



Government of **Western Australia**
North Metropolitan Health Service
Sir Charles Gairdner Osborne Park Health Care Group



Sir Charles Gairdner Hospital and Osborne Park Health Care Group

Human Research Ethics Committee

Project Summaries for Approved Projects
October to December 2023 Quarter



Project summaries for proposals approved by the SCGOPHCG Human Research Ethics Committee – October to December 2023 quarter.

The material contained in this document is made available to assist researchers, institutions and the general public in searching for projects that have ethics approval from the SCGOPHCG HREC. It contains summaries of projects approved in the October to December 2023 quarter.

Project Title	Open label use of tissue plasminogen activator (tPA) and DNase in the treatment of pleural infection (2)
Coordinating Principal Investigator	Professor Gary Lee
Institution	Sir Charles Gairdner Hospital
Approval Date	05 October 2023
<p>This is a retrospective audit of patients who have already received tPA/DNase therapy for a pleural infection. All the data we will collect will derive solely from existing information documented in the patient's medical records. The particular section of records pertaining to the admission where the patient received tPA/DNase therapy will be reviewed. Most of the patients will be alive but some may be deceased. No direct interaction with the patient will be necessary.</p> <p>This dataset is collected to provide significant and robust safety and efficacy data on this novel treatment and to inform local clinical care to optimise the use of this therapy. We will be collating de-identified data from other sites both within Australia and international sites to boost the dataset size and provide greater numbers for publication until the optimal dosage regimen of tPA/DNase is obtained. These datasets from elsewhere are provided with the ethical approval of the site and data transfer agreements will be carried out.</p>	

Project Title	Towards a patient-centred management framework for allergic reactions to anti-cancer drugs (ACD).
Coordinating Principal Investigator	Dr Piyush Grover
Institution	Sir Charles Gairdner Hospital
Approval Date	05 October 2023
<p>We aim to understand the frequency, drivers and impact of such drug reactions and explore the associated patient experience of these reactions. The knowledge generated will be helpful to pilot a clinic service involving cancer and allergy specialists to provide advice to patients and their treating cancer team on management of allergic reactions to anti-cancer drugs.</p>	

For this study, we will firstly conduct an audit of patients' medical records (currently underway following Sir Charles Gairdner Hospital GEKO approval), and then identify and assess patients' symptoms who develop allergic reactions to anti-cancer drugs. We will also conduct interviews with approximately 15 (and up to 30) patients to reveal the impact of these reactions on patients' treatment plans and wellbeing. Subsequently, we will plan to integrate a new service (Allergo-Oncology service) into the already established drug allergy clinic at Sir Charles Gairdner Hospital.

By creating guidelines and standards on assessment and management of allergic reactions to anti-cancer drugs within a patient centred model of care, the service is likely to prevent delays in cancer treatment, provide access to more treatment options and provide specific support options for cancer patients across Western Australia.

Project Title	Can Intracardiac Echocardiography Catheter IVUS assessment of inferior vena cava / retroperitoneal tumour interface predict the need for caval replacement and ECMO during tumour resection?
Coordinating Principal Investigator	Dr James Preuss
Institution	Sir Charles Gairdner Hospital
Approval Date	05 October 2023

We aim to assess the accuracy of intracardiac echocardiography (ICE catheter facilitated intravascular ultrasound (IVUS) to identify tumour invasion of the inferior vena cava in patients with large retroperitoneal tumours.

We hypothesise that IVUS performed with an ICE catheter will have a high accuracy in identifying patients with IVC invasion from large retroperitoneal tumours.

We hope that by identifying patients with true invasion from compression may allow us to accurately identify a patient with IVC invasion from those with compression to reduce the unnecessary additional invasive procedures in patients that don't ultimately need it, allow for optimal booking of the operative lists and improve efficiency in the use of theatre resources, including staff.

Project Title	Subarachnoid Haemorrhage Aneurysm RErupture Prediction And Patient Expressed Results Study 2 - Patient specific computed saccular cerebral aneurysm wall tension at admission as a predictor of ultra-early pre-treatment rebleeding.
Coordinating Principal Investigator	Dr Arosha Dissanayake
Institution	Sir Charles Gairdner Hospital
Approval Date	05 October 2023

The University of Western Australia Intelligent Systems for Medicine Laboratory has developed a computer program which can take the size and shape of a patient's brain aneurysm from scans and simulate the tension on the wall of the aneurysm caused by the patient's own blood pressure.

This program can already predict the risk of rupture for aneurysms of the aorta, the vessel which takes blood from the heart to the legs.

In this study, we hope to investigate whether the software can detect a difference in wall tension between WA brain aneurysm patients who re-bleed and those who did not. If a difference is found; in the future, it is hoped that this software could be used to predict which patients with a ruptured brain aneurysm are at increased risk of re-bleeding. This information could then be used to direct emergency treatment whilst minimising the cost to the health care system of treating all aneurysm patients emergently.

Project Title	Evaluation of hepatocellular carcinoma predictive scores in an Australian cohort with chronic hepatitis B virus infection
Coordinating Principal Investigator	Dr Thisuri Jayawardena
Institution	Sir Charles Gairdner Hospital
Approval Date	05 October 2023

Patients with chronic hepatitis B are at increased risk of developing liver cancer. Current guidelines classify a significant portion of patients as high risk based on epidemiologic factors. These patients are recommended to undergo liver ultrasound and blood tests every six months placing a significant burden on radiology services, liver clinics and patients. The objective of this study is to assess the validity of these predictive scores in a retrospective cohort of patients attending a tertiary hospital liver clinic in WA. We will categorise patients into low risk and high risk based on calculated scores and assess how many patients developed cancer in the follow up period. We will identify how effective each score is at predicting cases of cancer and whether they can safely reduce the number of patients undergoing screening.

Project Title	Terlipressin for refractory hypotension in Intensive Care Unit Patients
Coordinating Principal Investigator	Dr Matthew Anstey
Institution	Sir Charles Gairdner Hospital
Approval Date	05 October 2023

Terlipressin is a synthetic vasopressin analogue with vasoconstrictor activity in the splanchnic and systemic vasculature.(1) It is currently used in the setting of hepatorenal syndrome and

bleeding oesophageal varices. (SCGH clinical guideline) However, it has been studied for use in both septic shock and vasoplegic shock. It has a long half life of 6 hours so contrary to usual vasopressors, it is not given as an infusion (it is metabolized to lysine-vasopressin). No previous studies have examined the use of terlipressin as an alternative to intravenous vasopressor infusions (such as noradrenaline, metaraminol) for the treatment of refractory hypotension in an ICU setting. We are investigating a new indication for terlipressin as the treatment of hypotension in critically ill patients. It may also be more efficacious in patient with recent angiotensin-converting enzyme inhibitor or angiotensin II receptor blocker use as it acts via an alternate pathway.

We hypothesise that terlipressin will decrease the time of patients being administered continuous vasopressors and therefore accelerate their readiness for ICU discharge. This has potential to have a significant impact on healthcare costs by reducing ICU and hospital LOS. As a pilot randomised controlled trial, we will describe the outcomes, and provide estimates of effect for future larger trials.

Project Title	A bi-national survey on the functioning of Intensive Care follow-up clinics.
Coordinating Principal Investigator	Dr Matthew Anstey
Institution	Sir Charles Gairdner Hospital Armadale Health Service Nepean Hospital Royal North Shore Hospital Redcliffe Hospital
Approval Date	12 October 2023

Following discharge from the intensive care unit (ICU), patients often suffer from physical, cognitive, and psychosocial impairments, known as post-intensive care syndrome (PICS), significantly affecting their quality of life. To address this issue, numerous ICU follow-up clinics have been set up globally. These clinics, however, are relatively new to Australia and New Zealand, and thus, there is a lack of data to guide how these clinics should run to best address the patients' significant ongoing care needs.

To the knowledge of investigators, there are five follow-up clinics in Australia and one in New Zealand. We propose conducting a survey of these clinics to be able to describe these clinics in detail: financial reimbursement models, clinic staffing, current data collection methods, patient enrolment, and limitations to expanding the services of the clinic. The survey will be created on REDCap and sent to each site for the ICU site coordinator to complete. Once the surveys are returned, the results can be statistically analysed and reported on.

This survey will provide the most detailed description of ICU follow-up clinics in Australia and New Zealand and provide the basis to guide how future clinics can be best set up.

Furthermore, the survey provides a foundation for further research focused on patients enrolled at each clinic, describing their needs and aspects of their health amenable to interventions to further increase their quality of life and long-term health outcomes.

Project Title	'Colours': A new technique of estimating the comparative risk of anaphylaxis to neuromuscular blocking agents by consideration of cross-reactivity.
Coordinating Principal Investigator	Dr Paul Sadleir
Institution	Sir Charles Gairdner Hospital
Approval Date	02 November 2023
<p>This is a retrospective observational study. The patient group will comprise of patients over the previous 20 years who were diagnosed with perioperative anaphylaxis at Sir Charles Gairdner Hospital and found to have hypersensitivity to vecuronium or rocuronium. The demographic data for these patients and pattern of cross-reactivity of skin tests will be gathered from a pre-existing and de-identifiable allergy clinic database.</p> <p>The pattern of cross-sensitivity will be used to estimate the relative prescription rate of each muscle relaxant. This will be used to correct the overall rate of NMBA anaphylaxis for each agent, giving a comparative risk per exposure.</p> <p>This estimate of comparative risk will be compared to those generated by structured literature review.</p>	

Project Title	Optimal Ruptured Aneurysm Closure via Endovascular-FIRST TREATment Time (ORACLE-FIRST TREAT): a personalised machine learning prediction model of treatment time to minimise the risk of pre-treatment rebleeding following single culprit saccular aneurysmal subarachnoid haemorrhage
Coordinating Principal Investigator	Dr Arosha Dissanayake
Institution	Sir Charles Gairdner Hospital
Approval Date	09 November 2023
<p>In this study we aim to train a supervised machine learning model using our 14-year prospectively collected cohort of consecutive patients with aSAH due to a single culprit ruptured saccular aneurysm present at the time of diagnosis. We will use as inputs for model training routinely available clinical and radiological parameters which are associated with pre-treatment rebleeding as shown by recent meta-analyses. The model outcome will be both the risk of pre-treatment re-bleeding as well as the time to re-bleeding, aneurysm closure, death or discharge; the latter will inform the model's recommendations regarding the optimal time to aneurysm closure to minimise rebleeding risk. In this manner we seek to develop a predictive model capable of providing actionable information to clinicians with regard to the optimal timing of ruptured saccular aneurysm closure to minimize re-bleeding risk based on admission clinical and radiological parameters.</p>	

Project Title	Retrospective analysis of the association between Neutrophil Lymphocyte ratio and outcomes and prognosis in head and Neck squamous carcinoma patients treated with different modalities in western Australia
Coordinating Principal Investigator	Associate Professor Peter Friedland
Institution	Sir Charles Gairdner Hospital
Approval Date	10 November 2023
<p>Head and neck squamous cell carcinoma (HNSCC) is a malignant disease with a poor prognosis. Reliable prognostic biomarkers are crucial for personalized treatment strategies and improved outcomes.</p> <p>Recent studies suggest that the neutrophil-to-lymphocyte ratio (NLR) may serve as a valuable prognostic factor in HNSCC. A meta-analysis involving 3,553 HNSCC patients found that a high NLR was significantly associated with poor overall survival and disease-free survival. Other studies supported these findings and revealed that NLR can predict poor response to chemotherapy and chemoradiotherapy. NLR is also linked to various clinicopathological factors and shows potential in combination with other biomarkers.</p> <p>However, further research is needed to fully explore its utility and guide treatment decisions. Notably, no reported publications on this topic exist in Australia.</p>	

Project Title	The supplementation of Ketones in Neurological Damage: A pilot randomized controlled trial
Coordinating Principal Investigator	Dr Matthew Anstey
Institution	Sir Charles Gairdner Hospital
Approval Date	15 November 2023
<p>Altered cerebral glucose metabolism likely contributes to tissue hypoxia and secondary neurological injury in patients admitted to ICU with acute brain injury due a variety of aetiologies. Ketosis may be an alternative energy source in times of cerebral starvation, and this has been classically achieved through the ketogenic diet. Enteral supplementation of ketone bodies in the form of ketone esters may be a quicker way to achieve ketosis in this population and are safe and easily available as over-the-counter dietary supplements.</p> <p>This trial will assess the feasibility of administering ketone esters via the nasogastric route in patients admitted to ICU with coma and either subarachnoid haemorrhage or hypoxic-ischaemic encephalopathy as a critical step in a programme of research aimed at determining the role of ketone body supplementation in patients with acute brain injury in the ICU.</p>	

Project Title	Managing dizzy ENT patients with a novel Advanced Scope Physiotherapy model of care
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Coordinating Principal Investigator	Dr Jafri Kuthubutheen
Institution	Sir Charles Gairdner Hospital
Approval Date	01 December 2023
<p>Lengthy Ear, Nose and Throat (ENT) waitlists at a tertiary hospital remain a significant barrier to patient care. Recent pilot funding established a novel senior experienced Physiotherapist as an Advanced Scope Practitioner (ASP) to act as the initial contact point for patients referred to the ENT clinic with vestibular symptoms (including vertigo, dizziness, and poor balance). The purpose of this role was to reduce the time waiting for a specialist ENT appointment for patients with dizziness and allow early investigation and treatment. This novel model of care, whilst encouraging, has identified the need for rigorous research as there is still limited data on outcomes.</p> <p>This project will determine the benefit of the ASP role for SCGHOPH. If successful, the ASP role has potential to reduce the ENT outpatient clinic waitlist, the demand on scarce specialist time, and the time to be seen, investigated, and treated. The results of this study may allow expansion of the role in other specialities such as neurology.</p>	

Project Title	Utilities of Functional Near Infrared Spectroscopy in Vascular Surgery
Coordinating Principal Investigator	Professor Shirley Jansen
Institution	Sir Charles Gairdner Hospital
Approval Date	14 December 2023
<p>Tissue perfusion and oxygenation are essential to keep up with the increased oxidative metabolism during wound healing. Lower limb foot wounds are common in patients with vascular disease and diabetic foot, often with a significant degree of overlap. These patients have impaired tissue healing, with an average wound healing time of 6 months. In addition, there is a high rate of ulcer recurrence, with further complications of infection and the potential need for major limb amputation. Current methods of assessing tissue healing are primarily based on clinical judgement, with adjunctive scoring tools used to aid in standardising assessments and communication between clinicians.</p> <p>Despite various objective measures, with bedside tools such as ankle-brachial pressure index and toe-brachial index, as well as radiological imaging of ultrasound and contrast computed tomography, to assess tissue perfusion, these tools do not necessarily reflect tissue oxygenation. In addition, patient anatomy and physiology significantly influence these measurements. Functional near-infrared spectroscopy is commonly used to measure regional tissue oxygenation of the brain at the bedside. It utilises differences in optical absorption to determine oxygenation status of a tissue and is portable and safe.</p> <p>We aim to use a derivative of this measuring tool to assess tissue oxygenation in lower limb wounds. We believe that the use of this technology would serve as a novel, safe, inexpensive</p>	

and portable measure to assess potential success in wound healing and identify patients who require further intervention such as surgical debridement and amputation early.

Project Title	Normative adult weight data for foam pressure redistribution cushions used in hospital settings: An observational exploratory study.
Coordinating Principal Investigator	Dr Kristie Harper
Institution	Sir Charles Gairdner Hospital Osborne Park Hospital
Approval Date	14 December 2023

Occupational therapists provide foam pressure redistribution cushions to support patients to sit out of bed safely. They are essential to support wound healing, prevention of pressure injuries and maintenance of function. Pressure redistribution cushions reduce the surface interface pressure by spreading the load across a larger surface area and away from vulnerable areas. Approximately 30 foam cushions are used at Sir Charles Gairdner Hospital (SCGH) per week.

Foam pressure redistribution cushions are prescribed to the patient dependent on the patient's weight. In the 1990's the weight ranges for the different densities of foam were developed and these are currently relied on today. These require updating with improvements in foam densities and new directions in surgery for sarcomas, skin grafts and flaps requiring different considerations for pressure care management. The Occupational Therapy Department also has new pressure mapping technology consisting of the BodiTrak Pressure Mapping System which is now routinely used in standard care.

This project aims to complete a prospective exploratory study to recalibrate current weight capacities for the four different densities of the foam currently utilised. This would review and update the 1990's data, maximise use of new technology and consider clinical care changes to better support patients. Healthy volunteers will be purposely selected to generate normative weight capacities for the fabricated foam pressure redistribution cushions utilised across SCGOPHCG. Volunteers will be pressure mapped while sitting on the different densities of foam to determine depth of body immersion, spread and location of the sitting pressures exerted. This will identify which foam provides the best level of immersion and therefore pressure redistribution relevant to the individual in a certain weight category. This data is essential to ensure patients are provided with the best foam option for effective positioning and pressure redistribution in hospital.

Project Title	The Pneumothorax and Symptom Evaluation (PASE) Study: Bendopnoea in Patients with Pneumothorax
Coordinating Principal Investigator	Professor Gary Lee
Institution	Sir Charles Gairdner Hospital

Approval Date	18 December 2023
<p>The PASE study is a pilot study to explore the incidence and clinical relevance of bendopnoea in patients with pneumothorax and may provide better understanding of breathlessness in pneumothorax.</p> <p>Pneumothorax (a collapsed lung) occurs when air leaks from the lung and accumulates between the chest wall and the lung, resulting in partial lung collapse. The build-up of air may impair diaphragm function (the muscle that helps us breathe). The mechanism of breathlessness in pneumothorax is unclear, and symptoms can vary between patients. Some patients present with minimal or absent symptoms, whilst others experience distressing breathlessness and pain. Sometimes tubes may need to be inserted between the ribs to drain the collected air and help the lung reinflate, and occasionally surgery is required to stop the leak.</p> <p>Currently, the effect of the accumulated air in the pleural space and its association with diaphragmatic function and symptoms of breathlessness is not well understood. Bendopnoea (breathlessness when bending forward) is an evolving clinical symptom that has been demonstrated as clinically useful in some heart and lung conditions. Whether bendopnoea is present in patients with pneumothorax, and its potential clinical usefulness has not yet been investigated.</p>	

Project Title	Whole genome sequencing to improve the diagnostic yield for patients with endocrine disorders of unresolved genetic aetiology
Coordinating Principal Investigator	Professor Scott Wilson
Institution	Sir Charles Gairdner Hospital
Approval Date	19 December 2023
<p>Whole genome sequencing (WGS) of genomic DNA from neonates in the acute care setting is both efficient and cost effective in providing diagnosis and treatment; in a recent study, 54% of patients received an informative diagnosis, with an average time to report of 3 days. The question now is, can similar benefits be achieved by completing WGS on adult patients with genetic endocrine diseases of unknown aetiology? Historically, the coding region of candidate genes was sequenced, with the expectation that one might rationalise where molecular defects lay; unfortunately, that approach was very inefficient, often failing to aid diagnosis. More recently next generation sequencing panels, or in some instances, exome sequencing, has been used, however, while often beneficial, these approaches have been shown to be less than optimal, with only an estimated 30% of patients receiving a diagnosis. Since the price of WGS has now fallen substantially and with current availability of recently developed efficient bioinformatics approaches for interpretation of WGS, this approach now offers genuine promise for definitive diagnosis and treatment of patients, including those with endocrine disorders.</p> <p>In this state-of-art research project we will use skills and experience gained in previous WGS studies to assess feasibility and efficiency of applying WGS to participants recruited prospectively. Patients identified with a genetic endocrine disorder such as hypogonadotropic hypogonadism, glucocorticoid resistance, thyroid ectopia, osteogenesis imperfecta and</p>	

glucocorticoid resistance, will be recruited. WGS (30X) will be performed on genomic DNA from a blood sample provided with informed consent, using established WGS methodologies and bioinformatics analysis pipelines established in our laboratory, which include assessment of structural variants and regulatory non-coding genetic variants. Through this research we will be able to establish the diagnostic utility of this approach and assess efficiency compared to approaches that are in routine use.

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