

CiSA Awards

Section 1: 2019 – 2020 Funded Project Reports

Section 2: 2021 – 2022 Overview of New Projects

April 2022









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Pictured: CiSA team members - Dr Harriet Byrne, Dr Mary Jane O'Leary, Dr Mohamad Saab, Mr James Harte, Prof Helen Whelton, Dr Aonghus Joyce, Dr Maria Buckley, Dr Michael Clarkson, Dr Owen J O'Connor.

FOREWORD: A NOTE FROM THE HEAD OF THE COLLEGE OF MEDICINE & HEALTH, PROFESSORHELEN WHELTON

The College of Medicine & Health (CoMH) at University College Cork is very grateful for the support our research received from industry through corporate philanthropy and sponsorship. Our industry partnerships enabled us to establish the CoMH interdisciplinary Seed Award (CiSA) Programme in 2019, which brings together academic and clinical researchers to better address knowledge gaps and impact the lives of patients. Through the continued generosity of these partners, we ran the CiSA programme again this year, and we anticipate exciting and impactful research which will benefit the Health Care Sector as a whole in Ireland and the quality of life for patients.

Partnerships among academia, the health and social care service, industry and policymakers are essential to promote, facilitate, translate and implement research advances in a timely manner. Better health and improved treatment outcomes for patients are the rewards of this effort.

The below report outlines the results of three selected CiSA projects that were funded in 2019. The impacts of these projects on patients' quality of life, patient education and on future research and building capacity in these important areas through leveraged funding are clear and highlight the important, multidisciplinary research that is being carried out here at University College Cork.

Finally, we would like to express our gratitude to our sponsors who help bring our work to fruition. Particular thanks are owed to Boston Scientific, GSK, Laya Healthcare and Pfizer, without whom much of this research could not have been realised.

Professor Helen Whelton

Helen Welton

Head of College of Medicine and Health









HIGHLIGHTS OF 2019/2020 FUNDING IMPACT



IMPACTED NATIONAL STRATEGY

Research findings impacted and were published in a **National Strategy** "Leading the Way - A National Strategy for the future of Children's Nursing in Ireland 2021-2031"



LEVERAGED FUNDING

€730,000 leveraged funding secured



FUNDING FOR SALARY SECURED

A dental nurse salary was funded as a result of research findings



ESTEEMED PUBLICATIONS

8 publications in esteemed international medical & dental journals, including two in 'Trials'



RESOURCES FOR IMPACT INTRODUCED

Educational resources for people with Cystic Fibrosis on specific dental health issues are now available at Cystic Fibrosis units throughout Ireland









PROJECTS FUNDED 2019/2020

2019 PROJECT 1: THE CHALLENGES OF RECRUITMENT TO A RANDOMISED TRIAL REGISTRY – WHAT INFORMATION MATTERS TO THE PATIENT?

Background	Using registries to conduct randomized controlled trials (RCT) is a reasonably new practice. Recruitment is challenging. The purpose of our study was to establish the patient motivators, barriers, and consent to registries. Our methodology included a questionnaire and observational studies.
Results and Conclusion	87 patients participated. Motivators for participation included personal and altruistic benefits. Barriers/concerns include time requirements, risks (incl. data safety) and side effects along with impacts on current treatment. Though a total of 29.8% of patients 'strongly agree/agree' to having concerns regarding their data storage in a registry, 79.3% of patients were 'very likely/likely to consent. Our project concluded that there is a need to improve patients' understanding of clinical trials and the personal andaltruistic benefits should be emphasized. Finally, addressing a patient's concerns regarding time and risks of involvement may improve their likelihood to participate in a registry for RCTs.
Impact and Leverage	 Two Publications from the project were issued in <i>Trials</i>, this esteemed Medical Journal is dedicated to improving the design, conduct and reporting of randomised controlled trials in health. A workshop was hosted in UCC on Registry-Based Randomised Trials: uses, challenges, advantages, andapplications. The project team gained further exposure through the publication of the work and development of the trialmethodology research which resulted in grant applications. Established a glomerular disease registry and National Renal Dialysis Office Dialysis Registry
Team Members	Dr Frances Shiely, Director of Education, Senior Lecturer, HRB Clinical Research Facility and School of Public Health UCC. Dr Eva Long, Consultant Nephrologist, Department of Renal Medicine, Cork University Hospital.

Leveraged Funding

HRB-TMRN Working Group Award 2020/2021 €10,000

HRB-TMRN 2021/2022 €12,5000

HRB TMRN Summer Student Scholarships 2020

MRC-NIHR-TMRP Project Grant 2021 €10,000

NIHR CTU Funding 2021 £78,000

ERASMUS +KA 220-HED - Cooperation partnerships in higher education €368,624

HRB ILP 2022 (shortlisted).











2019 PROJECT 2: ORAL HEALTH OF ADULTS WITH CYSTIC FIBROSIS

Approximately 1 in 19 Irish people are said to 'carry' one copy of the altered gene that causes Cystic Fibrosis (CF). Half of the people born with cystic fibrosis in 2017 will live to at least 47. This is a remarkable medical advance, however, this means that we now have a shortage of evidence for the healthcare management of adults with CF, as previouslylife expectancy did not extend far beyond their teenage years. Dental decay and gum disease are among the most common chronic infectious diseases globally and any person going for a transplant operation is required to be in good dental health. This study aimed to compare the levels of dental decay and gum disease among adults with Cystic Fibrosis and a comparison group of non-CF adults.

The study featured in numerous esteemed publications and medical & dental journals over the past two years:

Background

- Coffey, N, O' Leary, F, Burke, F, Howlett C, Plant BJ, Hayes M. "Oral Nutritional Supplements: Sugar Content and Potential Dental Implications". Gerodontology. 2021; 00: 1–5. doi:10.1111/ger.12592
- Coffey, N, O' Leary, F, Burke, Roberts A, Hayes M, "Periodontal and oral health status of people with Cystic Fibrosis: a systematic review" Journal of Dentistry, 2020; Volume 103, https://doi.org/10.1016/j.jdent.2020.103509.
- O'Leary, F, Coffey, N, Hayes, M, Burke, F. "Oral care for patients with cystic fibrosis". Journal of the Irish Dental Association. July 2021
- O'Leary, F, Coffey, N, Hayes, M, Burke, F. "Oral care for people with cystic fibrosis requiring a solid organ transplant". Journal of the Irish Dental Association. July 2021
- Coffey, N, O' Leary, F, Burke, F, Hayes M. "Oral Disease in People with Cystic Fibrosis". Irish Medical Journal. October 2020

As a result of the CiSA Award, the team was able to leverage funding of €236,000 from the Health Research Board (Clinician Scientist Postdoctoral Fellowship awarded to Dr Martina Hayes). Furthermore, a Dental Nurse's Salary was funding by Cystic Fibrosis Ireland, following the research.

Impact and Leverage

The team also successfully developed educational resources for people with Cystic Fibrosis on the impacts of oral nutritional supplements and bisphosphonates on their long-term oral health. These will be available to patients attending Cystic Fibrosis units throughout Ireland.

The impact of the CiSA award and funding goes far beyond 2019 & 2020. The results of this study will improve CF patient outcomes in the future.

Team Members

Dr Martina Hayes, UCC, Professor Anthony Roberts UCC, Dr Frank Burke UCC, Dr Richeal Ni Riordain UCC, Dr Eimear Hurley UCC, Dr Mairead Harding UCC, Ciara Howlett CUH and Professor Barry Plant, CUH, PhD Students Dr Niamh Coffey, UCC and Dr Fiona O Leary, UCC.









2019 PROJECT 3: QUALITATIVE EVALUATION OF A PAEDIATRIC HAEMATOLOGY ONCOLOGY OUTREACH SERVICE AT MERCY UNIVERSITY HOSPITAL

Children's cancer care primarily occurs in one national hospital and requires children to undergo arduous protracted treatment regimens involving chemotherapy, radiation and surgery, depending on the type of cancer. This has implications for families who live outside Dublin such as long journeys with sick children, prolonged periods of separation from family and the additional financial burden.

Background

The Paediatric Haematology Oncology Outreach service at the Mercy University Hospital in Cork employs two full-time outreach Clinical Nurse Specialists (CNS), who provide home care for families of children with cancer. 'Care closer to Home' is a shared vision of both Sláintecare (2017) and The National Model of Care for Paediatric Healthcare Services (2014). However, little is known about how parents perceive this service, the impact it has on their family and whether this is a potential exemplar of how to care closer to home should be provided. This project aimed to explore mothers' experiences of the paediatric haematology oncology outreach service. As such, eight Irish mothers of children with cancer aged 4-13 years were recruited to take part in tape-recorded interviews. Data were analysed using thematic content analysis. The Rigour of the study was established by verbatim quotations, reflexivity and a decision trail of the research process.

Results and Conclusion

Five themes emerged – The Role of the Outreach nurse; Enhanced Quality of Life; Psychosocial and Emotional Support; Geographical Advantage and Parent Recommendations. The conclusion drawn was that the Paediatric Haematology Oncology Outreach service is a unique exemplar of specialised community—based children's nursing, keeping sick children in their own homes.

This award provided the project team with the opportunity to research and identify the meaning of this service for parents, which to date had gone unrecognised and undocumented. The self-reported enhanced Quality of Life of patients and their families and the physical and psychological benefits of keeping the sick child at home was the primaryimpact of this study. Quotes on the impact of directly affected families are below.

Impact and Leverage

- (1) "People kept saying to us (while in Crumlin) you are so lucky to be in Cork. We didn't feel lucky those couple of weeks but as time has gone on we realised we are so lucky,"
- (2) "I think I would have gone under if the service didn't exist"

Upon receipt of this award, the team compiled a report which was presented to the Director of Nursing at the Mercy University Hospital detailing this innovative approach to home care. This award afforded the team with the opportunity to present their findings internationally to showcase how this service can positively impact the physical, emotional, and economic status of families following a potentially live threatening diagnosis.

The findings of this study were also published in "Leading the Way A National Strategy for the future of Children's

The findings of this study were also published in "Leading the Way A National Strategy for the future of Children's Nursing in Ireland 2021-2031"

Team Members

Dr Margaret Curtin, Ms Maria O'Shea and Ms Claire Hayes, School of Nursing and Midwifery, UCC and Ms Olga Buckley, Mercy University Hospital, Cork.



137 children are diagnosed with cancer in Ireland annually

(National Cancer Registry, 2017).









PROJECTS FUNDED 2021/2022

2021/2022 PROJECT 1: TO INVESTIGATE THE INDUCTION OF MONOCYTE PROCOAGULANT ACTIVITY BY SARS-COV-2 AS A POSSIBLE CONTRIBUTOR TO THE INCREASED RISK OF THROMBOEMBOLISM OBSERVED IN COVID-19

Background

COVID-19 remains a worldwide health emergency. As of April 2022, there have been 468 million confirmed cases, including 6 million deaths. Hypercoagulability is a poor prognosticator of COVID-19. Tissue factor is the key potentiator of hypercoagulable states, monocytes are the predominant source of blood-borne tissue factor. Recently, aberrant tissue factor expression has been linked to COVID-19.

Implementation

The implementation plan for the project is as follows:

- Specific Aim 1.1: Determine the morphological and functional changes in monocytes induced by SARS-CoV-2 spike protein.
- Specific Aim 1.2: Determine the extent of involvement of tissue factor in MPCA induced by SARS-CoV-2 spike protein.
- Specific Aim 2.1: Determine the molecular mechanisms underlying changes in MPCA induced by SARS-CoV-2 spike protein.
- Specific Aim 2.2: Investigate MPCA induced by SARS-CoV-2 spike protein in peripheral blood monocytes isolated from patients with or without COVID-19.

Expected Impacts

We anticipate that the findings of the proposed project will provide the basis for improved healthcare innovations with direct application in the prevention and treatment of COVID-19-associated coagulopathy.

- 1. To advance understanding of the pathophysiology of SARS-CoV-2 and the coagulopathy of COVID-19;
- 2. To facilitate further research on the induction of MPCA by SARS-CoV-2 as a possible contributor to the increased risk of hypercoagulability.
- 3. To make a meaningful contribution to the field of medical knowledge and enable the screening and identification of novel therapeutic modalities.
- 4. To facilitate research dissemination and knowledge exchange.

Team Members

Aonghus Joyce, Academic Track Intern, Sinead Harney, Consultant Rheumatologist, Éanna Falvey, Adjunct Professor & Consultant Sports & Exercise Medicine Physician, Darren Rodgers, Senior Physiotherapist.











2021/2022 PROJECT 2: ASSESSMENT OF AUGMENTED SYSTEMIC RESPONSES BY THE GUT MICROBIOME ELICITED BY LIVER-DIRECTED NEOPLASIA TREATMENT

Background

Post ablation/embolization syndrome is poorly understood and relatively unexplored. Iatrogenic phenomenon occurs following ablation (thermal) & embolisation treatments which entail organ injury. Patients suffering from fever,myalgia, nausea, vomiting, and fatigue. An incidence of 40-50% increased pain and interference with work and general activities compared with patients who did not develop the condition.

This project aims to elucidate the causality of post-ablation syndrome following organ-targeted ablation and embolisation procedures and to assess treatment methods. This study will also aid in the identification of mechanisms responsible for the development of this syndrome and will provide insights and potential therapeutic targets.

Implementation

Project implementation will involve patient/participant recruitment and sample(s) collection 3-5 days postablation/embolisation.

Expected Impacts

- The project will help improve understanding of immune response mechanisms and more importantly
 so that therapies which can attenuate these responses can be developed (e.g., following cancer
 treatment or for treatment of systemic inflammatory response syndrome (SIRS)).
- Research has the potential to elucidate the mechanisms underlying the post-ablation syndrome and lead to treatments which would improve the quality of life for these patients.
- The present proposal will provide data which we strongly believe will contribute to a successful larger grant application(s) (HRB-ILP, SFI Frontiers for the future).

Team Members

Dr Maria M Buckley, Department of Pharmacology & Therapeutics, UCC, Dr Owen J O'Connor, Department of Radiology, UCC, Professor Michael Maher, Department of Radiology, UCC, Dr Stephan Power, Department of Radiology, UCC.











2021/2022 PROJECT 3: ORAL HEALTH STATUS AND DENTAL CARE NEEDS OF ONCOLOGY PATIENTS PRIOR TO BONE MODIFYING AGENTS (BMAS)

Background	There are 170,000 living in Ireland with or after cancer therapy, most commonly breast or prostate. These patients are generally on antiresorptive or antiangiogenic medications. Many patients suffer from medication-related Osteonecrosis of the Jaw (MRONJ). The dental community must play a preventative role. As such, the aim of this research project is to address MRONJ using an effective long-term strategy.
Implementation	The implementation plan for this project takes place over 12 months and involves; an assessment of Oral Health Status, pre-therapeutic dental preventative, and treatment for a defined oncological cohort. This will be a multidisciplinarycollaboration between dentistry and oncology, taking place in a secondary care setting. Assessment Plan Prevention/Treatment BMA Therapy
Expected Impacts	 Address MRONJ using an effective long-term strategy Recognition of the increasing prevalence of MRONJ Establish a strong multidisciplinary relationship between oncology and dental Pilot toward multicentre, competitive funded research Reduce the risk of MRONJ and improve QoL in this cohort Progression toward cost analyses study
Team Members	Dr R Ní Riordáin, Prof S O Reilly, Dr H Byrne; Cork University Dental School and Hospital

2021/2022 PROJECT 4: THE COMMUNICATION EXPERIENCES OF PATIENTS AND CARERS REFERRED TO SPECIALIST PALLIATIVE CARE SERVICES AT MARYMOUNT UNIVERSITY HOSPITAL AND HOSPICE: A QUALITATIVE EXPLORATION

Background

Multiple studies of palliative care (PC) programs in different countries and health care systems show that early referral to specialist PC is associated with improved patient outcomes, including symptom control and quality of life, and caregiver outcomes, such as reduced stress and dysfunctional grief. However, timely referral to specialist PC remains problematic, and most patients are still referred too late. There are many well-documented reasons for referrer reluctance to refer to PC early including fear of upsetting patients, seeing referral as an admission of failure, and not understanding the benefits of early referral.

The aim of this study is to explore the experiences of patients and carers referred to specialist PC:

- To better understand the challenges, barriers, and facilitators to early specialist PC referral
- To identify strategies to improve communication experiences during specialist PC referral
- To guide the development of a supportive communication framework for healthcare professionals to ensure seamless early referral to the speciality.

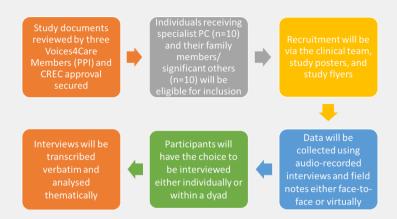








Implementation



Patient impact: The project represents an important step in the MRC Framework for intervention development and testing. It will help the team design a communication framework and targeted intervention to enhance referral processes for patients and carers in the future. Findings will be used to prime further grant applications (e.g., HRB DIFA).

Local impact: This interdisciplinary project will pave the way for future research collaborations in this area.

Expected Impacts

National impact: The HSE Palliative Care Development Framework recommends that specialist palliative care services should be available to all patients, wherever they are, and whatever their disease. Such services require a partnership approach. This research helps address this objective.

Wider impact:

- Presentations to key stakeholders (i.e., healthcare professionals, patients, and carers)
- Open Access publication
- Presentations at national and international conferences

Team Members

Dr Mohamad Saab, University Lecturer, Catherine McAuley School of Nursing and Midwifery, University College Cork, Dr Fiona Kiely, Consultant Palliative Medicine, Marymount University Hospice & Bantry General Hospital, Prof Josephine Hegarty, Professor of Nursing, and Head of the Catherine McAuley School of Nursing and Midwifery, University College Cork, Dr Mary Jane O'Leary, Consultant Palliative Medicine, Marymount University Hospice & Cork University Hospital











2021/2022 PROJECT 5: CLASSICAL AND IRISH TRADITIONAL MUSICIANS: INTERVENTION FOR PLAYING-RELATED MUSCULOSKELETAL DISORDERS (PRMD)

Background

Musicians exhibit a high prevalence of playing-related musculoskeletal disorders (PRMDs) Musculoskeletal complaints in musicians vs non-musicians have a 12-month prevalence of 89.2% vs 77.9%. The aim of this project is to research interventions to prevent & manage PRMD. As part of this remit, our team will assess the efficacy of an online exercise programme for the management of PRMDs. We hope that this project will reduce symptom severity Mitigate the impact of PRMDs on participants' lives and careers & inform the efficacy of an online exercise intervention upon the distinct cohorts of classical & Irish traditional musicians.

Implementation

Implementation will involve participant recruitment and randomisation, online questionnaires, and the distribution of specific exercise equipment

Expected Impacts

- Establishment of an intervention
- Help manage and mitigate the impact of PRMDs
- Provide a foundation for further interventional research
- Contribute to international research on PRMDs & management
- Provide a knowledge resource for musicians, doctors, and allied healthcare professionals

Team Members

Aonghus Joyce, Academic Track Intern, Sinead Harney, Consultant Rheumatologist, Éanna Falvey, Adjunct Professor & Consultant Sports & Exercise Medicine Physician, Darren Rodgers, Senior Physiotherapist.



Consequences

73% Changed/impaired way of playing instrument

55% Impaired function outside work

53% Difficulty in leisure time activities

49% Difficulty sleeping

Up to 12% gave up profession permanently









2021/2022 PROJECT 6: CEREBRAL BLOOD FLOW PATTERNS IN A PIGLET MODEL OF INTRAVENTRICULAR HAEMORRHAGE

15 million preterm infants are born each year. 30-36% of infants born less than 28 weeks of gestational age will develop preterm intraventricular haemorrhage (IVH). The risk factors include fragile vasculature and unstable cardiorespiratory systems. A surgical shunt is the only available intervention for severe cases. There is a risk factor for potential long-term cognitive and motor deficits.

Physiological stimulus/stimuli that causes intraventricular haemorrhage unclear Physiological stimulus/stimuli that causes Conference Presentations

Background

The project aim is to answer our research question "How do clinically relevant combinations of PaO2and PaCO2influence cerebral blood flow, brain oxygenation and brain activity in a piglet model?" The objective of the project is, to use multimodal monitoring, to investigate the influence of abrupt versus gradual changes in cerebralPaCO2and PaO2on cerebral blood flow, brain oxygenation and brain activity caused by manipulation of a large preclinical animal model.

Implementation

The project will be implemented alongside the UCC Biological Services Unit. The project will utilise a large animal housing and surgical facility close to the UCC Main Campus and Cork University Maternity Hospital to keep the piglets that will be used for the experimentation. The piglet model is excellent for bidirectional neonatal cardiovascular research.

Expected Impacts

The implementation of this project will provide an opportunity to enrich pre-clinical research at the INFANT research centre.

It will also give our project team the opportunity to build further international collaborations. Additionally, it will enable the team to leverage additional funding in the future. To date the team have submitted the following applications:

- SFI Future Frontiers Project Application Submitted (Emerging Investigator Category)
- Physiological Society UK, Accelerator Fellowship Application Submitted

Team Members

Principal Investigator - Dr FB McDonald; Mentor - Professor KD O'Halloran, University College Cork; Collaborators - Professor EM Dempsey, Dr J O'Toole, Professor Geraldine Boylan, Professor PY Cheung, Professor G. Griese, University College Cork.









