LEE
- SANDRA BROWN
- WEI QI FAN
- ELEANOR JOHNSON
- TENGYI CAI
- HUI YIN LIM
- ADAM SEMCIW
- EMILY FARRUGIA
- NIKKI FRESCOS
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